COLORADO
Division of Reclamation, Mining and Safety
Department of Natural Resources

# MINERALS PROGRAM INSPECTION REPORT
# PHONE: (303) 866-3567

**The Division of Reclamation, Mining and Safety has conducted an inspection of the mining operation noted below. This report documents observations concerning compliance with the terms of the permit and applicable rules and regulations of the Mined Land Reclamation Board.**

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| **MINE NAME:** Daniels Sand Pit 2 | **MINE/PROSPECTING ID#:** M-1973-007-SG | **MINERAL:** Sand and gravel | **COUNTY:** El Paso |
| **INSPECTION TYPE:** Preoperation Inspection | **INSPECTOR(S):** Timothy A. Cazier | **INSP. DATE:** December 7, 2016 | **INSP. TIME:** 13:00 |
| **OPERATOR:** Continental Materials Corporation | **OPERATOR REPRESENTATIVE:** B. Heser, A. Laroche & G. Smith | **TYPE OF OPERATION:** 112c - Construction Regular Operation | |

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| **REASON FOR INSPECTION:** Preoperation Inspection | **BOND CALCULATION TYPE:** Partial Bond | **BOND AMOUNT:** $1,038,500.00 |
| **DATE OF COMPLAINT:** NA | **POST INSP. CONTACTS:** None | **JOINT INSP. AGENCY:** None |
| **WEATHER:** Snowing | **INSPECTOR'S SIGNATURE:** | **SIGNATURE DATE:** December 9, 2016 |

**The following inspection topics were identified as having Problems or Possible Violations. OPERATORS SHOULD READ THE FOLLOWING PAGES CAREFULLY IN ORDER TO ASSURE COMPLIANCE WITH THE TERMS OF THE PERMIT AND APPLICABLE RULES AND REGULATIONS. If a Possible Violation is indicated, you will be notified under separate cover as to when the Mined Land Reclamation Board will consider possible enforcement action.**

**INSPECTION TOPIC:** Backfilling & Grading

**PROBLEM/POSSIBLE VIOLATION:** Problem: Observed sparse vegetation, erosion rilling and portions of over steepened slope on the southwest embankment outer face of the current wash pond reducing the erosional stability and potentially the geotechnical stability of the embankment.

**CORRECTIVE ACTIONS:** Prior to the Corrective Action due date, the Operator must: (a). Place additional material on the outside face of the southwest embankment to achieve a slope no steeper than 3H:1V; (b) Work to establish a vegetative cover to reduce erosion potential; and (c) Conduct a geotechnical investigation for the purpose of assessing the slope stability of this embankment.

**CORRECTIVE ACTION DUE DATE:** 2/10/17

## OBSERVATIONS

This inspection was conducted as part of the review of the Operator's submittal of a technical revision requesting a new wash pond (TR-05). The Operator (Continental Materials Corp.) was represented by Messrs. Brandon Heser, Andre Laroche, and Grant Smith. Consultants present were Messrs.Bruce Humphries, Chris Sanchez (Bishop Brogden Associates) and David Kwietnewski (Brierley Associates). Tim Cazier and Wally Erickson represented the Division for the inspection.

Daniels Sand Pit 2 is accessed from Bradley Road just west of South Academy Blvd, about one mile from I-25 in Colorado Springs. This is a 112c sand mine. The mine was not active at the time of the inspection due to the temperature (~10° F) preventing reliable conveyor belt operation. Light snow had fallen the night before the inspection.

**Inspection**:
Markers & Boundary – A permit sign was displayed at the site entrance (see **Photo 1**). The Division drove the roads along the perimeter prior to the inspection and noted the affected area boundary was marked by visual berms on the west and berms and/or fences on the north, east and south.

