

Dam Reserve Fund Committee Report

Committee: Asper Antoon (chairman), Bill Cox, Maison Heidelberg, Judy Lyons, Sherry Azordegan, Kevin Long, Bob Marsh

Background:

The dams have been in existence for over 40 years with no unexpected or major expense until 2007 when the big dam was modified to bring it into compliance with current regulations. At that time riprap was added along the face of the big dam to prevent wave erosion and the spillway was upgraded. The cost of this project was approximately \$90,000, which was funded partially by the existing annual budget and partially by a certificate of deposit (CD). The CD had been in existence for a number of years and was viewed as a “rainy day fund” being held in reserve for future use. Lake Lorman Corporation currently has no reserve funds.

Committee Assignment:

The committee was asked to review the establishment of a special “Reserve Fund” (the Fund) to cover future unexpected dam expenses. This reserve account would be funded by a non-permanent increase in lot owner dues. The Fund would be completely separate from and independent of the ongoing annual operating revenues and expenses of Lake Lorman Corporation. The amount of the Fund, the mechanics of creating the Fund, the control of the Fund, and the timing and amount of any proposed dues increase would be recommended by the committee.

Process:

After in-depth discussion, the committee determined that an assessment of the potential risks associated with the dams must be done to establish the amount and urgency of the Fund. The committee acknowledges that an increase in dues, even though temporary, would represent a burden on lot owners and the basis for any request for such an increase should be thoroughly and completely explained and justified.

Risk Assessment Summary:

The most common catastrophic earthen dam failure is a breakage due to flood. Both of our lakes are rain water fed and are not subject to such catastrophic failure. The most recent Dam Inspection Report by Aqua Engineers reports that the big lake is capable of handling the “probable maximum precipitation”, (PMP). Per the report, “100% of the PMP can be passed or stored by the existing spillways and lake storage without over topping the dam.” The Mississippi Department of Environmental Quality does not currently require a formal inspection of the little dam and we have no professional opinion or assessment of the little lake's capability of handling the PMP. However, the little lake drains directly into the big lake and there is no local knowledge of excessively high water levels in the little lake. If the big lake can handle the PMP, including the overflow from the little lake, then it can be assumed that the little lake is not subject to overflow.

Neither of the lakes is near a public transportation right-of-way such as a highway or rail such that the lakes would be of risk to some kind of a chemical or toxic spill. There are no pipelines of any type passing through our area. The sewage lagoon is below the elevation of the lakes and poses no risk due

to overflow or failure. On occasion the sewage system serving the community has had problems with lift station failure which has caused sewage leaks. These sewage leaks have been reported and repaired quickly. The possibility of earthquake damage can be discounted.

The big dam was constructed in about 1967 and there are no known records of it ever having a leak. The little lake was constructed shortly after the big lake and it too has no known record of ever having a leak. Neither lake has ever had any work done other than maintenance and, in the case of the big lake, the improvements mentioned above. A leak that is detected early can be repaired without major expense. A leak that goes undetected could eventually develop into a major financial expense and major repairs.

According to the experts in the references cited below, proper maintenance can eliminate some leaks and routine inspections will locate leaks when they occur. Large plants and burrowing animals can cause leaks. For the abatement of potential leaks and for easy inspection, dam experts recommend that vegetation other than grass not be allowed to grow on earthen dams. Grass should be kept cut and there should be 100% grass coverage to eliminate erosion. Burrowing animals are generally under control with our "critter catcher". However, the removal of vegetation and the cutting of grass makes it easy to locate animal burrows, spot erosion, detect leaks, and monitor seepage.

Dams Assessment:

The committee relied on the most recent Dam Inspection Report prepared by Aqua Engineers in February 2008 and required by the Mississippi DEQ Dam Safety Division. DEQ requires a formal inspection by a professional engineer approved by DEQ to inspect the big dam on a periodic basis. A formal inspection of the little dam is not required. Representatives of the committee personally inspected both dams.

The big dam is in excellent condition. A small seepage was reported at the toe of the dam near the east end and a small sink hole was reported on the toe near the west end. According to the Report, this seepage poses no threat and, according to long time residents, has been essentially the same for many years. There is also some seepage into the ditch along Westline Drive which was not reported in the Inspection Report but also has been the same for many years. No leaks of record have ever been detected. The dam is clear of vegetation and the grass is being cut. The Report stated that the spillway is in satisfactory condition.

The little dam appears to be in good structural condition but the inspection was incomplete because of dense vegetation growth on the face and toe. The committee found no record of leaks or seepage related to the little dam.

A number of pictures were taken of both dams supporting some of the recommendations itemized below. These photographs are available with this report on a CD in digital format. For the Board's convenience, this report, the Dam Inspection Report, and the Emergency Action Plan are also included on the CD.

Emergency Action Plan, EAP:

The Mississippi DEQ requires an "Emergency Action Plan" for the big lake and dam. This EAP was prepared by Aqua Engineering Services in 2008 and defines responsibilities and provides procedures designed to identify unusual and unlikely conditions that may endanger the big dam and to notify the

appropriate emergency management officials of possible, impending, or actual failure of the dam. The inspection procedures detailed in the EAP, when followed, essentially serve as an early warning system.

Conclusions:

1. Based on the history of the dams, the Dam Inspection Report, the current condition of the dams, and an assessment of the potential risks associated with the dams, the committee concludes that a “Reserve Fund” for the purpose of future unexpected expenses is not in the best interest of the lot owners at this time.
2. Undetected leaks pose the biggest threat to the integrity of the dams. The committee concludes that the most likely problem related to the lakes is a leak that goes undetected. With a structured risk management program implemented, this is a tolerable risk.
3. No significant expenditure related to the dams is expected in the future.

Recommendations:

1. Inspections: Each year, a minimum of one person at Lake Lorman should be designated the EAP Coordinator by the Board. This person should be familiar with both the EAP and with the DEQ document, “Guidelines for the Inspection of Dams”. This DEQ document is available on the MDEQ web page referenced below.
2. Routine inspections of both dams should be documented and reported to the Board using the Form identified as Owner's Inspection Checklist in Appendix A of the EAP.
2. Clear the toe of the big dam of encroaching trees so inspections are more easily made. Spray the weed trees growing in the riprap.
3. The little dam is in serious need of vegetation control. The face and toe should be cleared and encroaching vegetation on the toe should be removed. Only the top of the dam is now being cut; the face and toe should be cut so inspections can be made.
4. The alligator weed on the face of the little lake dam should be sprayed so inspections of the waterline can be made.

References:

Dam Inspection Report by Aqua Engineering, February 2008

MDEQ Dam Safety Division web site:

http://www.deq.state.ms.us/MDEQ.nsf/page/L&W_Dam_Safety?OpenDocument

The Association of State Dam Safety Officials dam safety recommendations:

<http://www.damsafety.org/resources/downloads/?p=92fc7963-aa9e-4f6f-9f02-2b19cdda4422>

Mississippi Department of Environmental Quality. Detailed procedures for inspecting a dam:

http://www.deq.state.ms.us/MDEQ.nsf/page/L&W_Dam_Safety?OpenDocument

FEMA concerning animal risks to earthen dams: *Dam Owner's Guide To Animal Impacts On Earthen Dams*

<http://www.damsafety.org/media/Documents/PDF/fema-L264.pdf>

FEMA concerning the risk of plants, *Dam Owners Guide to Plant Impact on Earthen Dams*

http://www.damsafety.org/media/Documents/PDF/fema_l263.pdf