

memorandum

DATE:

DEC 18 1985

REPLY TO
ATTN OF:

Division of Programs, Water Resources, Code 380

SUBJECT:

Request for Hazard Assessment on Lake Seventeen on the Fort Belknap Indian Reservation

TO:

Assistant Commissioner, Engineering and Research
Attention: Division of Dam Safety, D3390,03310
Bureau of Reclamation

From:

Billings Area Director

The Billings Area Director is requesting an emergency hazard assessment from your office on Lake Seventeen located on the Fort Belknap Indian Reservation, Montana. The reservoir is located on USGS 7½ minute quadrangles Lake Seventeen East and Lake Seventeen West in Sections 21, 22, 23, 26, 27 and 34, Township 27 North Range 22 East while the dam is located in the NW¼ SW¼ Section 23, Township 27 North Range 22 East. The capacity of the reservoir is approximately 4,000 acre-feet with a maximum structural height of about 15 feet.

The dam is an old structure, probably constructed in the 1930's. In the summer of 1985, Fort Belknap Agency personnel placed a 4 foot dike across the emergency spillway located in the NE¼ NE¼ Section 26 in order to raise the level of the reservoir. In late summer of 1986, agency personnel began adding material to the top of the dam to improve the freeboard and constructed a coffer dam to enable them to rehabilitate the corrugated metal pipe (CMP) outlet tube. The downstream portion of the tube had rusted out. The downstream toe of the dam at the outlet tube was then excavated and the tube removed for replacement with a new CMP tube. At this point, on September 25, 1986, heavy rains began to fall. Rainfall of more than 6 inches was recorded in Harlem, Montana, which is near the Fort Belknap Agency, in 18 hours. The rainfall was in addition to almost 3 inches of rain already recorded for September. Flash floods resulted. Flows rose quickly, and it was apparent that Lake Seventeen was imperiled. Flood waters were released through the shortened outlet tube, causing erosion further back into the toe of the dam. These releases were not sufficient to keep the reservoir from rising. The 4 foot dike at the emergency spillway was opened up to afford some relief. At the outlet tube of the dam,

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erosion was continuing, and seepage through the dam was increasing. An oversized tube was placed on the end of the existing tube to carry flows away from the toe and the excavation was backfilled with material. Plastic sheeting was placed on the upstream face of the dam to decrease seepage through the dam. These combined actions served to stabilize the dam and prevent its loss.

The outlet tube is still releasing water and the reservoir level is slowly dropping. All rehabilitation work has been halted. The Billings Area Office is requesting a hazard assessment in order to determine the urgency of effectuating permanent repairs and/or rehabilitation to the dam, outlet tube and emergency spillway.

If you have any questions, contact Mr. Douglas Oellermann at FTS 585-6782.

Douglas M. Oellermann