STATE OF COLORADO

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Reponses to CMC Response Adequacy Review #3

1 message

Warren Dean <warren@whd22.com> Wed, Feb 19, 2020 at 12:38 PM
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Tim, We reviewed the information CMC sent to you in response to your latest round of questions. I thought your questions were clear and concise, but was surprised to how vague and evasive CMC's information was in response

Let me know if you have any questions or comments.

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MEMORANDUM

To: Tim Cazier, Michael Cunningham and Russ Means

Colorado Division of Reclamation Mining and Safety

From: Warren Dean

Date: February 19, 2020

Re: Review of CMC Response to DRMS Adequacy Review #3, February 7, 2020

We have reviewed Castle Aggregates (Castle) (Sometimes referred to as Continental Materials Corporation, CMC) third set of responses and found that they contain little scientific analysis or data to back up Castle's claim that the reclamation plan will stabilize the west wall of the quarry and improve its function and aesthetics.

We believe that when the Castle and/or Colorado Division of Reclamation Mining and Safety, (DRMS) do not provide the scientific detail or the data upon which the Quarry science is based, we must ask the questions again. Castle has claimed our questions to be "untimely," but, they remain unanswered since October, 2019, when the issues were first brought up.

Note that we do share the goals outlined in you cover letter, Para. 4, but, the information provided does not show how Castle and DRMS can meet any of these goals. Many examples follow, and we challenge Castle and DRMS to show how the "proposed reclamation plan" meets the goals better than the currently approved plan.

Slope Stability, Existing

I note that the current Permit Amendment #3 is a "plan to stabilize the entire previously mined area at Pikeview Quarry." We weren't part of the process from almost 12 years ago, but we do see what is proposed now and we do not agree that that the proposed buttress stabilizes the quarry or provides much meaningful reclamation.

To start, we should review the Quarry's long history of large, uncontrolled landslides and the fact that this Permit Amendment #4 ignores those and provides data as to why they occurred. Without that data, how can anyone engineer a solution to the ongoing causes or the slides? We have asked for that information, but have received essentially nothing in response.

As detailed below, the Pikeview Quarry has experienced many landslides over the past 45 years. Since the largest and most obvious slides of 2008/09, the Colorado Geologic Survey (CGS), the Mining Safety and Health Administration (MSHA) and DRMS have studied the quarry, its geology, faults, operations, and mining practices in detail. Here's what they found.

These are quotes from the studies and the Cease and Desist Order signed on June 10, 2009 by Ray Peterson, Acting Chair of the Mined Land Reclamation Board. It states clearly that the quarry has a history of unsafe instability, which was made even more unsafe by questionable mining operations knowingly performed by Castle, the current operator. This is our starting point.

Though I encourage you to read the whole Order and Reports, here are some quotes related to the quarry:

Mined Land Review Board, Cease and Desist Order - "The Site is located in a geologically structurally complex zone where five faults are mapped and within the mine boundary."

CGS January 7, 2009 post slide report states – Brittle deformation features are abundant within the Precabruan granite, sandstone and limestone outcrops within the vicinity of the fault zone.(e.g. slickensides, altered zones, fractures and fault gouge which indicate additional numerous, small unmapped fault and shear zones within the mine area.

The CGS Report on Page 10 concludes that the quarry rockmass is inherently weak, " caused by the abundant discontinuities related to the Rampart range fault zone."

The Cease and Desist Order refers to the following slides which occurred during Castle's ownership and mining operations:

1970's – Several Slides

1980's – Several Slides

1993

2008

2009

2015

CGS Report, Page 10 states "The Pikeview Quarry has a history of slope failures and rockslides."

MSHA report dated September 17, 1986 states "The combination of undercut, steeply dipping beds, bedding plane separations and freeze thaw cycles can be expected to produce this eventual quarry wall failure. It did.

CGS Report conclusion and Cease and Desist Order stated the 2008 and 2009 slides were a combination of:

- Daylighted adverse steeply inclined strata.
- The inherent weakness of the rockmass.
- The loading of benches on top of the quarry with spoils and recent expansion.
- Further undermining and steepening of the rockslope related to the mining and removal of rock in Area H, (The Hole). The operator did not mine Area H as agreed in the Mine Reclamation Plan. The operator testified at the hearing that they mined more than should have been mined.
- The effects of water from offsite drainage.

