## PROJECT DESCRIPTION DAMS & DIKES RAIN RETENTION BASIN



Project: RRB Rain Retention Basin

Loctaion: Ehringen Year: 2006 - 2008

Ultimate and Serviceability limited state design for an earth dam used within a rain retention basin





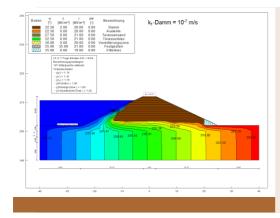
## **PROJECT DESCRIPTION**

The village of Ehringen is located in close to the rivers Erpe and Dase. Since 1950, the village has been flooded seven times. After the last flood event in 2002, it was decided to install a flood protection system for the village. As part of this measure, the planning and construction of a flood retention basin with a storage volume of 1.43 million cubic meters started. An approximately 220 m long dam with a floor volume of approx. 40,000 m³ and a max. Height of 10 m was planned.



## **PROJECT FACTS**

- ➤ 40.000 m³ earth dam with a length of 220 m, height of 10 m, base width of 55 m and crest width of 4.50 m
- ➤ Maximum water fill of 8.70 m leads to free board of 1.30 m and reservoir volume of 1.43 Mill. m³
- ightharpoonup Construction on top of soft peat layer with shear strength of φ = 22.5°, c = 0 kN/m²
- > Stiffness modulus of ES = 6 MN/m<sup>2</sup>
- ➤ Slope inclination of 1:2.20 and 1:2.25
- Geogrid reinforcement for slope stabilization of the water side of the dam



## **OUR SERVICE**

- ➤ Slope Stability analysis according to German DIN 4084 including load cases "full water filling" and "rapid water lowering" in steady and unsteady state
- Sensitivity analysis: Variation of permeability, ground water level, material properties of dam and subgrade material
- > Settlement analysis by numerical method
- ➤ Determination of required geogrids reinforcement to satisfy load case 2 "rapid water lowering"
- Calculation of safety against lateral spreading of the dam base and bearing capacity