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August 19, 1992

TO: Daron Haddock, Permit Supervisor

FROM: Rick P. Summers, Senior Hydrologist

RE: Review Pond C Designs, Amendment 007/019-91A and Response to Division Order 007/019-92A, (Received March 9, 1992), 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 January 24, 1992. The existing spillway system at Pond C consists of a single drop inlet spillway. The Operator proposes to demonstrate compliance with the spillway requirements of 742.223.1 and 742.223.2 using the option provided in 742.224. This option allows a single spillway if storage and pond hazard criteria are met. The proposal demonstrates compliance with these rules and approval is recommended.

ANALYSIS

The adoption of the recently rewritten rules (R645 et. seq.), dated August 23, 1991, incorporates rules R645-301-724 through 725 which allows an alternative to constructing separate principal and emergency spillways for sedimentation ponds. 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 or 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 ammendment demonstrates that the pond is adequately sized to totally contain **both** the 10 yr. - 24 hr. and the 100 yr. - 6 hr. precipitation events. 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. The Operator has provided runoff volume calculations and a stage-volume curve demonstrating compliance with this rule. Division calculations verifying the demonstration are attached to this memo. The current spillway at Pond C has also been demonstrated to be sized adequately to pass the 25 yr. - 6 hr. and 100 yr. - 6 hr. precipitation events with 0.8' and 0.5' freeboard respectively. This freeboard is marginal, however, the spillway is equipped with an 18" inlet located 1.5' below the inlet to the overflow. The discharge capacity of this inlet was ignored during the demonstration, therefore, the estimates of the spillway capacity are conservative and the freeboard will actually be greater than those values.

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). A dewatering plan has been incorporated into the MRP that describes the decant procedure using a pump. The pump will be equipped with a floating decant inlet that provides for oil skimming during the procedure. The water will be decanted into the mine bypass system only when the requirements of the NPDES permit have been met.

The proposal includes the installation of an access walkway to the spillway to provide for spillway inspection and maintainence and access for discharge sampling during a storm event.

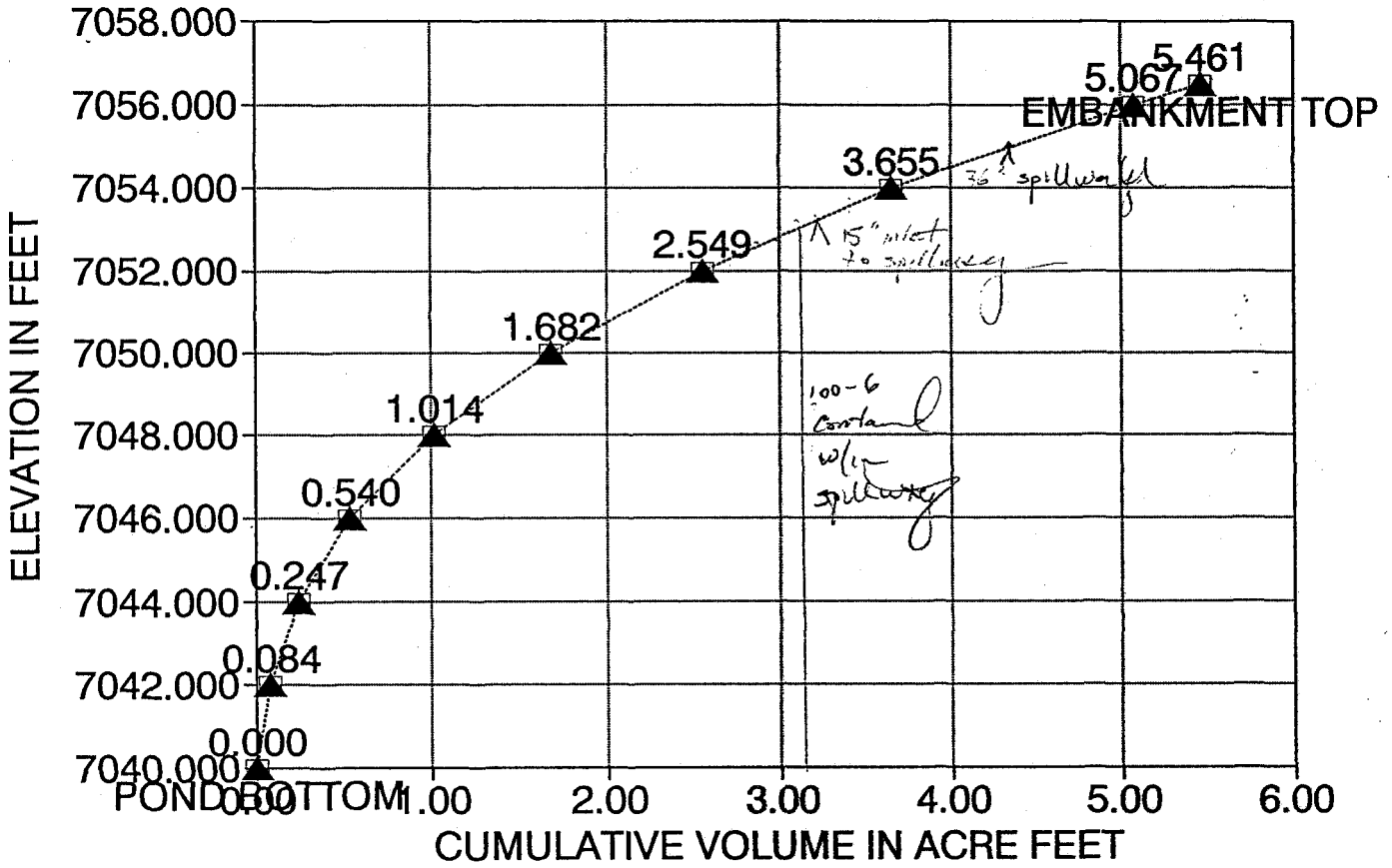
The third criteria involves a separate demonstration and certification from a registered professional engineer that: ".... the sedimentation pond will safely control the design precipitation event..". The Operator has provided this certification statement with the proposal.