Wash Pond Areas – All personnel involved in the inspection visited the site of the proposed wash pond embankment (TR-05). The alignment and north abutment is shown in **Photo 2**. Wash fines would be placed east of the proposed embankment in the previously mined out area. The south abutment is shown in **Photos 3** and **4**. The Division expressed concern about the potential failure of both the existing and proposed wash pond embankment failures resulting from a worst case seismic event which might cause liquefaction of the embankments and stored wash fines and whether or not the loosened material might impact S. Academy Blvd on the west end of the South Pit. Messrs. Humphries and Heser proposed increasing the storage volume downstream of the wash pond embankments and within the south pit by either over excavating the existing pit floor or building a secondary shorter embankment some distance from the toe of the proposed embankment. The Division agreed the additional storage has potential to mitigate potential impacts to S. Academy Blvd. Stability analyses would be necessary to assess the effectiveness of a secondary embankment. It was agreed that appropriate geotechnical stability analyses of the proposed 30-foot embankment (as well as the possible secondary embankment) would be completed incorporating an applicable seismic load and submitted to the Division for review. The Division also posed placing piezometers in the new embankment (if approved) to monitor the phreatic surface for the purpose of monitoring water saturation that could lead to slope failure. An agreement was reached to install an appropriate number of piezometers in the proposed embankment unless an engineering evaluation could demonstrate they would not be necessary. Although the new embankment would be approximately 30 feet in height, Mr. Smith indicated there would likely be no more that 6 to 8 feet of water stored behind it at any given time. The rest of the storage volume would be taken up with fines storage. It was acknowledged that the variation in particle size would likely result in lenses of tighter material that locally would not facilitate infiltration, resulting in some water being trapped in the impoundment. Mr. Humphries suggested vegetative cover could help with removing water from these lenses through evapotranspiration. The Division agreed, except for the deeper lenses, where deep rooted trees as proposed for the reclamation of the current wash pond would be more effective. The Division raised concerns about the management of the water and wash fines placement with respect to how water might be kept away from the embankment. Mr. Smith stated he manages the water in the current wash pond by alternating the location from which he pumps water out of the pond. The Division also posed moving the spigot/slurry discharge location using either a manifold

system, or by moving a single spigot.

All parties walked the perimeter of the current wash pond while Mr. Smith explained how he manages it and how the southwest embankment was constructed. **Photo 5** shows the north embankment of the current wash pond. **Photo 6** shows the curved crest of the southwest embankment of the current wash pond. This southwest embankment appears to approximately 15 feet above native ground at its tallest point. Mr. Smith stated it was constructed using imported fill, which he described as having good cohesive and compactible properties while being placed in 6 to 8-inch lifts with scrapers and shaping with dozers. The Division inspected the outer face of the southwest embankment, observing sparse vegetation, erosion rilling and portions that appeared over steepened. The over steepened slope may have resulted from material being borrowed from the toe for the area shown in **Photo 7** that appeared to be newly graded and mulched. **The poor condition of the outer face of the southwest embankment is cited as a Problem on page 1 of this report.** An agreement was reached to place additional material on the outside face of the southwest embankment to achieve a slope no steeper than 3H:1V, work to establish a vegetative cover to reduce erosion potential and conduct a geotechnical investigation for the purpose of assessing the slope stability of this embankment.

Groundwater Protection – Messrs. Sanchez and Humphries provided a briefing on the location and potential impact of the proposed wash pond on the nearby Schlage Lock groundwater remediation program (presented and approved by the Division in TR-03). The treatment building, extraction and injection wells are located on unmined ground just south of the area where the proposed wash pond is to be located. The Division has two primary concerns with respect to the proposed wash pond and potential impacts to the ongoing groundwater remediation project: 1) Will the new pond alter the hydraulic gradient in such a way that the existing extraction wells fail to capture the plume being treated?; and 2) Could the new pond increase the groundwater flow rate and/or mobilize additional product such that the treatment capacity of the existing system is exceeded? Mr. Sanchez stated he had been in contact with Geosyntec's project manager for the Schlage groundwater remediation program. Both BBA and Geosyntec believe the chance of a negative impact from the pond is unlikely, and the potential groundwater mounding caused by the new pond may even help the remediation project by altering the hydraulic gradient towards the extraction wells. Mr. Sanchez stated he was preparing a memo to address the Division's concerns.

Mining Plan – Mr. Smith indicated mining is currently taking place in the North Pit area, which was not visited during this inspection. Mr. Heser stated the Operator is evaluating the economic benefit of rerouting the irrigation ditch that bisects the North and South pits enabling the underlying material to be mined.

Reclamation – Messrs. Humphries and Heser indicated the Operator is contemplating requesting a release for the Little Johnson area (added in Am-02) which now hosts a solar farm, and possibly any area remaining in the permit boundary northwest of the North Pit where the road construction has been completed. The Division stated a revision would likely be required prior to requesting a release of the solar farm area as that is a change in the approved post-mine land use of wildlife habitat.

Environmental – The Division observed what might be tamarisk north of the current wash pond embankment toe. We recommend controlling these as proposed in the noxious weed control plan approved by the Division with TR-04, before they become a problem again.

**Records:**

- Revisions: Amendment 1 (AM-01) in September 1993 to incorporate M-1977-213, AM-02 adding the

Little Johnson Reservoir area in 2005, and AM-3 altering mine and reclamation plans in 2008. Technical Revisions (TR-01 through TR-05): TR-3 incorporated the Schlage Lock groundwater remediation program in 2001 and TR-4 added a noxious weed control program in 2005. The mine reclamation permit was transferred (SO-1) to Continental Materials in 2003.

