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

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TO: Daron R. Haddock, Permit Supervisor

FROM: Steven M. Johnson, Reclamation Hydrologist

RE: Alternate Topsoil Borrow Areas, U. S. Fuel, Hiawatha Mines, ACT/007/011-93B, Folder #2, Carbon County, Utah

SUMMARY

On September 10, 1993, the Division received a proposed change to U.S. Fuel Company's Plan that requested the addition of two alternate top-soil borrow areas. The Division received a revised amendment on March 4, 1994 in response to the initial review. U.S. Fuel had the entire hydrology section of this amendment reworked, including sediment control on two borrow areas not addressed in the original amendment. I have conducted a review of the latest proposal.

ANALYSIS

R645-301-120 Clear and Accurate

Synopsis of Proposal:

Page 19 in Chapter II states that in Borrow Area E 6.6 acres will be excavated to a depth of 5 feet. The cross section in Appendix VII-10, Part II shows the excavated surface to be about 15 feet below the original surface. The proposal contains pages from Chapter VII marked with the numbers 78, 79, 84, and 85, and the diversion plans in Part III of Appendix VII-10 show contributing land area of unknown sources.

Analysis:

There is an apparent inconsistency in the plan regarding the amount of soil that will be removed from Borrow Area E. The operator should clarify the exact amount that will be excavated and correct the text in Chapter II and/or the drawing in Appendix VII-10.

The page numbers in this proposal do not correspond to the proper pages in the current plan. The operator should give some reason for acreage used in the design of diversions.

Recommendation:

1. The cross section of Borrow Area E in Appendix VII-10, Part II, should reflect the same depth of excavated soil as is stated in Chapter II, page 18.

R645-301-722 Cross Sections and Maps

Synopsis of Proposal:

Plate VII-10 shows the location of the proposed Topsoil Borrow Areas with the location of the sediment traps. The contours on this map delineate the elevations prior to soil removal activity.

Analysis:

In determining the suitability of the sediment traps, it is necessary to know how the land will be reformed by the removal of topsoil. The cross sections supplied for Areas E and F show the changes in slope from top to bottom, but do not show how the slope will be affected across the disturbed area. Exhibit V-13 shows the final surface configuration. There were no cross sections given for areas A and D.

Recommendation:

1. None.

R645-301-R645-301-731.600 Stream Buffer Zones

Synopsis of Proposal:

Borrow Areas B, C, D, and E are to be located within 100 feet of Miller Creek. This is within the stream buffer zone. The cross section for Borrow Area E shows the sediment trap to be less than 70 feet from the creek and 5 feet higher than the creek.

Analysis:

The operator did not supply information showing that there would be no negative impacts to Miller Creek from borrow areas within the 100 foot buffer zone. Specifically, the sediment traps of Borrow Area E appears to be within the flood plain of the creek. The Division can only approve activities in the buffer zone after the operator shows that operations will not cause or contribute to the violation of applicable Utah or federal water quality standards and will not adversely affect the water quality and quantity, or other environmental resources of the stream.

Recommendation:

1. The operator must show that operating in the stream buffer zone of 100 feet from Miller Creek will not adversely affect water quality, quantity or other environmental resources of the stream while working and reclaiming areas B, C, D, and E.

R645-301-742 Sediment Control Measures

Synopsis of Proposal:

The operator proposes a series of sediment traps to work as sediment control for Borrow Areas A, D, E, and F. There will be between 2 and 6 sediment traps per disturbed area, and each trap will hold a storm runoff and sediment volume of between 6970 and 8929 cubic feet. The traps are designed to contain the 10-year, 24-hour storm event for a period of 10-years. The entire runoff from the storm will be contained within the sediment trap.

Similar sediment traps are proposed for the reclamation of the refuse piles and Ponds 1, 4, 5 and 5A. The operator will choose the locations of the sediment traps in the field as necessary.

Analysis:

The storage volume in these sediment traps is large enough that the Division classifies them as impoundment. The Division makes some allowance for structures to hold up to 0.0025 acre feet (100 cubic feet) before classification as impounding structures; however, the proposed sediment trap are much larger. The sediment traps must meet the requirements of R645-301-743 or R645-301-742.220. This includes the design criteria for sizing and/or spillways, and regular inspection.

The use of sediment traps as secondary sediment control methods is an acceptable idea. However, the location should be designed as closely as possible prior to building the structures in the field. As-built drawings can, and should be submitted after construction to show the precise location of the traps after construction. These traps may only be implemented as secondary sediment control methods, and removal of sediment pond that are currently in place must be approved by the Division.

Recommendations:

1. The sediment traps proposed are too large to be considered non-impounding structures; therefore, they must meet the requirements of R645-301-743 or R645-301-742.220.

2. Sediment trap proposed for the reclamation of Ponds 1, 4, 5, and 5A must be specifically designed prior to construction. These sediment traps may only be implemented as secondary sediment control methods.

R645-301-763 Reclamation of Siltation Structures.

Synopsis of Proposal:

After borrow materials have been removed, the area will be prepared for revegetation by; shaping and grading the side slopes and floor of the borrow area and preparation of the seedbed, including the addition of nutrients and soil amendments. The sediment traps will be left to fill and revegetate naturally.

Analysis:

The operator plans to revegetate the borrow areas after removing the soil. They also plan to allow the sediment traps to fill in over time and revegetate naturally. This idea is good conceptually; however, when one takes a close look at the numbers they show that this process would take an extremely long time. For example, Sediment Trap D1 has a volume of 8929 cubic feet as listed on Plate VII-10, and the sediment production for the area in the first three years is given in Appendix 10, Part IV, as 16.5 cubic feet per year. Assuming that water deposition is the main process filling the sediment traps, these numbers show that they will not be completely fill for more than 540 years. It is expected that other processes will aid in filling the traps, but it can be assumed that they will still exist for a very long time. The proposal does not mention a plan for reclamation of the bypass ditches.

Recommendation:

1. The operator must design a reclamation plan and time table for the topsoil borrow areas sediment control structures.

RECOMMENDATION

The plan's sediment trap and sediment control for the alternate topsoil borrow areas are incomplete in addressing the necessary regulation. First, the information given about the post-activity configuration of the topsoil borrow areas is incomplete. Second, the plan is lacking information necessary to make the determination that operation within 100 feet of a stream will not adversely affect the water quantity or quality. Third, the sediment control measure designs do not address the proper regulations. Finally, reclamation of the sediment traps is not properly addressed.