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MEMORANDUM

TO: Ron Daniels, Coordinator of Mined Land Development

FROM: Mike Thompson, Engineering Geologist

DATE: November 13, 1978

SUBJECT: Utah Power & Light, Deer Creek Sediment Pond and Diversion Design

I have checked Morrison-Knudsen's proposed sediment pond and diversion design and I have the following observations and comments:

number

Curve^A technology as developed by the U.S. Soil Conservation Service was used to determine runoff in area inches from the 10 year 24 hour storm. A rather conservative curve number of 90 was used for the watershed draining into the pond. I believe that a slightly lower curve number could be justified; therefore, Morrison-Knudsen's work overestimates runoff.

Additional sediment storage volume was calculated by increasing the pond capacity 0.1 acre-feet for each acre of disturbed land within the watershed draining into the pond. A total of 14 acre-feet was determined to be needed. I concur with Morrison-Knudsen's estimates of runoff and storage volume.

Morrison-Knudsen has designed a diversion to be constructed under the surface facility pad similar to that incorporated in the Wilberg Mine. The diversion consists of round culvert, pipe arches and surge tanks. Runoff is collected from the three canyons that converge on the site and channeled under the fill area to a rip rapped outlet.

The design of the diversion is based on the estimated peak flow resulting from the 50 year 1 hour storm (805 cfs). This estimate of 805 cfs for peak flow was derived by extrapolating U.S. Forest Service estimates for Grimes Wash above the Wilberg Portal. Peak flow was adjusted proportionally to the sizes of the two watersheds.

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I believe this design is adequate. Unit peak flow from the Deer Creek watershed should be less than that from the Grimes Wash Watershed as Deer Creek is not grazed. Extrapolating estimated peak flow and adjusting for watershed size in this case should be a conservative estimate. Peak flow resulting from the 50 year 1 hour event should be greater than that from the 10 year 24 hour event.

The proposed design does not incorporate diversions adjacent to the disturbed area. Runoff from this area is designed to flow into the pond. Only that water which flows down the canyon bottoms from the areas upcanyon from the site is diverted.

I concur with the hydrologic design for these plans. Mike Minder should review the engineering. Utah Power & Light should be consulted about sediment disposal and monitoring.

X.M.L.