

B & W Engineering Laboratories, Inc.

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Job No. 9762
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Ms. Ally Martin
Woodland Lake HOA
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and

Mr. Roland Harris
(601) 527-5164
rharris@abelectric.net

Ref: Spillway Area Inspection
26 July 2021
Woodland Lake Dam
Eudora, Mississippi

Dear Ally and Roland:

The primary spillway area of Woodland Lake Dam was inspected on 26 July 2021 by the undersigned. The application of bentonite clay into voids that were noted during a January 2021 inspection, appeared to be effective in that prior conditions did not appear to have become further degraded. Based on observations made during the recent inspection, the primary concern continues to be apparent excessive flow of lake water along the southern (left, when looking downstream) edge of the spillway. The water appears to be flowing beneath the inclined edge of the spillway, as well as beneath the adjacent "flat" portion of the spillway; this was evidenced by observed downstream flow patterns of water that had been dyed at the edge of the upstream spillway incline, i.e., at the downstream exit point of the dyed water, a cross flow of clean water was noted. "Permanent" repair of this water seepage, will likely include injection of cementitious bentonite grout into the cavities that exist along the above described portions of the spillway, as well as installation of a flow barrier near the lake's edge, likely adjacent to the spillway weir. It must be understood that when dealing with water seepage, "permanent" repairs are actually repairs of the existing flow patterns, which can always evolve into differing flow patterns at later dates.

In order to define the portions of the spillway beneath which seepage water is now flowing, it is recommended that one-inch diameter holes be bored through the concrete at selected locations, through which the underlying soil and/or voids may be evaluated using a probe rod; boreholes will then be filled with hydraulic cement which will seal the concrete, but not the underlying soils/voids.

In order to define the best method of preventing future flow from the lake to its present flow paths beneath the spillway, i.e., the flow barrier mentioned above, the flow pattern of the

observed seepage water near its source, i.e., the lake, must be established. Several test borings should be made just south of the southern end of the spillway weir; depending on conditions observed in such borings, installation of temporary piezometers (slotted PVC casings that are installed in boreholes) may be warranted to allow further evaluation of seepage flow volumes. In some cases, flow can be significantly reduced by injecting grout, similar to that described above, into voids and/or permeable soil zones through which seepage water is now bypassing the spillway. In other cases, installation of barrier walls are required, with such barriers being created by excavation of trenches through the permeable soils and backfilling the trenches with impermeable soils.

The proposed investigation will include boring, probing, and filling the above described holes through the concrete spillway, completion of the borings and piezometers near the lake that are also described above, and preparation of an engineering report that will present findings of the investigation and recommendations related to the best course of action for remediation of the observed spillway area seepage. It is impossible to accurately define the total cost of the recommended investigation because the proposed work will define the extent of the work required to accomplish its goal. The total cost of the investigation, however, is expected to range from four to six thousand dollars, with billing to be based on the amount of time spent and the cost of the materials utilized. If during the course of the work, it becomes apparent that costs are likely to exceed this range, you will be notified immediately and the range will not be exceeded without prior authorization.

If there are any questions, or if additional information is required, please advise.

Respectfully submitted,

B & W Engineering Laboratories, Inc.



Jamie C. Cunningham, P.E.



John L. Walton, Sr., P.E.
President

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