MSHA concluded that in addition to the geologic formation factors, " the current pit mining operation was likely removing material that had provided a buttress to the rock material above the critical continuity, ultimately triggering the slope failure.

CGS and MSHA conclude "that the area above the slide area is (still) at risk of sliding.

The CGS Report states the CGS has concerns about large, unstable rock blocks that are now defined by the unsupported "hanging" walls of the landlside headscarp."

It is not a matter of "if" but rather "when" this unstable block will fall"

And in spite of this obvious instability, Castle boldly stated an earlier mine permit amendment that " any large scale instability that might occur would be limited in scope simply because the west wall will either be supported by backfill or by native rock yet to be mined. After more slides, The CGS report states "that does not appear to be the case. An oblique photo illustrates that much of the hole was open and the quarry wall was essentially unsupported prior to the failure.

This Permit Amendment #4 we are considering is about buttressing known, dangerous sliding rock. Everyone can track Caste's disregard for the area's unstable geology and the results have been "poor" at best. This is Castle's problem to fix, but In light of Castle's history of poor performance, foot dragging, financial questions and questionable geologic analysis, shouldn't the DRMS and MLRB exercise a surplus of caution in the review and oversight of the Quarry work going forward?

What will happen if Castle starts reclamation, there is another slide and Castle throws up it hands and walks from the project? Will DRMS have protected the State with enough of a bond to enter the site, clean it up and finish the job? The current cost estimates are bare bones, do not cover all costs and have no provision for future slides or issues. DRMS needs to make assure these should all be well covered and if Castle completes the work as agreed / promised, the bond will be returned. If Castle really truly plans to complete the project, then the bond would be a non-issue and a normal cost of the mining business since the beginning.

Per below, CDRMS requested known slide monitoring and other data from Castle in previous Reviews. Of note in, Castle declined to provide that information.

- Of note DRMS Requested to review " Slide monitoring reports, summaries and / or data for the monitoring that has occurred to date for visual inspections, drone investigations and prism monitoring"

- CMC Response: "The slide monitoring to date has included robotic prism surveying, visual inspections, drone imaging and the monitoring was performed primarily for worker safety. The data were reviewed on an as-needed basis again for worker safety, but formal reports were not prepared. During reclamation activities CMC will prepare monthly monitoring reports that summarize the monitoring data."

I think CMC states here that DRMS can not see any of its historical data. Why not? Is DRMS planning to follow on this refusal?

Fill Materials to Stabilize Quarry Wall

Castle calculates that it will need to push 3,985,558 cubic yards of fill against the quarry wall to stabilize it. For reference, this is 200,000 tractor trailer trips to move material into the quarry and another 200,000 trips to return for the next load for a total of 400,000 trips, under the most optimistic scenario. This impacts the City of Colorado Springs' neighborhoods and road systems. I know the MLRB review is narrow, but as a courtesy, has anyone from DRMS spoken with anyone at the City about the plans? It seems, in this age of breaking down bureaucratic silos, at least a conversation or heads up might be in order.

The real question is “Where will Castle get the material?” It is a huge amount. In its initial submittal, it claimed it would mine/move it from a “borrow area” on the south side of the quarry. This area has already been quarried has litle excess material. Quarrying it more would merely would create another scar to be reclaimed. Castle now states, in its latest Response, it would “mine” another 40 acre quarry expansion to the north to create the fill.

We have specifically requested that CMC provide a detail of how the 40 acres and / or the “borrow area” can provide enough fill to stabilize the wall and also create usable slopes at the bottom of the wall. We have received no response nor has the DRMS.

To make up the shortfall Castle states it will “import” fill material from what are currently unknown sources throughout the region. Stated examples include fill from an undefined “Multi Family Construction Project”, “Wilkinson Construction” or “TAB Construction”. These are not large, defined, known sources of fill in the quantities required for the quarry reclamation. These are small construction companies. With this scale of sourcing, Castle will have to obtain the fill from many different small locations. This then raises questions about the uniform strength and quality of the fill. Given the importance if its strength and quality, it will need to be well tested and engineered. However, Castle states it will only test one of every 250 truckloads hauled to the site. I ask the DRMS if this is prudent.

