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**From:** Steve Christensen  
**To:** Dave Shaver; Dave Shaver  
**CC:** James Owen; OGMCOAL  
**Date:** 11/17/2009 7:46 AM  
**Subject:** Crandall Canyon Water Treatment: James Owen deficiencies  
**Place:** OGMCOAL

Dave,

The following are three deficiencies that James Owen has identified relative to the proposed Crandall Canyon water treatment facility:

**R645-301-533.110 and R645-301-533.712-** The Permittee must revise the information contained in Appendix 7-65, Attachment 6. This section of the plan discusses the construction specifications and drawings for the iron treatment facility used to treat the discharging mine water. The Permittee should revise Attachment 6 to include engineering design specifications for the 'settling basin' or 'sediment pond' that will be used for settling iron. The engineering design specifications should demonstrate adequate calculations, drawings, and engineering analyses that provide a minimum static safety factor of 1.3 for impoundment stability.

**R645-301-533.612 and R645-301-533.712-** The Permittee must revise the information contained in Appendix 7-65, Attachment 6, page 1, bullet 4) which states, "Using structural granular borrow material, construct a berm". The Permittee should include more detailed geotechnical information for material that will be used for berm construction and backfill.

**R645-301-533.210-** The Permittee must revise the information contained in Appendix 7-65, Attachment 6. This section of the plan discusses the construction specifications and drawings for the 'settling basin'. The Permittee should demonstrate that necessary laboratory testing was conducted to achieve adequate geotechnical information for the foundation material. The Permittee should include design details for the foundation stability of the settling basin. The Permittee must revise the information contained in Appendix 7-65, Discussion, page 2, paragraph 3, which states, "By lining the entire bottom of the basin the pit liner will prevent the underlying fill material from becoming saturated, thereby maintaining its geotechnical stability". The Permittee should provide more details and design specifications for the foundation stability of the "foundation fill material" that will be covered with pit liner.

If you'd like to speak with James about these, feel free to give him a call (801) 528-5306.

My official deficiencies will be coming shortly.

Steve