



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 : September 10, 1996

Time: 9:00 a.m. to 11:00 a.m.

Mine: Starpoint

File Number: ACT/007/041 006 # 2

DOGM Staff: Robert Davidson

Other Attendees: Dr. Ed Walker, Weber State Univ. and Johnny Pappas, CPMC

Purpose:

To discuss Se remediation in Starpoint's refuse pile for the purpose of reducing the soil and overburden cap requirement.

Recommendations/Conclusions:

Dr. Walker gave a presentation on remediation methods for reducing Se within the refuse material and preventing further oxidation of Se after reclamation. These methods utilize oxidation/reduction thermodynamic principals for controlling the Se both short and long term. By placing a oxygen barrier above the refuse or within the soil cap, selenide and elemental selenium compounds will remain in the reduced state and will remain innocuous to the environment. Specific points that need to be researched and answered include:

- Does oxidized Se remain in the oxidized state inside the refuse pile? Johnny wants to drill the refuse pile to determine if there are oxidized bands of Se within the pile. This would help answer if the selenites are being reduced when fresh refuse is place over an oxidized surface.
- Is 18 inches of soil sufficient to prevent oxidation of the refuse immediately below the surface? We already know that Se underneath 10 and 20 inches of soil in the test plots remain oxidized. What we don't know is if this Se was originally oxidized before the soil cap or if the Se became oxidized with time after the soil cap was placed over the refuse.
- If the Se will oxidize beneath the soil cap, then a oxidation barrier needs to be developed and field tested to show that Se will not be oxidized with time. These materials could possibly be placed as a band between the refuse and soil cap or mixed with the soil cap. A few examples include coal fines that are free of Se, Ferrous iron and/or certain clay mixtures. The iron has an extra benefit since oxidized Se will complex with iron and render it insoluble to the environment and unavailable to plants. Likewise, clay will exchange and hold any soluble Se within the soil solution.

Signature: _____

Robert A. Davidson, Reclamation Specialist II (Soils)

on September 12, 1996