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Groundwater artificial recharge solutions for integrated management of watersheds and aquifer systems under extreme drought scenarios

Joao-Paulo Lobo-Ferreira (1), Luís Oliveira (2), Catarina Diamantino (3,4)

(1) Groundwater Division Head, Laboratório Nacional de Engenharia Civil, Lisbon, Portugal (lferreira@lnec.pt), (2) Ex-MSc candidate at Groundwater Division, Laboratório Nacional de Engenharia Civil, Lisbon, Portugal (loliveira@lnec.pt), (3) Ex-Ph D candidate at Groundwater Division, Laboratório Nacional de Engenharia Civil, Lisbon, Portugal, (4) DHV, Estudos, Projectos e Consultoria, Alfragide, Portugal, (catarina.diamantino@dhv.com)

The paper addresses groundwater artificial recharge solutions for integrated management of watersheds and aquifer systems under extreme drought scenarios. The conceptual idea of Aquifer Storage and Recovery (ASR) is considered as one of the scientific based solutions towards scientific based mitigation measures to climate variability and change in many parts of the world. In Portugal two European Union sponsored 6th Framework Programme for Research Projects have been addressing this topic, namely GABARDINE Project on "Groundwater artificial recharge based on alternative sources of water: Advanced integrated technologies and management" and the Coordinated Action ASEMWATERNet, a "Multi-Stakeholder Platform for ASEM S&T Cooperation on Sustainable Water Use". An application of Aquifer Storage and Recovery methodologies aiming drought mitigation and Integrated Water Resource Management of the Algarve (Portugal). The technique of artificial recharge of groundwater is used in many parts of the world with several aims, e.g. water storing in appropriate aquifers for the mitigation of future water needs during droughts or as protection against pollution or even for the recovery of groundwater quality. Artificial recharge of the aquifer systems of Campina de Faro and Silves-Querença is addressed in this paper, proposed to be an alternative to decrease the vulnerability of the Algarve to a future drought. Integrated management of water resources in the Algarve is not a clear issue since the last decade, when groundwater resources that supplied almost all water needs, have been drastically replaced by surface water stored in new reservoirs.