### **Bulkhead/Terracing History**

#### The Cause

- We had our lakefront area terraced with standard wood bulkhead material in 2001.
- In 2006, we added a dock and contracted an electrician to provide power to the waterfront
- Instead of a small 6 inch trench directly to the waterfront that we had expected to run the electric wiring, we came home to find a 3-4 ft. deep serpentine trench passing close to the edge of the bulkhead and terrace walls:





#### The Effect

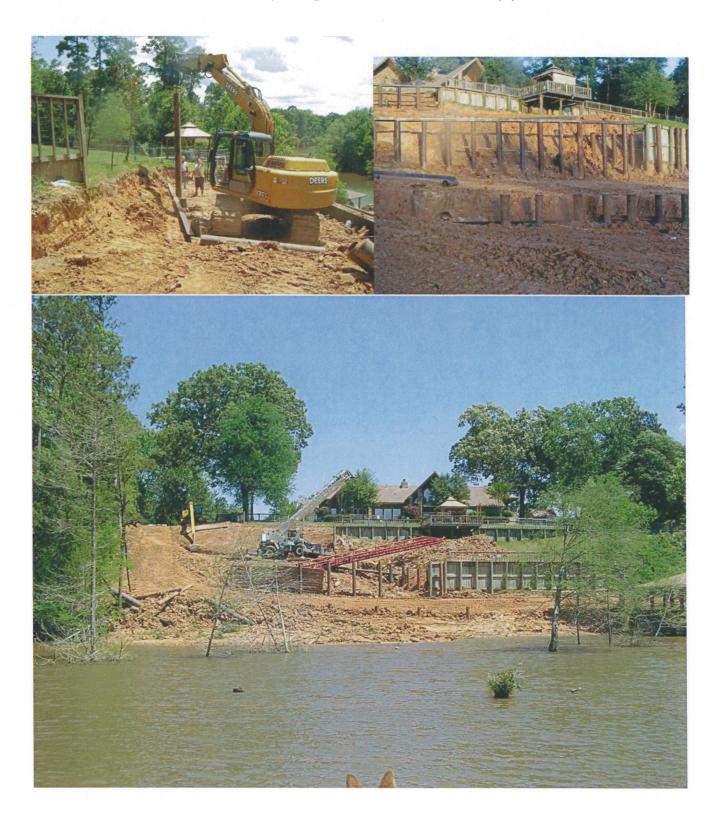
- A few months after this work, we notice some ground shift in the track of the trench and areas below:
- Investigation reveals that the trench damaged tie backs to the lower walls permitting the movement:





### **The Solution**

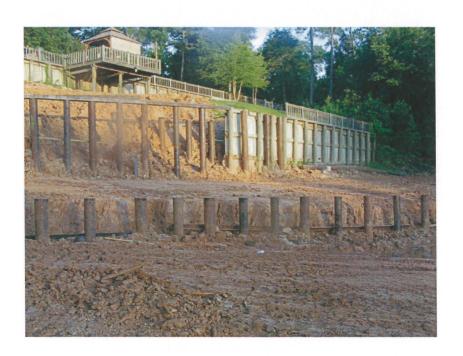
• 40 ft. crane-driven steel pilings and horizonal supports



## Steel piling 'deadmen'



## Steel piling 'soldier wall'



• Cost \$250,000.00

# **The Result**

(10 years later)