- Commitments/Stipulations: The Division has a record for Stipulation No. 1 limiting highwalls to no more than 35 feet in height
- Other Records
  a) The total permitted area is 352.3 acres, the 2016 annual report indicated 247 acres of disturbance.
  b) The previous inspection was performed on 2/7/2013. No problems were cited.
  c) The anniversary date is January 7. Annual reports and fees are current through 2016.
  d) The post-mine land use is wildlife habitat.

**Bond:**

The Division holds a $1,038,500 bond which is deemed adequate for the current estimated disturbance of 247 acres (2016 annual report). The Division measured the site disturbance using Google Earth Pro satellite imagery from November 2, 2015 and found the disturbance at that time to be somewhat less than the 247 acres. The Division believes the $4,678/acre of disturbance is adequate.

**Summary and Recommendations:**

1. A problem was cited for the poor condition of the southwest embankment of the existing wash pond. Prior to the Corrective Action due date, the Operator must:

a. Place additional material on the outside face of the southwest embankment to achieve a slope no steeper than 3H:1V,
b. Work to establish a vegetative cover to reduce erosion potential, and
c. Conduct a geotechnical investigation for the purpose of assessing the slope stability of this embankment.

2. Continue monitoring for noxious weeds as outlined in the noxious weed control plan approved as TR-04 in 2005.

3. A geotechnical stability analyses of the proposed 30-foot embankment (as well as the possible secondary embankment) would be completed incorporating an applicable seismic load and submitted by the Operator to the Division for review. The new embankment will require the placement of piezometers to monitor the phreatic surface unless an engineering evaluation can demonstrate they would not be necessary.

4. The Operator will submit a groundwater impact evaluation/analysis to address the Division's concerns with respect to the proposed wash pond and potential impacts to the ongoing groundwater remediation project:

a. Will the new pond alter the hydraulic gradient in such a way that the existing extraction wells fail to capture the plume being treated?
b. Could the new pond increase the groundwater flow rate and/or mobilize additional product such that the treatment capacity of the existing system is exceeded?

5. The Division will continue treating the new wash pond as a technical revision, pending review of the geotechnical stability analyses and the groundwater impact evaluation/analysis discussed in items 3 and 4 above.

Please contact Tim Cazier (303-866-3567, ext. 8169) if you have any questions regarding this report.

## PHOTOGRAPHS


Photo 1. Permit sign at entrance.

Photo 2. Proposed wash pond embankment alignment and north abutment (looking NE).

**PHOTOGRAPHS (cont.)**

Photo 3. Proposed wash pond embankment alignment and south abutment (looking south).

Photo 4. Proposed wash pond south abutment (looking east).

**PHOTOGRAPHS (cont.)**

Photo 5. North embankment of the current wash pond (looking west).

Photo 6. Curved crest of the southwest embankment of current wash pond (looking SE).

## PHOTOGRAPHS (cont.)

Photo 7. Over steepened southwest embankment slope & newly graded area (looking south from crest).

## GENERAL INSPECTION TOPICS

**The following list identifies the environmental and permit parameters inspected and gives a categorical evaluation of each**

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|---|---|---|
| **(AR) RECORDS---------- Y** | **(FN) FINANCIAL WARRANTY-------- Y** | **(RD) ROADS---------- Y** |
| **(HB) HYDROLOGIC BALANCE---------- Y** | **(BG) BACKFILL & GRADING---------- PB** | **(EX) EXPLOSIVES--------- NA** |
| **(PW) PROCESSING WASTE/TAILING---- Y** | **(SF) PROCESSING FACILITIES------- Y** | **(TS) TOPSOIL---------- N** |
| **(MP) GENL MINE PLAN COMPLIANCE- Y** | **(FW) FISH & WILDLIFE---------- Y** | **(RV) REVEGETATION---- Y** |
| **(SM) SIGNS AND MARKERS---------- Y** | **(SP) STORM WATER MGT PLAN---- NA** | **(CI) COMPLETE INSP---- N** |
| **(ES) OVERBURDEN/DEV. WASTE--------- N** | **(SC) EROSION/SEDIMENTATION--- Y** | **(RS) RECL PLAN/COMP-- N** |
| **(AT) ACID OR TOXIC MATERIALS------- NA** | **(OD) OFF-SITE DAMAGE---------- Y** | **(ST) STIPULATIONS------- Y** |

**Y = Inspected and found in compliance / N = Not inspected / NA = Not applicable to this operation / PB = Problem cited / PV = Possible violation cited**

**Inspection Contact Address**

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