



State of Utah

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DIVISION OF OIL, GAS AND MINING

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TECHNICAL FIELD VISIT

Date : August 25, 1999
DOGM Staff: Sharon Falvey, Robert Davidson, Dave Darby
Others: Canyon Fuel Company, LLC - Gary Taylor, Chris Hansen; Blackhawk Engineering - Dan Guy
RE: Gordon Creek #2, #7, #8 Mine, Mountain Coal Company, Canyon Fuel Company, LLC, ACT/007/016, Carbon County, Utah

Purpose:

File #2

Compare RUSLE "K" values from drastically disturbed soils on-site with published Natural Resource Conservation Services' "K" values.

Background:

Many existing mine plans are using "K" factors from insitu soils to make an erosion loss estimate for the reclamation phase. Often the soils replaced are manipulated and physically different from insitu soils. Soils are often substitute topsoils if no topsoil was salvaged and stockpiled for reclamation use. Even when topsoil is used, soil structure has been drastically disturbed and often destroyed during the handling process. Changes in organic matter content, or organic matter that is actually coal waste, does not provide the same structure. The result is a potential to have a soil erosivity or "K" value that differs from the undisturbed insitu soils.

Gordon Creek #2, #7, #8 mine site has been recently reclaimed starting in 1996. The #2 mine reclaimed surface is primarily substitute topsoils composed of mine pad and construction fill materials. The #7 mine received a final top dressing of topsoil from the #8 mine topsoil stockpile. The #8 mine received a final top dressing of subsoil from the #8 mine subsoil stockpile. The soils at these sites are believed to differ from the published "K" values for the adjacent areas. In addition to comparing published K factors to actual K factors, it is also convenient to obtain preliminary samples to verify K factors that may exist in Utah's reclaimed mine sites.

Observations:

Three surface soil samples were collected from the site at three separate locations, one each from the #2, #7, and #8 mines. It is not the intention of this study to obtain statistically valid samples across the entire site, but simply compare several randomly collected samples to published values in the NRCS literature.

- Sample #1 - Gordon Creek #2 Mine.
- Sample #2 - Gordon Creek #7 Mine.
- Sample #3 - Gordon Creek #8 Mine.

Soil samples consisted of one spade, approximately 1/2 to 3/4 gallon size. Soil field bulk density were determined by measuring the volume of the excavated hole and weighing the soil sample. The undisturbed soil surfaces were photographed to document percent rock cover. Soil structure was noted for each site. A hand drawn map of each sampling location was made, including distances and direction from some known, permanent land mark. Slope inclination was measured. The samples were placed in heavy duty zip lock bags.

Sample Location	Field Bulk Density g/cm ³	Slope Inclination Degrees	Rock Cover %	Soil Structure
#2 Mine	1.78	14	35	structureless
#7 Mine	1.61	13	20	fine granular
#8 Mine	2.06	25	25	medium, fine angular blocky

“K” factor determination will require laboratory analyses for the following:

- % coarse fragments (rock)
- % sand, % silt, and % clay for texture
- % very fine sand
- % organic matter
- % moisture
- Permeability

Recommendations/Conclusions:

Information will be compiled and analyzed for determining K factor values. Values will be compared for each of the three different soils: topsoil, subsoil, and substitute topsoil. In addition, measured values will be compared to published values in the literature for that area.

Signature: Sharon Falvey on August 25, 1999
Sharon Falvey, Senior Reclamation Specialist

Signature: Robert Davidson on August 25, 1999
Robert Davidson, Senior Reclamation Specialist

Med small 15%
Small 25%

35%

#524 GC278 8/19/99 #2 mine



med small 570
small 15
20%

#525 GC 278 8/19/99 #7 mine



530 GC 278 8/19/99 #8 mine

mod
med small
small

570
570
1570

2570

