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January 14, 1992

TO: Daron Haddock, Permit Supervisor

FROM: Rick P. Summers, Senior Hydrologist 

RE: Review Emergency Spillway Designs, Amendment 007/019-91A, (Received October 3, 1991), Andalex Resources, Inc., Centennial Project, ACT/007/019, Carbon County, Utah

SUMMARY

The above referenced amendment was submitted in response to the Division review of September 10, 1991. The existing spillway system at pond C consists of a single drop inlet spillway. The operator proposed to install an open channel emergency spillway in order to comply with the requirement that the pond has a combination of principal and emergency spillways (R645-301-742.223).

However, with the adoption of the recently rewritten rules (R645 et. seq.), dated August 23, 1991, the incorporation of rules R645-301-724 through 725 allows an alternative to constructing separate principal and emergency spillways. These rules read:

- 742.224.** In lieu of meeting the requirements of R645-301-742.223.1 and 742.223.2 the Division may approve a sedimentation pond that relies primarily on storage to control the runoff from the design precipitation event when it is demonstrated by the operator and certified by a qualified registered professional engineer that the sedimentation pond will safely control the design precipitation event. The water will be removed from the pond in accordance with current, prudent, engineering practices and any sediment pond so used will not be located where failure would be expected to cause loss of life of serious property damage.
- 742.225.** An exception to the sediment pond location guidance in R645-301-742.224 may be allowed:

742.225.1 In the case of a sedimentation pond meeting the size or other criteria of 30 CFR 77.216(a), if the pond is designed to control the precipitation of the probable maximum precipitation of a 6 hour event or greater event if specified by the Division; or (30 CFR 816.46(c)(2)(ii)(A))

742.225.2 In the case of a sedimentation pond not meeting the size or other criteria of 30 CFR 77.216(a), if the pond is designed to control the precipitation of a 100 year 6 hour event or greater event if demonstrated to be needed by the Division.

The first criteria to be met for the exemption from 742.223 relates to storage criteria requirements. For sedimentation pond C at the Centennial minesite, the MRP suggests the pond has been designed to contain the 10 yr. - 24 hr. precipitation event. A review of the precipitation records at the Price City station indicates the 10 yr. - 24 hr. precipitation depth is 1.82 inches, the 25 yr. - 6 hr. event is 1.5 inches, and the 100 yr. - 6 hr. event is 1.91 inches. Therefore, the runoff volume expected from the **25 yr. - 6 hr. will be less than that for the 10 yr. - 24 hr. event.** It is also likely that the pond would be adequate to contain the small extra runoff volume for the 100 yr. - 6 hr. precipitation event. Thus, it is likely that the storage criteria requirements can be met for this pond (see discussion below for 25 year vs. 100 year event criteria). The operator should supply calculations demonstrating the expected runoff volume for these events (10 yr. - 24 hr., 25 yr. - 6 hr., and 100 yr. - 6 hr.) and revise the corresponding stage-volume curve to demonstrate pond capacity for the volumes.

The second criteria to be met is that..."the water will be removed from the pond in accordance with current, prudent, engineering practices....". The operator proposes to decant the pond when necessary using a pump that will be located at the minesite. Definitive criteria for a dewatering device is not available in the rules. Several alternatives for a dewatering device in a traditional sense would be difficult for the operator to install (i.e., require excessive excavation and embankment disturbance). Considering the history of few if any, discharges at the site, the selection of the pump alternative will be approvable with the submittal of a dewatering plan for the operation. The dewatering plan is to include the following:

1. Pump system and power supply description.
2. Dewatering rate calculation demonstrating the pumping rate to be used to dewater the 10 yr. - 24 hr. runoff volume.

3. Commitment to discharge the decant water into the primary spillway and not to Pond E and conduct the discharge (including sampling) in accordance with the UPDES permit conditions.
4. Provide a drawing and design for a floating decant intake w/a provision for an oil skimmer.
5. Provide a discussion and means to ensure the decanting (pumping) operation will cease when the water elevation is 1.0 ft. above the maximum sediment elevation.
6. Commitment to retain all storm water for a minimum of 24 hours or until effluent limitations will be met prior to decanting.
7. Pond C needs a sampling access ramp to provide for placement of the outlet discharge line into the primary spillway and provide for NPDES sampling and spillway inspection. The operator proposes to provide a temporary boardwalk to provide access for sampling the discharge from the pond when necessary.

The Dept. of Environmental Quality, BWPC, Mike Herkimer was contacted to see if this method of access would meet the needs of their staff. He stated the access is important for the Department as their program requires periodic samples to be taken by his staff. He stated that a temporary access would be adequate if it provided a handrail for safety reasons and had adequate strength for support. He stated a simple plank would not be adequate. Therefore, the proposal will be approvable if a drawing of the access boardwalk is submitted depicting: 1) a handrail, 2) dimensions of access ramp, and 3) a means to elevate the spillway end of the boardwalk above the spillway inlet. The boardwalk elevation should be above the discharging water elevation (i.e. head required to pass the 10 yr. - 24 yr. event).

The third criteria involves a separate demonstration and certification from a registered professional engineer that: "... that the sedimentation pond will safely control the design precipitation event..". The operator must provide a certified demonstration (including calculations and discussion) that this criteria is met.

The fourth criteria involves the location of the sedimentation pond. If the pond is "...located where failure would be expected to cause loss of life or serious property damage", the demonstration for Pond C (non-MSHA pond) will have to include a demonstration that

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the pond will control the 100 yr. - 6 hr. precipitation event. As above, the 10 yr. - 24 hr. designed containment volume for the current pond will probably, in this case, ensure adequate volume for the runoff from the 100 yr. - 6 hr. precipitation event. The operator must provide a runoff volume calculation and a revised stage-volume curve demonstrating that the pond capacity meets or exceeds the 100 yr. - 6 hr. precipitation event runoff volume.

Conversely, if the pond cannot contain the 100 yr. - 6 hr. precipitation event, the operator must provide a demonstration that the pond location will not be expected to cause loss of life or serious property damage. The Division would accept a dam breach and subsequent flood wave analysis as the basis for this demonstration. It is to be recognized that this is a suggested approach, other approaches to the analysis would be acceptable to the Division. It is noted that by simply assuming the location may cause said damage and meeting the criteria of pond containment for the 100 yr. - 6 hr. runoff volume, this analysis will be eliminated and the amendment approval and site/permit compliance will be expedited.

During the course of this review, it was noted that several discrepancies exist relative to the assumptions and calculations for Pond C. The values presented in the existing MPR, the proposed amendment (esp. pps. 152 and 152-A) and the Division's values differ greatly. The discrepancies are numerous and rather than belabor the details of the permit defects in this review, the Division will issue a Division Order to correct the permit defects pursuant to R645-733 and 742.220. In conjunction, the operator is requested to schedule a meeting with the Division in the near future to discuss the details of the permit defects prior to proceeding with the spillway exemption amendment.

cc: Sharon Falvey, DOGM
Steve Demczak, PFO
ANDSPLEX