STATE MINING AND GEOLOGY BOARD

Geohazards Committee

Cheryl Bly-Chester, Chair; Erin Garner, Bob Tepel, Charlie Wyatt

EXECUTIVE OFFICER'S REPORT

ARNOLD SCHWARZENEGGER
GOVERNOR

For Meeting Date: January 14, 2010

Agenda Item No. 2: Review of Strategy to Stabilize Existing Fill Slope and Implement Revegetation Measures to Super Creek Quarry (formerly Painted Hills Mine), (CA Mine ID #91-33-0003), Whitewater Rock & Supply Company (Operator), Allan Bankus (Agent), City of Desert Hot Spring.

INTRODUCTION: The State Mining and Geology Board (SMGB) acts as the lead agency pursuant to the Surface Mining and Reclamation Act of 1975 (SMARA, Public Resources Code Section 2710 et seq.) for surface mining operations in the City of Desert Hot Springs. During conduct of a site inspection performed on November 27, 2007, several violations and corrective measures were identified. Such violations were deemed, in part, as substantial deviations from the approved reclamation plan. At its December 13, 2007, regular business meeting, the SMGB requested that an amended reclamation plan that adequately addressed long-outstanding issues be provided to the SMGB by January 31, 2008, and directed the Executive Officer to issue a Notice of Violation (NOV) should such a submittal not be received. A Notice of Violation was issued by the Executive Officer on July 1, 2008. An Order to Comply was issued by the SMGB on September 11, 2008. At its May 14, 2009, regular business meeting, the SMGB moved to defer consideration of the Order to Comply for 90 days, and forward this matter to the Geohazards Committee for discussion of feasible options and alternatives, and short-and long-term strategies, within 60 days.

STATUTORY AND REGULATORY AUTHORITY: In regards to overall slope stability, Public Resources Code (PRC) Section 2733 defines "*reclamation*" as:

> "*Reclamation" means the combined process of land treatment that minimizes water degradation, air pollution, damage to aquatic or wildlife habitat, flooding, erosion, and other adverse effects from surface mining operations, including adverse surface effects incidental to underground mines, so that mined lands are reclaimed to a usable condition which is readily adaptable for alternate land uses and create no danger to public health or safety. The process may extend to affected lands surrounding mined lands, and may require backfilling, grading, resoiling, revegetation, soil compaction, stabilization, or other measures."*

In regards to cut slopes, including final highwalls and quarry faces, performance standards, as provided in the SMGB's regulations (CCR Section 3704(f)), require that:

> "*Cut slopes, including final highwalls and quarry faces, shall have a minimum slope stability factor of safety that is suitable for the proposed end use and conform with the surrounding topography and/or approved end use*."

Similarly, with regards to fill slopes, performance standards, as provided in the SMGB's regulations (CCR 3704(d)), require that:

> "*Final reclaimed fill slopes, including permanent piles or dumps of mine waste rock and overburden, shall not exceed 2:1 (horizontal:vertical), except when site-specific geologic and engineering analysis demonstrate that the proposed final slope will have a minimum slope stability factor of safety that is suitable for the proposed end use, and when the proposed final slope can be successfully revegetated*."

CCR Section 3502(b)(3) states, in part:

> "*The designed steepness and proposed treatment of the mined lands' final slopes shall take into consideration the physical properties of the slope material, its probable maximum water content, landscaping requirements, and other factors. In all cases, reclamation plans shall specify slope angles flatter than the critical gradient for the type of material involved.*"

CCR Section 3501 defines Critical Gradient as:

> "*The maximum stable inclination of an unsupported slope under the most adverse conditions that it will likely experience, as determined by current engineering technology.*"

CCR Section 3700(b) states:

> "*Where an applicant demonstrates to the satisfaction of the lead agency that an exception to the standards specified in this article is necessary based upon the approved end use, the lead agency may approve a different standard for inclusion in the approved reclamation plan. Where the lead agency allows such an exception, the approved reclamation plan shall specify verifiable, site-specific standards for reclamation. The lead agency may set standards which are more stringent than the standards set forth in this Article; however, in no case may the lead agency approve a reclamation plan which sets any standard which is less stringent than the comparable standard specified in this Article.*"

BACKGROUND:

Physical Description: The Super Creek Quarry (formerly known as the Painted Hills Mine), is located within the City of Desert Hot Springs. Decorative rock, with sand as a by-product, has been produced since about 1954. The site is located approximately 3.5 miles north of the existing Whitewater Rock and Supply retail site, adjacent to Interstate 10, and is accessed by an existing Bureau of Land Management (BLM) right-of-way, which runs along the ridge immediately east of the south-flowing Whitewater River. The ridge-top mine site is surrounded by land managed by the BLM, and is bordered on the northeast and southeast by the meandering and intermittent southerly-flowing Super Creek. A BLM access/haul road that parallels Super Creek defines the toe of the mining operations east-southeast facing tailings slopes.