If there is a need for imported fill, Castle claims it will be covered by community “donations” . DRMS and the MLRB should check this claim / assumption for two reasons. 1) From experience in the El Paso County construction industry, we know that clean fill with strong structural characteristics sells at a premium price and are not donated or given away. 2) I think the bond calculations assume there will be no cost for the fill material or its transportation. If Castle walks and DRMS must pay to import fill, it could have large shortfalls in its and reclamation budget and associated bond amount. I think it would be wise for all parties to double check these assumptions. Proper bonding is a safe, conservative way for DRMS to proceed and costs very little for Castle execute.

<u>Buttress Material Hillside Compaction</u>

Once we know the fill material is strong, it must then be compacted, per the recommendation of a geotechnical engineer, to achieve the strength needed to buttress the quarry wall and create useable slopes. An important part of the design is to keep water from migrating below the surface and creating voids.

CMC, Page 5, Para 5, Castle states that the “slide material has naturally consolidated under its own weight over the last 10 years, thus limiting the remaining void space.” Though we have requested data from the laser prisms and other “proof”, we have received no response and are not aware that DRMS has either. How can Castle make this claim with no proof? In fact the President of Castle, in a recent newspaper article,

stated that "the slide continues to settle in on itself moving about one tenth of a foot per month." This is the same area which had a major slide in 2015. If the hillside has compacted itself and created a strong buttress, Castle needs to prove it with all the data it has collected since 2008 and earlier. Hopefully it has compacted itself.

The critical design issue is that Castle proposes to push the rock down from the top of the quarry. we don't understand how Castle can control the compaction and soils strength with that method. Additionally, it proposes to stack the soils hundreds of feet high against the wall at a 2 ' to 1' slope, which is inherently unstable and subject to erosion, voids and slumping. Again, this question has been asked, but not answered.

Once the fill is in placed and assuming it stays put, Castle will need to place topsoils so grasses, bushes and trees can grow. How will those critical soils stay on place? Unfortunately, we can envision a scenario in which they don't stay put and quickly wash down into the bottom of the quarry and into the City Storm Drain system, which creates a whole new set of problems for Colorado Springs.

Finally, Castle proposes to drive bulldozers or trucks over the fill placed on the site, to compact it. We have yet to see how these unscientific vehicle passes take the place of engineered compaction testing. We have asked to proof that this system works and have also asked Castle and DRMS to explain the "method specification" described in the Castle Response, Page 3, Para.4. Additionally we would like confirmation that one test for every 250 truck loads of varied material is sufficient.

CMC, Page 4,Para1 – On a related note, Castle states that "Area H was backfilled using the process discussed herein." It is unclear how this several hundred foot deep, excavated area was backfilled. Can Castle or DRMS please provide more detail?

What is the back fill material and where was it sourced, tested and processed? Does Castle have copies of those tests?

How much material was placed?

How was it compacted?

How thick were the lifts? Are they documented?

How often was the density and compaction tested?

Has DRMS ever checked those records related to Area H?

Are there also "construction quality assurance tests, geotechnical monitoring results, construction volumes and drone survey results?" Are these available for inspection.

CMC,Page 3,Paras 9,11 – Can you please answer these questions about meeting the compaction specifications and provide test results.

Water, Reclamation Bond and Other Items

CMC Page 2,Para.4. Did you submit these plans in a larger scale.? The State site only has 81/2x11. Does anyone know where we can obtain a legible copy of these documents?

Dean, Page 2, Para 3 - I could not find a bond calculation, Exhibit "L". Why is there no calculation? CMC clearly states in its cover letter that one of its main goals is to reduce the bond amount, and thus its exposure to the work at the Quarry. Again, I assume the DRMS will protect the interests of the citizens of Colorado and make sure we have adequate funds to cover the full costs of stabilization and reclamation. There are many things which can go wrong. CMC has already mined many millions of tons of material and sold it. We need to make sure it completes is reclamation obligations

CMC, Page 2,Para. 9 – Your whole premise with this PA4, with its 2-1 slopes is quite different than the 4-1 slopes proposed in PA3. I am not sure what industry standards are for buttressing a continually sliding slope area, but I do think that this operator needs to prove that its hightly unusual design will hold back the sliding quarry wall. I think the DRMS needs to know that to proposed design will work and that CMC will actually complete it. Anything less would be remiss.

