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State of Utah  
DEPARTMENT OF NATURAL RESOURCES  
DIVISION OF OIL, GAS AND MINING

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**DIVISION OF OIL GAS & MINING  
FIELD VISIT FORM  
TECHNICAL**

**Date :** July 3, 1996

**Time:** 1:30 PM

**Mine:** Willow Creek Mine

**File Number:** ACT/007/038, Folder #2

**DOGM Staff:** Steven Johnson and Robert Davidson

**Other Attendees:** Ben Grimes (Cyprus) and Michelle Waltz (Army Corp of Engineers)

**Purpose:** Evaluate stream alteration.

**Observations:**

The lower stream alteration of Willow Creek look good with a couple exceptions. First, water was not flowing on the surface over the culvert-outlet pool. The water appeared to be flowing under the grouted rock that formed the pool. Second, the lower section of the channel had spotty surface flow. Pools formed on the surface but water would disappear into the rocks for several feet at a time.

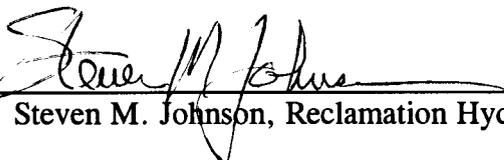
Mr. Grimes had questions about routing the water around the upper stream alteration section. The tight area formed by steep channel banks and coal refuse on the channel bank was causing a potential stream sediment load problem. He suggested moving the channel temporarily to the right by about 10 feet. This location would put flow back into the original channel location where erosion protection would come from the natural rock lining. I made it clear that I was not sure that they would be able to accomplish this maneuver without building a berm or cutting the old channel down. The consensus was that no matter how the water was moved to the right, doing so would best control the amount of sediment entering the stream.

**Recommendations/Conclusions:**

We agreed that time would cause the lower stream realignment to fill in with sediment, bringing the water to the surface. However, late this summer, when flow is minimal, Cyprus may need to repair the culvert outlet pool to eliminate any cracks or openings that are allowing flow to channel under the grouted rock.



We further agreed that temporarily moving the channel of the upper realignment to the right of its current position was necessary and would be the best technology currently available for minimizing off site impacts from increased sediment loads. All flow should be routed into the naturally-protected, original channel for the time that the new channel is built.

**Signature:**  \_\_\_\_\_ **on July 23, 1996**  
Steven M. Johnson, Reclamation Hydrologist