

Bryan Utilities Lake Dam was constructed in 1975 and is located in the Brazos River Basin northwest of the City of Bryan, Texas. The reservoir impounded by the dam is used for cooling water and for recreational purposes. The dam consists of four earth embankments (power plant, east, south, and west). Observations and inspections over the years did not indicate any significant issues. In late August 2015, during a routine inspection, a longitudinal crack on the south embankment crest was observed. Within a matter of days, the cracking expanded and a differential vertical offset of about seven inches was noted. In addition, a long (approximately 300 feet) horizontal crack was located just above a drainage berm, which is located about 28 feet below the crest on the downstream slope of the embankment. A significant sag in the crest was observed. After a quick initial investigation, a contractor was mobilized to begin work on a stabilizing berm. With no way to lower the lake level due to a non-functioning low flow gate, pumps, which were later replaced by siphons, were installed to relieve the pressure on the embankment.

The movement continued, the offset at the crest increased to more than two feet vertically and the original downstream stability berm was increased. Relief wells and inclinometers were added to the project. Surface slides had occurred on other sections of the embankment in the past and the possibility of a deep seated failure was considered. A geotechnical investigation revealed the movement was most likely the result of several issues, including the embankment material, a blanket drain not placed against the original foundation, and a water bearing alluvial section below the embankment.

This paper describes the emergency and sometimes frantic investigation and remediation of the problem.