If these soils, from many unknown sources, aren't strong enough to hold back the quarry wall and or slides, who will come fix the problem?

How long will CMC stand behind its work? Geologic time can move slowly and sometime problems take time to manifest themselves.

Can the required standard proctor be determined in the field after testing, while the load is waiting to be released?

Page 7, 33 – Water has been a major factor in previous slides, and CMC has been the victim of renegade water flows which it claims it could not anticipate. Does CMC take responsibility for keeping water off of its site and mitigating any problems it might cause

The question refers to WS1 and WS2 as "most important". And WS5 and WS7 "may also be of critical importance." Given the history, I think they are all important. I note that the quarry inspection in 2015 included photos of water pouring into the quarry from the west. I don't know which watershed that water is flowing from, but there is no doubt it is flowing freely. If it is a contributing or main factor, why wasn't it all kept out of the quarry?

The responses seem to fiddle with freeboard depths etc…when the real issue is to keep the water out of the quarry so that it doesn't lubricate further slides. I don't see this issue addressed in the Response.

Reclamation

Castle claims it will reclaim the site using 112,000 CY of topsoil "donated" to the project by the City of Colorado Springs and its citizens. This is a large amount to topsoil, which in the open market has a high value. Is Castle committed to purchasing the topsoil if it cannot obtain any donations. Do we know a market price for topsoil ? The same would also apply to the availability and cost of structural fill material.

I do note that several exhibits show topsoil stockpiles. Does DRMS have a good estimate on how much topsoil is on site? Field inspection showed the stockpiles to be short (not tall) and that in order to have a sufficient quantity, the piles would have to be approximately 65 feet tall. They are not.

Does DRMS differentiate the quality of topsoils? Are man made topsoils interchangeable with natural?

When topsoil is placed on steep slopes, how does the operator assure that the topsoil stays in place. What happens if it washes out and down the hillside?

Is Castle responsible for assuring germination of seed and the health of plants, shrubs and trees? Responsible for survival of seedings or plugs.

How tall are seedlings and plugs when planted?

Can Castle or DRMS point out any reclamation projects such as this, with it its steep slopes have been successful?

How does DRMS define success with germination and establishment?

CMC, Page 10, para 8, If the steep slopes might make the use of tackifiers unsafe, what do you do to hold plantings and seeds in place?

CMC Page 11, Para 1, Is Castle stating that they should be left off the hook due to the steep slopes and that hydro seeding should not be part of the bond calculation. So if there are issues Castle thinks it is ok to have nothing grow on the hillside. I think the excessively steep slopes are Castle's design and idea. Why would they be able to walk. They could shallow the slope to 3 to 1 or less and the plantings should work. Is it a cost issue? I think this is a Castle design and Castle needs to make it work and not shift the burden to the public sector.

CMC, Page 11, para 3. It seems that without watering, the plants are guaranteed to die, especially with the flash nature of the precipitation in this area. I don't understand how Castle feels they didn't understand the nature of the reclamation when they took this project on. Its inexcusable.

CMC 12, para 12 – Where is the tree survival criteria is located in the Pikeview Environmental Assessment?

CMC 13, para 14 para 4- I note you have a criteria for concrete rubble which can be part of your fill. I also have photographs of concrete rubble thown into a fill pit in direct violation of this guideline. This is exactly the type of item which creates voids and underground washouts. Can you please advise me who oversees this type of activity? And, who corrects it?

CMC 14, para7 – I do not think this claim is correct. In an earlier submittal, I requested the calculation to for the available fill and exactly where it would come from. I am also thinking that the DRMS would need an easement or permission to take the fill from that area. If Castle walks, I doubt it will offer up free fill material on the way out the door.

CMC Page D-2, Para 4 Please calculate the amount of highwall which will be eliminated in this design and how it qualifies as "nearly all."

Thank you. I look forward to your providing the requested information and your start of the reclamation.

I hope that Castle creates a sincere, thoughtful and scientific plan which will stabilize and restore the Pikeview Quarry without shortcuts. I also hope that Castle starts the project shortly and sees it through to a fast and efficient completion. Though I know bonds are important to assure performance, I also hope that the Pikeview bond is never called upon to complete the project.