

## OGMCOAL - Fwd: Polymer testing at Crandall

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**From:** Steve Christensen  
**To:** OGMCOAL  
**Date:** 1/13/2011 5:28 PM  
**Subject:** Fwd: Polymer testing at Crandall

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>>> Kevin Lundmark 1/13/2011 5:08 PM >>>

Dana,

Can you please provide an update on the status for Genwal's submission of treated water samples for polymer testing, and the status of the 3 requests the Division made following our discussion with WaterSolve last month?

Thanks,  
Kevin

>>> Kevin Lundmark 12/20/2010 4:08 PM >>>

Dana,

This morning Steve Christensen and I spoke with Randy and Doug at Watersolve regarding the polymer testing procedure for Crandall Canyon mine. Here is a summary of our conversation:

- Watersolve has been able to evaluate the effects of residual coagulant (polyaluminum chloride or PAC) on the settling test. Surprisingly, the presence of PAC resulted in increased settling times for polymer samples compared to polymer samples prepared in water with no PAC.
- The PAC concentrations initially evaluated by Watersolve ranged from 2.5 to 50 ppm. Base on feedback from Genwal on the likely concentration of PAC in treated minewater, Watersolve performed an additional trial at 1 ppm PAC
- The 1 ppm PAC trial showed less effect by the PAC, although settling time was still increased compared to water without PAC.
- Watersolve is finalizing the calibration curves for no PAC and 1 ppm PAC and should be providing those to you shortly.
- Based on 1 ppm PAC settling curve, the polymer detection limit is about 0.1 ppm
- Testing completed at their lab was performed using NALCO products obtained from Genwal. Watersolve felt that the test procedure would not be appreciably different if other manufacturers' polymer or PAC were used.

The Division makes the following requests:

1. Please provide the Division copies of settling curves (calibration curves) once received from Watersolve
2. Watersolve should analyze a 1 ppm PAC solution for pH and aluminum (total and dissolved) to allow comparison with treated minewater chemistry and thereby substantiate the 1 ppm PAC assumption
3. Watersolve should prepare an addendum to their "Determination of the Presence of Polymer Using the Flocculation Method" procedure which describes preparation of the 1 ppm PAC solution and the preparation of settling curves using the 1 ppm PAC solution. This addendum should then be provided to laboratories (e.g., SGS) who will be analyzing Crandall mine water effluent for polymer.

Randy, please provide feedback if I have misrepresented our conversation today.

Thanks,

Kevin

Kevin Lundmark  
Environmental Scientist II  
Division of Oil, Gas & Mining  
[kevinlundmark@utah.gov](mailto:kevinlundmark@utah.gov)  
(801)538-5352