

## WATERWORKS 2017 RDI FUNDED PROJECTS BOOKLET

**Title of the project:** Tools and criteria for URBAN groundWATER management

**Acronym and LOGO:** URBANWAT

### **Outcomes and expected impact:**

The, URBANWAT project will contribute to the following overall impacts of the JPI: (1) **SOCIAL:** The participation of the groundwater organism in this project, especially in the results diffusion task, allows establishing a water policy more effective implementing a close horizontal dialogue with stakeholders interested in clean and healthy water; (2) **ECONOMIC:** The reuse of groundwater safely constitutes a vital complement to water regulations and they can assist in allocating water between competing user demands. Mitigation measures and short-term solutions to overcome emergency situations as water scarcity, which will reduce costs; (3) **TECHNOLOGICAL:** Improvement of the techniques for managing of water resources with interoperability of databases, groundwater quality, risks and modeling. Optimization of concentration and viral detection in groundwater samples. The use of new technologies for the identification of a greater number of organic compounds and for the study to measure temporal and spatial patterns of water and pollutants with encapsulated DNA nanoparticles promises a breakthrough in the investigation of groundwater; (4) **ENVIRONMENTAL:** The integrated models of the entire water cycle, including all compartments and water use have yet to take into account scenarios of water demand and predict the impact of global change (including climate). Water resource observations, experimental work and modeling are required to better understand hydrogeological processes and their connection, and to analyse and forecast the effectiveness of management options. This will support improved decision-making to ensure the long-term availability of water resources and to enable the integrated management of water resources at the national and global scale; (5) **POLICY:** Regulatory measures are essential tools to ensure compliance with environmental standards for water quality and quantity. Understanding the mechanism leading to improved water management will lead to better policy design and adaptation it will help in the new plans of uses and integrated management of aquifers and it will ensure the good state of this groundwater masses management.

The main barriers that this project would be related to the modeling task where some predictions cannot be verified, since in practice it is not possible to obtain a measurement at all points of the modeled domain, this will be overcome by developing models for different scenarios and evaluating the sensitivity of the models.

**List of deliverables expected:**

**Deliverables: D1.1** Protocol for groundwater sampling; **D1.2** Report on current groundwater quality; **D1.3** Report on occurrence of PMOCs in groundwater; **D1.4** Assessment of PMOCs degradation in groundwaters

**Deliverables: D2.1** A SOP of an optimized method for viral concentration from groundwater samples; **D2.2** Report: presence and loads of classical fecal indicator bacteria, human and animal viral indicators as well as relevant viruses in groundwater collected; **D2.3** A SOP of an optimized viral metagenomic analysis for groundwater samples; **D2.4** A report of the different viruses found in groundwater collected at different sites and times during the year by applying metagenomics analysis.

**Deliverables: D3.1** Statistical report/geochemical processes; **D3.2** Report related to the developing an analytical methodology for PMOCs determination; **D3.3** Report polar transformation compounds.

**Deliverables: D4.1** Report: artificial DNA tracer; **D4.2** Report: Comparison between the use of different tracers; **D4.3** Flow and transport model/Simulations

**Deliverables: D5.1:** list of soil-water-plants continuum that will be tested; **D5.2:** Development of the experimental setup; **D5.3:** Role of flow rate on retention efficiency; **D5.4.** Parametrization of the removal efficiency in the different scenarios for the chemical and microbial contaminants tested

**Deliverables: D6.1** Report about the WP progress. Different phases of testing; **D6.2** End of project show-casing the results of project

<b>Expected research results to communicate and disseminate (in very general terms)</b>	<b>Target groups for communication and dissemination activities:</b>
1. Protocols	managers and technicians of water resources
2. Reports and management guides	managers and technicians of water resources

3. Communication in meetings and congresses	scientific community
4. Development of new analysis methodologies	scientific community
5. Current groundwater quality	End users, managers and technicians of water resources
6. Flow and transport model	managers and technicians of water resources
7. Testing real-scale test (Delft)	Scientific community, managers and technicians of water resources