

Firewheel Swim and Recreation Center
Assessment of the Geo-Tech Exploration Report prepared by Alpha Testing, Inc.
September 21, 2008

Introduction

Below is an assessment of the report the Swim and Recreation Center (SRC) board received from Alpha Testing, Inc. on August 22, 2008. This assessment was prepared by the SRC and used during our decision making process. You can view the official test report from Alpha Testing, Inc. by clicking Official Report on the home page.

Alpha visited the site on August 1, 2008 to collect 6 core samples on and near the dam (drilling and retrieving soil from depths up to 18 feet). The samples were analyzed and a report was provided to the SRC on August 22, 2008.

Our Assessment of the Report

Alpha's statements have been paraphrased (**bold text**) below and refer to section 6 of the report. Additional comments from the SRC have been added here and there.

Alpha states that two problems exist: 1) a porous pond bottom, causing the soggy areas and 2) a porous earthen dam, causing the leak into the falls. These problems may require separate fixes unless the entire pond is lined with a thick layer of clay.

Our consultants basically agree with the above but also say we might stop most of the leak by re-engineering just the dam. Another option they mentioned was to lower the pond level to the point where the leak is manageable. If we did the latter, we would try to improve the appearance of the shoreline. There are no guarantees that any of the proposed solutions will work.

Section 6.1

1. **The primary leak source is within the upper 24" below normal pond level and may be passing through porous dam soil into the falls.** Two things may explain why the leak is only noticeable in the falls area: 1) the falls cuts into the hillside making it the narrowest part of the dam and 2) a 1999 aerial photo, indicates the pond was drained, soil was removed except where an earthen ramp was formed to get equipment in and out of the pond. As a result, this ramp area may be more porous than other areas of the dam (since it was disturbed).
2. **A second leak source *could be* natural cracks in the limestone under the pond and this may explain the soggy areas on either side of the falls (where the slope starts to level out going toward Water Oak).** The report says 'could be' and here I'll point out the soggy areas and the seepage into the falls dried up when the pond level was 16"~18" below normal.

Section 6.2.1

3. **They recommend a 2ft thick clay liner to cover the bottom and sides of the pond, noting that this is the most positive method. They also mention geo-membrane liners as alternatives.** Pond Medics told me this type of liner is not practical in our case because of the retaining wall around the pond.

Section 6.2.2

4. **Alpha recommends reworking the dam extensively. Alpha includes a lot of detail here as to how this must be done.**

The board has met twice since receiving the report from Alpha, including many phone conversations and email exchanges, to perform due diligence and discuss next steps. Basically, Alpha has recommended draining the pond, excavating the topsoil and placing a thick clay liner in it. They also suggest installing a clay barrier approximately 200 feet long inside the dam. Alpha states that both steps might not be necessary but doing both is the most 'positive' approach.

The consultants we engaged earlier this year anticipated the need for the clay barrier as well and estimated it alone could range from \$25,000 to \$125,000. *They also pointed out we could still end up with a leak – no guarantees.*

The potential expense, lack of guaranteed results and risks of damage to the wall and/or waterfall compelled the board to pursue more conservative measures for now – especially given that at a lower level it does not leak.

To mitigate the pond leak for now, the board has elected to have topsoil added to the eroding areas along the base of the retaining wall and then raise the pond level to the maximum, manageable level. Submerged cement bags will be added along the base of the wall to protect the new topsoil from erosion. Additionally, a common shoreline treatment called riprap may be installed.