CASE STUDY #2 - The *Duck Pond*, Morgantown, West Virginia

In 1998, the owners of a piece of real estate along Monongalia County Route 857, southeast of Morgantown, WV, decided to landscape their property to produce a pond. Shown below is the pond as it currently exists. As you can see, the final product is an attractive addition to the property (so attractive that it requires *Posted* signs to keep potential picnickers away!).

However, the construction of the pond was not without controversy . . . and mishap. Shown below is the pond as it appeared in August of 1998. Notice the unvegetated soil around the edges of the pond. Vegetation has not yet completely covered the earthen dam or the excavation required to create the pond. Otherwise, the effects of landscaping/construction are not readily apparent.
Shown below is a photo of the hillside west of the pond. What is the name of the prominent feature visible in the photo? ____________________ Do you think that this feature formed rapidly or slowly? ____________________

Below is a view looking into the scar produced by the feature in the previous photo. What type of material has been displaced by this earth moving process? ____________________ What was a major contributing factor in this slope failure? ____________________
Now, we come to the real problems associated with the creation of the pond. Show above is the stretch of Monongalia Route 857 immediately south of the pond - top photo looking east; bottom photo looking west. Describe the damage to the land surface, vegetation, and manmade structures apparent in these photos.
Above is an enlargement of the Morgantown North 7 1/2’ topographic map. Monongalia Route 857 loops across the center of the map area. The pond is shown to scale as a red circle near the east edge of the map. Why did your instructor paste a portion of the graphic scale to the bottom of the map? ____________________ What is the current scale for this map expressed as a unit-less ratio? ____________________ Draw a north arrow on the map.

In order for a manmade pond to fill with water, it is usually constructed by damming a stream valley. How are small streams (either continuous or intermittent) marked on a topographic map? ____________________ Is the pond situated along a stream? _________ How do you think that the pond filled with water?

Early in 1998, the construction company who built the pond excavated a circular depression in the valley floor south of Route 857 then used the excavated material to dam the valley. Spring of 1998 was rainy and within a couple of weeks of the excavation and damming of the valley two effects were noticed. First, the excavation was partially filled with water and second, the northernmost lane of Route 857 and most of the slope it was built on had collapsed into the valley to the north. What factors do you think contributed to this failure?
In the Spring of 1998, West Virginia Division of Highways (WVDOT) repaired Route 857 by driving wooden *pilings* into the slope north of the road and then rebuilt the road bed by dumping rock and soil into the space behind (south of) the pilings. In August of 1998, the slope failed in exactly the same place causing the damage shown in photos on previous pages. WVDOT replaced the wooden pilings with steel I-beams and interlocking concrete panels. This *fix* has lasted successfully.

To this day, the landowner and the construction company deny any responsibility for the destruction of Route 857 and the efforts of WVDOT necessary to remedy the situation. If you were an *expert witness* called upon to testify at hearing to fix blame for this situation, what would you tell the court?