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كل الحقوق محفوظة للمدرسة الوطنية العليا للري.

Abstract: The problem of leaks in earth dams, especially in their foundations, frequently leads the operating services to consider or to seek for solutions to prevent and minimize risks of dam failure. In the present study, Fountain of Gazelles zoned dam, located in southeast Algeria, has a height of 42.5 m and a width of 8.5 m, with side slopes of 1/2.5 and 1/2.75 has been taken as a case study. The dam is subject to leaks in its right bank, with an abnormal increase in piezometer P3 situated in section 1 downstream, this rises was accompanied by the appearance of springs on the toe of the dam and in the middle of the spillway flow channel. The main objective of this study is to perform an analysis of the piezometric data, and stable isotopic investigation using deuterium (^2H) and oxygen (^{18}O) to determine the interrelationships between various samples collected from reservoir and from several collection points downstream, to identify the source location, and understand the cause of the leaks. In this regard, samples of surface water, drainage, injection galleries and spring were collected for isotopic analysis. The piezometric analysis of the three monitoring profiles shows that the problem is due to underground seepage caused by a fault below the dam foundation. The stable isotopic results indicate that the abnormal leakage on the dam comes from the reservoir.

Key words: Leaks ; Earth dam ; Piezometer ; Stable isotopes ; Fountain of gazelle

Available from : 1-<https://link.springer.com/article/10.1007/s12665-020-8886-8>

2-https://www.researchgate.net/profile/Abdelkader-Ratiat-3/publication/339773524_The_piezometric_and_isotopic_analysis_of_leaks_in_earth_dams_the_case_of_the_fountain_of_Gazelle_dam_Biskra_Algeria/links/639dce5e40358f78ebf8df8a/The-piezometric-and-isotopic-analysis-of-leaks-in-earth-dams-the-case-of-the-fountain-of-Gazelle-dam-Biskra-Algeria.pdf

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