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三峡水库引水工程（方案）秦巴段地壳稳定性评价研究

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摘要：

三峡水库引水工程（方案）是南水北调的重要补充工程，具有重要的战略意义和经济意义。本文在分析现今构造应力场、地壳结构、构造格架、活动断裂、地震活动、工程地质岩组等影响地壳稳定性主要因素的基础上，利用模糊数学综合评价模型分构造稳定性和岩土体稳定性两个层次评价工程场地的稳定性。评价结果表明，三峡引水工程场地地壳稳定性较高，适合兴建大型引水工程。同时，运用地壳稳定性评价结果对三条规划线路进行了优化比选，结果表明以中线为最好。

关键词：三峡引水工程 地壳稳定性评价 引水线路的优化比选

Assessment of Regional Crustal Stability of the Three Gorges Reservoir Water Diversion Project in the Qinling Dabashan Region

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Abstract:

The three Gorges reservoir water diversion project is a new line of the South North Water Diversion Project. The paper studies several major factors which affect the crustal stability in the region. These factors are deep seated structures,tectonic stress fields,fault activity,earthquake activity and rock properties. In order to improve the accuracy and adaptability of evaluating regional crustal stability, with an emphasis on stability of long deep buried tunnels of water diversion project on two orders of structural stability and rock mass stability, the authors select dominative conditions which affect regional crust stability as evaluating factors, establish fuzzy evolution model, and fuzzy comprehensive evaluation method. The stability of engineering ground is assessed in terms of structural stability and rock and soil stability using a comprehensive assessment model of fuzzy mathematics. The result shows that the engineering field of the water diversion project is of high crustal stability and suitable for building large water diversion projects. Of all the thirty regions, the most unstable region (one) covers an area of 699 km 2, accounting for only 1.3% of the total engineering field area (about 52577 km 2); relatively stable regions (eight) cover an area of 15826 km 2, 30.1% of the total area; stable regions (twenty one) cover an area of 36052 km 2, 68.6% of the total area. Three designed water diversion lines were optimized and compared using the crustral stability assessment method, indicating that the middle line is the best.

Keywords:The Three Gorges reservoir water diversion project the crustal stability The optimization and comparative selection of water diversion line

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