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 the pond will control the 100 yr. - 6 hr. precipitation event. The pond has been demonstrated to have adequate capacity for the runoff from the 100 yr. - 6 hr. precipitation event. 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, the criteria for pond hazard location is met and the amendment is in compliance with this rule.

Attachments
cc: Sharon Falvey, DOGM
Steve Demczak, PFO
ANDD092A

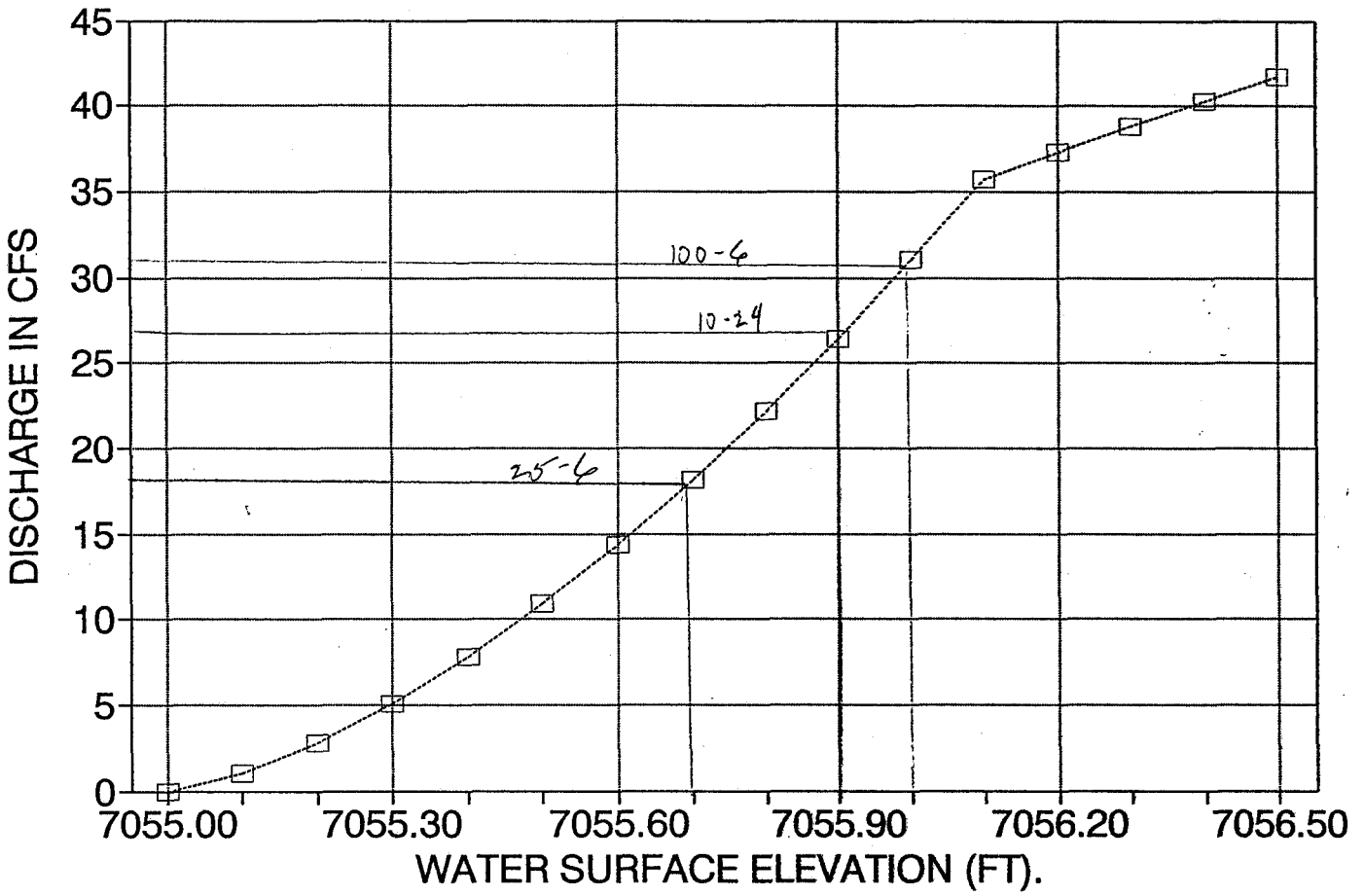
STAGE VOLUME CURVE

POND C, 8/13/92, R.SUMMERS



STAGE-DISCHARGE CURVE rps 6/91

Andalex Sediment Pond C



VARIABLE	VALUE	UNITS
X AXIS TITLE =	ELEVATION	(FT)
Y AXIS TITLE =	DISCHARGE	(CFS)
SPILLWAY ELEV. (FT) =	7055.00	
HEAD INCREMENT (FT) =	0.10	
TOP EMBANKMENT (FT) =	7056.50	
RISER DIA (FT) =	3.00	
BARREL DIA (FT) =	3.50	
HT. RISER (FT) =	20.00	
BARREL LENGTH (FT) =	200.00	