Pre-SMARA tailing slopes exist on the northeastern flank of the quarry, and immediately northeast of the access road to the quarry. Sheet 1 of 1 of the 1993 Revised Supplement to the Reclamation Plan denotes Post-SMARA, Present and Future Tailings areas. These tailing slopes are approximately 300 feet in height, and are inclined as steep as 1.7H:1V (31 degrees from the horizontal). Field measurements of tailings slope gradients during recent annual inspections ranged from approximately 30 to 40 degrees (or approximately 1.7H:1V to 1.2H:1V, respectively).

The tailings slopes are deemed unstable and past erosion from such slopes has resulted in transport of sediment into Super Creek. During late 2007, the operator installed a series of sediment catchment basins along the access road at the toe of the tailings slopes in order to prevent continued delivery of sediment to Super Creek. These catchment basins are not reflected in the currently approved reclamation plan. Although these catchment basins appear to be generally successful in preventing sediment delivery to Super Creek, they require regular maintenance in order to remain effective, and they do not constitute reclamation of the tailings slopes themselves. In addition, revegetation efforts carried out to date remain questionable, and do not reflect revegetation requirements set forth in the approved reclamation plan.

The mine operator and his representatives assert that reclaiming such slopes in accordance with SMARA and the SMGB's current regulations will have a significant adverse impact on the operator's ability to continue mining.

Compliance Issues: When the site was inspected by SMGB staff on November 27, 2007, three violations were noted:

- The revegetation program has not been maintained in a manner set forth in the approved 1992 Revised Supplement to the Reclamation Plan.
- A landslide headscarp noted near the top of the eastern tailings slope indicated potential ongoing instability.
- Soil erosion control measures had not been fully implemented at the toe of the tailings slopes.

The following corrective measures were offered:

- Further efforts are required to implement and maintain the revegetation test plot program in accordance with the approved Reclamation Plan, or revise such program.
- Tailings slopes should be reviewed and periodically monitored by a licensed geotechnical engineer or certified engineering geologist, and corrective measures implemented as appropriate.
- Continued soil erosion control efforts should be implemented on the tailings slopes, such as additional rip-rap placement and slope contouring.

The following recommendation was also offered:

- The financial assurance amount should be reviewed and updated following SMGB and OMR review and comment upon the forthcoming revised amended reclamation plan for the Super Creek Quarry expansion.

Amended Reclamation Plan Status: During its December 13, 2007, regular business meeting, the SMGB requested that an amended reclamation plan that adequately addresses the issues noted above, and in earlier SMGB correspondence dated April 25, 2006, and February 22, 2007, be provided to the SMGB by January 31, 2008. The 2007 SMARA Mine Inspection report also recommended that the financial assurance amount be re-evaluated and adjusted *"…following SMGB and OMR review and comment upon the forthcoming revised amended reclamation plan for the Super Creek Quarry expansion."*

On March 10, 2008, the operator provided an Addendum to the 1992 Reclamation Plan dated February 2008, in lieu of providing an amended reclamation plan as requested. Upon review by OMR and SMGB staff, the submittal was deemed grossly inadequate, and a reiteration of outstanding issues and comments were provided to the operator in correspondence dated May 13, 2008.

On July 1, 2008, the operator was sent a Notice of Violation via certified mail, which was received by the operator on July 7, 2008. According to that Notice, the operator was to provide to the SMGB office a draft amended reclamation plan that adequately addressed the violations, or provide documentation that the physical conditions at the site had been corrected.

At its September 11, 2008, regular business meeting, the SMGB moved to issue an Order to Comply pursuant to PRC Section 2774.1(a), and to provide for a hearing before the SMGB concerning the alleged violation pursuant to PRC Section 2774.1(b). At it's December 11, 2008, regular business meeting, the SMGB deferred further action regarding the Order to Comply to their scheduled March 12, 2009, regular business meeting.

On December 2, 2008, the SMGB office received a revised Super Creek Quarry Expansion – BLM Plan of Operations and Amended Reclamation Plan No. 137, prepared by Lilburn Corporation, dated November 2008. After review and comment by OMR and SMGB staff, the operator revised and resubmitted the Super Creek Quarry Expansion – BLM Plan of Operations and Amended Reclamation Plan No. 137, prepared by Lilburn Corporation, dated May 2009.

At its May 14, 2009 regular business meeting the SMGB moved to defer consideration of the Order to Comply for 90 days, and forward this matter to the Geohazards Committee for discussion of feasible options and alternatives, and short-and long-term strategies, within 60 days.

