

FILE COPY

October 23, 1987

TO: File

FROM: Kent Wheeler, Reclamation Hydrologist *KW*

RE: Technical Review of Drainage Modifications at Andalex Resources, Pinnacle Mine, (received Aug. 28, 1987), PRO/007/019, Carbon County, Utah

SUMMARY

The above referenced applicant installed two 18 inch culverts to improve drainage around the substation area. The original maps submitted with this proposal were of insufficient detail to determine the peak flows from the watershed area. Since that time new maps were submitted with the MRP; from these maps the drainage area and slopes were calculated.

ANALYSIS

The expected peak flows from the drainage area is 1.15 cfs. The 18 inch culverts can easily pass this flow with the available headwater (see enclosed calculations).

RECOMMENDATIONS

The proposed drainage modification is acceptable and should be approved.

cc: S. Linner
W. Hedberg
R. Summers
D. Darby
1239R-73

Technical Review of Drainage Modification
(Addition of 2-18" culverts at substation area)

Area - AVERAGE calculated using length x width of a rectangular drainage area. Drainage area is outlined in Red on Plate 6 (received Oct 8, 1987) 10% WAS added to area because of poor definition of W.S. boundaries

$$250' \times 160' = \frac{44,000 \text{ ft}^2}{43560 \text{ ft}^2 \text{ Acre}} = 1 \text{ Acre}$$

Slope - unit length

$$\frac{\text{Rise}}{\text{Run}} = \frac{50 \text{ ft}}{60 \text{ ft}} = 83\%$$

Hy Length = 200 ft

CN = 93 weighted to take substation roof into consideration

Precip 100 yr - 24 hr 1.82 in

$Q_p = 1.15 \text{ cfs} \rightarrow$ Fig 4-28 Handbook of Steel Drainage + Hwy Const. Prod. P-189 shows less than 9 in of HW required

• This culvert is sufficiently sized to pass the expected peak flows