

WATERWORKS 2017 RDI FUNDED PROJECTS BOOKLET

Project: Managed Aquifer Recharge: Addressing the Risks of Recharging Regenerated Water

MARadentro



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Project partners:

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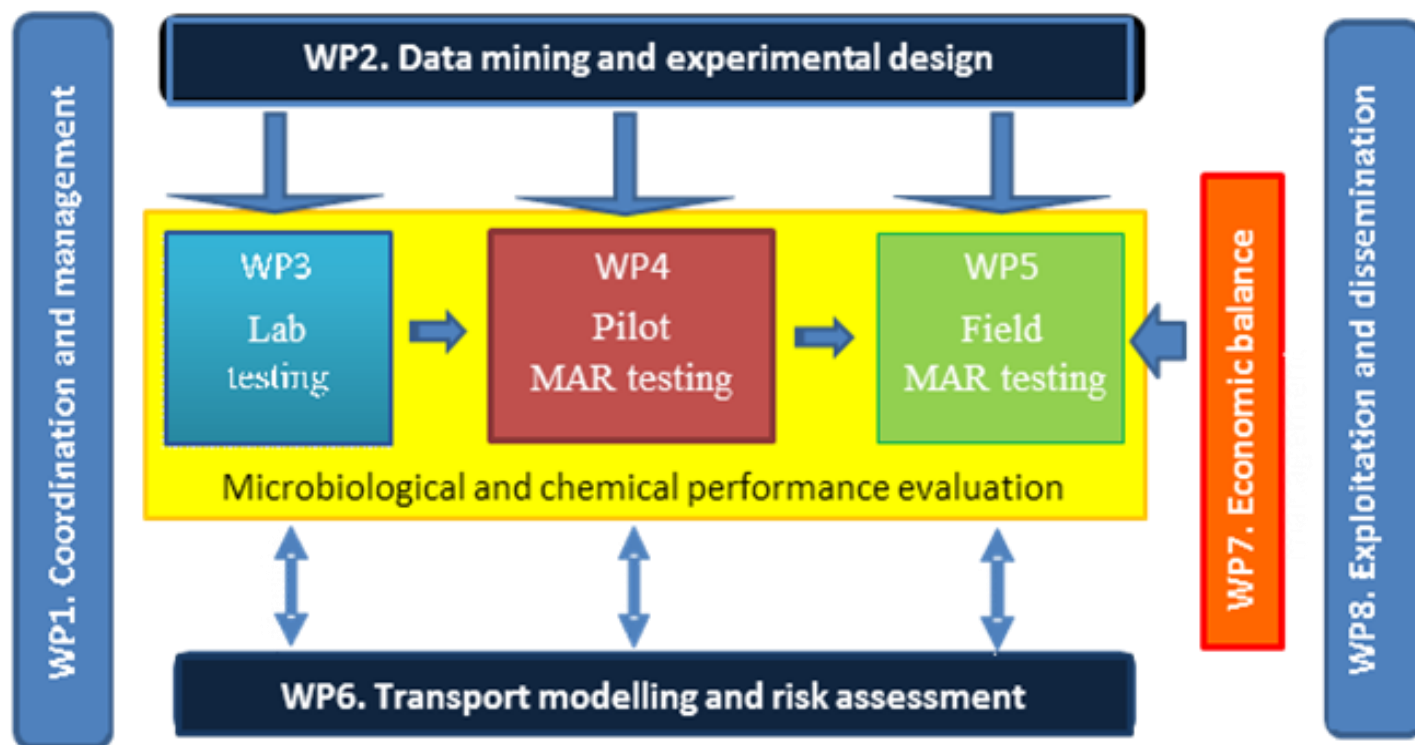
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Project structure (WPs description):



WP1. Coordination and management

Provide the necessary administrative and financial management coordination based on JPI accepted rules and guidelines. It will ensure a high standard of supervision, quality control and overall coordination of the activities described, within the planned time and planned budget, for the smooth running of MARadentro.

WP2. Data mining and experimental design

Review existing reclaimed water reuse for MAR projects, databases and records to identify gaps in knowledge, methodology and information as well as data needs. This will serve as the basis for properly developing novel reactive layers and will aid in the design and implementation of MAR testing at three scales.

WP3. Lab testing

Column experiments will be carried out to test and calibrate the performance of different layer compositions. Microbiological, toxicity and chemical analyses will be used to evaluate the performance of the tested layers and systems for the removal of pathogens and chemical pollutants.

WP4. Pilot MAR testing

A greater degree of complexity will be achieved in an existing pilot scale MAR located in Palamós WWTP (close to Barcelona). The facility consists of 6 recharge areas (2.4 m²) connected to 15 m. long sediment tanks mimicking the aquifer. The system allows biomass augmentation, addition of organic carbon sources and adsorbing chemical species. The use of real wastewaters in the pilot MAR will allow a realistic understanding of pollutants behaviors, largely influenced by source water physical, chemical and microbiological characteristics, in a complex fluctuating environment. For a more integrated approach, microbiology, toxicity and chemical analyses will be performed to describe the functionality of the reactive layers as well as to evaluate the performance of the pilot MAR for the removal of pathogens and chemical pollutants.

WP5. Field MAR testing

Validate MAR technology at a WWTP where the feasibility of our solution will be assessed under long-term operation. The MAR prototype will be fed with treated domestic wastewater with or without previous tertiary treatment. The design, construction and evaluation will be led by the industrial partner AQUALIA in close collaboration with the other partners.

WP6. Transport modelling and risks assessment

Numerical models will be developed to understand and predict the fate of basic ions and minerals, as well as pollutants and pathogens during MAR. These models will be calibrated with real data generated during the experiments performed at the three testing scales, i.e. laboratory, pilot and field.

WP7. Economic balance

A comprehensive and interactive model will be created, which can be applied for economic feasibility studies and technical project evaluations under different scenarios. Possible industrial outcomes will be evaluated to reach the market. Economic impact, market trends and technology positioning will be studied.

WP8. Exploitation and dissemination

Exploitation and dissemination of the project outcomes will be coordinated and supported by WP8 and will cover all WP activities during the entire duration of the project.