Amended Reclamation Plan Submittal: The Super Creek Quarry Expansion, Bureau of Land Management (BLM) Plan of Operations and Amended Reclamation Plan No. 137, dated November 2008, was received and subsequently reviewed by Department of Conservation Office of Mine Reclamation (OMR), and SMGB staff. This plan incorporated the Operator's objective to expand surface mining operations which would bring the total project disturbance area to 83.2 acres and the total area of the mine to 95.2 acres. The Operator estimates that approximately 50,000 tons of decorative rock will be removed annually for a period of 25 years. In addition to the expansion, the amended reclamation plan was intended to address violations identified by the SMGB.

The November 2008 submittal, upon review by OMR and SMGB staff, was deemed inadequate as documented in correspondence dated February 17, 2009. As noted above, in

response to review comments, the operator revised and resubmitted the Super Creek Quarry Expansion – BLM Plan of Operations and Amended Reclamation Plan No. 137, prepared by Lilburn Corporation, dated May 2009. Many identified inadequacies were addressed in the November 2008, and May 2009 revisions of the Amended Reclamation Plan. However, some key issues and violations previously noted were not adequately addressed in the most recent submittal, and all violations previously issued by the SMGB remain in effect.

DISCUSSION:

Slope Stability Issues: SMARA requires that all slopes have a minimum slope stability factor of safety that is suitable for the proposed end use, and allows for the proposed final slope to be successfully revegetated where appropriate. The SMGB may set standards which are more stringent than the standards set forth in its regulations; however, in no case may the lead agency approve a reclamation plan which sets any standard which is less stringent than the comparable standard specified in Article 9 of the SMGBs reclamation regulations.

California Geological Survey Special Publication SP117A, *Guidelines for Evaluating and Mitigating Seismic Hazards in California*, dated 2008, does provide three general means in which earthquake-induced hazards can be treated. These means are:

1. **Avoid the Hazard:** Where the potential for failure is beyond an acceptable level of safety during the life of the project and not preventable by practical means, the hazard should be avoided. Developments should be built sufficiently far away from the threat that they will not be affected by potential offsite failures. Proposed development areas at or near the base of unstable slopes should be avoided and relocated to areas where stabilization is feasible;

2. **Reduce the Hazard to an Acceptable Level:** Several techniques can be used to increase the factor of safety to a level that is acceptable to the local permitting agency. The commonly accepted factor of safety for slopes is greater than 1.5 for static and greater than 1.1 for dynamic loads; and,

3. **Accommodate the hazard:** Where conditions exist that will cause some measurable amount of strain, engineering techniques based on performance can be used to accommodate the stress. Reducing the hazard may not ensure that the project will remain stable indefinitely; however, the continued success of mitigation often depends on timely inspection, maintenance and ongoing repair.

The SMGB's regulations, CCR Sections 3704(d) and 3704(f), however, only recognize approach No. 2. In other words, SMARA requires that all final reclaimed slopes shall have a minimum slope stability factor of safety that is suitable for the proposed end use. Furthermore, such slopes should be stable as determined by current engineering technology. Other mitigation means, notably, approach Nos. 1 and 3 as provided in SP117A, are considered by some as applicable, or should be applicable, for failed or unstable slopes encountered at surface mine sites. Such strategies may incorporate end use restrictions, setbacks, placement of berms, catchment basins, and long-term monitoring and maintenance. However, despite these efforts, the subject slope would remain in an unstable form, and over time, reclamation of such slope for future development considerations are passed on to the developer, not the operator that caused the problem in the first place.

Furthermore, if SP117A approach Nos. 1 and 3 were considered applicable to mine reclamation, then two questions would be raised. First, would the mine operator realize an unfair advantage since the requirements for reclamation are reduced? Second, would having an avoidance or accommodation mitigation alternative generate an environment where mine operators would use such option as a fallback position, as opposed to mining in a responsible manner so as to avoid creating adverse slope conditions that warrant such consideration? Finally, SP117A approach Nos. 1 and 3 are not reclamation as currently defined in SMARA.

EXECUTIVE OFFICER'S RECOMMENDATIONS: It is the Executive Officer's opinion that any reclamation mitigation alternative that is not in compliance with SMARA and the SMGB's regulations, and does not fulfill the intent of SMARA, should be deemed unacceptable.

SUGGESTED MOTION LANGUAGE: The Executive Officer offers the following motion for the Geohazards Committee's consideration:

Motion No. 1 – To recommend acceptance/rejection of an avoidance or accommodation strategy in lieu of reclamation:

> *Mr. Chairman, in light of the information before the Geohazards Committee today, I move that the Committee recommend to accept/reject avoidance or accommodation in the mitigation of slopes at the Super Creek Quarry, and deem/not deem such approaches as adequate to meet the requirements of SMARA and the Board's regulations.*

Respectfully submitted:

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Stephen M. Testa
Executive Officer

EXHIBITS

A SMGB amended reclamation plan correspondence dated February 17, 2009.

B Operators responses to February 17, 2009 correspondence, dated May 6, 2009.

C Super Creek Quarry November 30, 2009, Inspection Report