CREST TO OUTLET (FT) =	25.00	
ORIFICE COEF. =	0.6	
KB =	0.5	
KE =	1	
KC =	0.020	
MANNING N BARREL =	0.024	
AREA RISER (FT2) =	7.07	
AREA BARREL (FT2) =	9.62	
CIRCUM. RISER (FT) =	9.42	

ELEVATION (FT)	HEAD (FT)	QWEIR (CFS)	QORIFICE (CFS)	QPIPE (CFS)	QCAPACITY (CFS)
7055.00	0.00	0.00	0.00	0.00	0.00
7055.10	0.10	0.98	10.76	145.08	0.98
7055.20	0.20	2.76	15.22	145.40	2.76
7055.30	0.30	5.07	18.64	145.71	5.07
7055.40	0.40	7.82	21.53	146.02	7.82
7055.50	0.50	10.93	24.07	146.34	10.93
7055.60	0.60	14.38	26.36	146.65	14.38
7055.70	0.70	18.13	28.48	146.96	18.13
7055.80	0.80	22.16	30.44	147.27	22.16
7055.90	0.90	26.46	32.29	147.58	26.46
7056.00	1.00	31.01	34.04	147.89	31.01
7056.10	1.10	35.79	35.70	148.20	35.70
7056.20	1.20	40.81	37.28	148.51	37.28
7056.30	1.30	46.04	38.81	148.82	38.81
7056.40	1.40	51.49	40.27	149.12	40.27
7056.50	1.50	57.14	41.68	149.43	41.68