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

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September 1, 1999

TO: File

THRU: Daron Haddock, Permit Supervisor *DH*

FROM: Michael Suflita, Senior Reclamation Hydrologist *MS*

RE: Proposed Culvert Removal on Out Slope of #1 Mine Access Road, Lodestar Energy, Inc., White Oak Mine #1, ACT/007/001-99B, File #2, Carbon County, Utah

**SUMMARY:**

The out slope referred to in this proposal has been an ongoing problem due to erosion below and beside the half-round culvert extending down a slope that is visible from the main highway. On July 31, 1998 the Division received a proposal to plug the inlet to the culvert, thus bypassing it, and diverting the flow into a concrete-lined ditch alongside the road. This flow goes to Eccles Creek as it did before, but at a different point. The old culvert would be removed and the slope revegetated. This was responded to by the Division on September 4, 1998. On August 6, 1999 the Division received a proposal to revise the revegetation of the area. The culvert has been removed based on Division approval. This TA is a response to that latest amendment.

**TECHNICAL ANALYSIS:**

**OPERATION PLAN**

**Diversions**

Regulatory Reference R645-301-742.300

**Analysis:**

The proposed plan indicates a preference to use surrounding soils adjacent to the disturbed area to blend into the depression. This would destroy existing vegetation and result in an even larger disturbance on a steep slope that is difficult to revegetate. Numerous unsuccessful past attempts have made this plain. The Division would MUCH prefer the use of imported soils to fill in the eroded gully and the unvegetated area beside the gully. Ideally the imported material will have substantial rock content similar to the surrounding area. Rock content has resulted in self-armoring of the adjacent gully to the west.

To limit exposure to erosion, the existing log structures and the soil they retain should be left in place. Then imported fill soil can be placed between the logs to smooth out the slope when the gully is filled. The topsoil storage pile is much easier to revegetate, so soils could be obtained from the pile to fill in the disturbed area depressions. Soils could also be obtained elsewhere, subject to testing and approval by the Division.

Use of straw bales at the top of the slope to divert water away from the newly seeded area is a good idea. Similarly, straw bales at the bottom to control erosion from the newly revegetated area will be beneficial. The use of soil stabilization matting will work, however, only if manufacturer installation instructions are followed closely. In the past it appears matting was used and it bridged over depressions in the ground and /or was eroded underneath the matting. Installation is crucial to matting success and this must be done correctly. The riprap at the inlet area of C-22-24 is very good and will reduce erosion.

Leaving existing sediment deposits at the bottom of the slope and revegetating them is acceptable. The entire barren area must be revegetated. In addition, there needs to be another silt collection basin constructed at the bottom of the slope. This is necessary since the culvert west of the removed one is still in use and collecting water. Thus, silt will continue to flow down to the bottom of the slope and must be prevented from entering Eccles Creek. The applicant needs to provide plans of where and how to retain this sediment.

Installation of a rock check dam at the bottom of ditch D-21 is essential to remove sediment from the runoff water. It's location is appropriate and the design with a designated outfall is good. There should be riprap at the outfall to prevent erosion in the ditch below the dam. Clean out and maintenance of the ditch and sediment behind the dam is necessary and is included in the plan. There is, however, a limitation to the use of a loose rock check dam. That is, the sediment-laden water goes right through such a structure. This is evident from the structure in place there presently. The dam needs to stop the water and provide sufficient retention time to let the sediment drop out. The applicant needs to improve the water holding characteristics of the check dam. Fine material from the surrounding parking area has been put on the dam, but that washed out. Perhaps some gravel-sized rock between the larger rocks would solve the problem. Similarly, the straw bales in place presently are not recessed into the ground and are not "chinked" between bales to prevent water from going under and around the bales. They don't retain sediment. The straw bale "dike" needs to be upgraded to be effective in preventing sediment loss through them. That's also true of the straw bale dams up the ditch from the rock check dam.

There are a couple of typographic problems with the submittal. There are no page numbers and the first paragraph of the first page refers to drawing R645-301-231.300 and it appears it should be -231.310.

**Findings:**

The proposed plan does not meet minimum regulatory requirements. Prior to approval, the Applicant must provide the following in accordance with the requirements of:

**R645-301-742.300**, use of imported fill that contains rock to fill the eroded ditch, plans of where and how to retain sediment at the base of the remaining culvert, improved design of the rock dam sediment basin, improved straw bale installation, and correction of typographic errors in the submittal.

**RECOMMENDATION:**

Prior to approval, the Applicant must provide the items outlined above in accordance with the referenced regulations.