0006

3

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

Michael O. Leavitt
Governor
Kathleen Clarke
Executive Director
Lowell P. Braxton
Division Director

1594 West North Temple, Suite 1210
PO Box 145801
Salt Lake City, Utah 84114-5801
801-538-5340
801-359-3940 (Fax)
801-538-7223 (TDD)

February 1, 2000

TO: Internal File

THRU: Pamela Grubaugh-Littig, Permit Supervisor

FROM: Michael Suflita, Senior Reclamation Hydrologist

RE: Proposed Culvert Removal on Out Slope of Mine Access Road, Lodestar Energy, Inc., White Oak Mine #1, ACT/007/001-AM99B

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. On September 1, 1999 the Division sent a response to the August 6, 1999 proposal. After numerous discussions with mine and Division personnel, yet another submittal was received on January 5, 2000. This Technical Analysis (TA) is a response to the Hydrologic aspects of the latest proposal and is comprehensive since it includes analysis from the previous TAs.

TECHNICAL ANALYSIS:

OPERATION PLAN

Findings:

Regulatory Reference R645-301-742.300

Analysis:

The proposed plan to plug the input to C-23-24 included an analysis of the impact of adding the design flow of the culvert to the ditch, D-21. The analysis showed a freeboard of 1.1 inch in the ditch downstream of the culvert inlet. While this keeps the flow in the ditch, the slightest obstruction could cause flows to leave the ditch. The application included calculations for the riprap lined ditch below the concrete lined ditch and for a rock check dam to help control sediment. All revised calculations were checked and compared to the original plan and appear appropriate.

Comparison of the drainage areas for the two adjacent culverts shows that, although C-22 and C-23 are both 24 inches in diameter, the drainage area of C-22 is about one-fourth that of C-23. Since C-23 is being eliminated, it would be less detrimental for it's runoff to flow into the remaining C-22. This would function as a "safety valve" in the event flows left the concrete lined ditch and flowed into C-22, a desirable condition.

A field trip was made on 9/3/98 to assess site conditions. Vicki Miller, the mine's Consultant accompanied this reviewer. The following conditions were noted and documented with photographs, which have been added to the mine photo file. Following each condition is the resolution made since the field visit.

1. The inlet to culvert C-22-24 is partially plugged with rocks and debris and needs cleaning. The triangular area adjacent to the culvert inlet, between the road and cliff, contributes sediment to runoff and the area needs to be riprapped. Resolution: The culvert inlet has been cleaned and the triangular area has been riprapped.

2. The concrete lined ditch is in immediate need of repair all along the road, and especially below the inlet to the culvert to be removed, to prevent further deterioration. Resolution: The concrete lining of ditch D-21 below culvert C-22 has been repaired. The proposal, page 3, commits to continued repair of the remaining ditch during the year 2000.

3. The entire ditch, from Eccles Creek up to the mine site, needs maintenance to clean up and remove rock and debris which has accumulated along and in the ditch. Resolution: The ditch has been cleaned below culvert C-22, however, ditch clean out needs to be finished above the culvert and there is a commitment to do that during the year 2000.

The existing depression from the removed culvert will be left in place and not filled in. Adjacent areas will not be "pulled in " or smoothed. The depression left by the culvert and adjacent areas will be roughened using hand tools. Some soil and rock will be added at the top of the depression. Hydro seeding and mulching will take place on top of the roughened area. The detailed methods, including seed types and application rates, have been reviewed and approved in the Soils and Revegetation Technical Analysis'. It appears revegetation success is likely.

Installation of a rock check dam at the bottom of ditch D-21 is important to remove sediment from the runoff water before it enters Eccles Creek. It's location is appropriate and the

design with a designated outfall is good. There is 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. The plan shows the use of "gravel-sized (1 - 6") rock..... blended with 6 - 18" rock", within the dam and in the channel below the dam. These should be adequate to retain flows behind the dam. The plan shows a commitment for straw bales to "be anchored into the channel above the check dam". This should further help sediment control.

Findings:

The proposed plan meets minimum regulatory requirements.

Road Drainage

Regulatory Reference R645-301-742.420

The proposed design shows showed a freeboard of 1.1 inch in the ditch downstream of the culvert inlet. The regulations require road drainage ditches to "be designed to prevent uncontrolled drainage over the road surface and embankment". While this is the case, the slightest obstruction could cause flows to leave the ditch. The situation below the point where the culvert inlet would be plugged has the road sloping up from the ditch and a cliff on the other side of the ditch. Thus, if flows were to exceed design, there would be minimal impact. It's crucial that this length of the ditch be maintained to be free of debris which could obstruct the ditch.

The ditch and the area between the road and cliff have been cleaned out. In addition, page 3 of the proposal commits to increased efforts to clean culvert inlets and area between the cliff face and edge of the road. Commitments are also made to riprap the area between the cliff face and edge of the road. These efforts should be adequate to keep flows off the road.

Findings:

The proposed plan meets minimum regulatory requirements.

RECOMMENDATION:

Based on the Hydrology portion of the regulations, the proposal can be approved.

sm
O:\007001.WO\FINAL\MJS99B2.wpd