

## **The evaluation of groundwater environmental restoration by artificial recharge in Pingtung Plain, Taiwan**

**YUNG-CHANG TU<sup>1</sup>, HSIN-TIEN TSAI<sup>2</sup> & CHEH-SHYH TING<sup>3</sup>**

*1 Graduate Institute of Disaster Prevention on Hillslopes and Water Resources Engineering, National Pingtung University of Science and Technology, No. 1, Hsueh Fu Road, Nei Pu Hsiang Pingtung Hsien, 91201, Taiwan  
[p9742002@mail.npust.edu.tw](mailto:p9742002@mail.npust.edu.tw)*

*2 Department of Earth Science, National Cheng Kung University, No.1, University Road, Taina 701, Taiwan*

*3 Department of Civil Engineering Centre and Water Resources Educations and Studies, National Pingtung University of Science and Technology, No. 1, Hsueh Fu Road, Nei Pu Hsiang Pingtung Hsien, 91201, Taiwan*

**Abstract** The Pingtung Plain, Taiwan, has abundant groundwater resources. The overall study objective focuses on groundwater restoration. In this study, MODFLOW was applied to evaluate the groundwater recharge dynamics between the recharge in the upstream reaches and pumping in the downstream reaches. Using the simulation model, the results show that storage of the groundwater increased by 683 266 m<sup>3</sup>/year and 2 471 765 m<sup>3</sup>/year and the groundwater table has risen 0.91 m and 1.21 m in Kaoping Lake and Wanlung Lake, respectively. From the view of storage change, the Wanlung Lake was found to be the most suitable area for constructing the artificial lake for artificial recharge. The variation of the groundwater storage of the aquifer is an important factor in artificial recharge. Managing artificial groundwater recharge can provide for shortages of good quality surface water during flood season, caused by higher turbidity, and conjunctive water use of surface and groundwater resources in the future.

**Key words** artificial recharge of groundwater; MODFLOW; simulation