Remedial Grouting at Shon Sheffrey Dam, Wales

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SYNOPSIS  Shon Sheffrey dam is a 15m high x 260m long embankment dam located about 3km north-northwest of Tredegar, Wales. The impervious element is provided by a puddle clay core. The dam is owned and operated by Dŵr Cymru Welsh Water. The dam was completed in 1896 and the spillway and embankment crests were raised 1.83m (6ft) and 2.44m (8ft) respectively between 1945 and 1948. Further remedial works were carried out in 1984 when a 34m long x 6m deep steel sheet pile wall was installed in the embankment adjacent to the spillway.

The dam had a history of leakage into the spillway chute and drawoff works culvert under the embankment. In recent years, the loss of embankment material into the culvert was observed and a need for remedial works was identified.

The paper will describe the results of a geophysical leakage detection survey carried using a Magneto-Metric Resistivity (MMR) technique (Willowstick), development of the grouting layout, the grouting plant, grout mixes and methods including the selection of the grouting pressure. The results of the grouting operations will be presented and conclusions drawn to demonstrate the advantages offered by targeted grouting.