1 INFORMATION ON WORK PROGRESS

1.1 Summary and aims for the period

Work Package 2: The aim of this project task is to process a large amount of raw data, which consists of both measured and collected data through specialists. Both data source need developing and involving mathematical methods to able the data to be implemented in modelling environment. Different geological, hydrological and technological parameters are required to implement models to the target areas. The built models require calibration, for which both datas from the wells technical monitoring system (ex.: quantity of produced water, depression levels etc.), and measurement campaigns required. The goal of this package is to analyze the pilot area, determine the size and type of models and build them. Also, calibration and determination of limitations of the built models also taks of this year's package.

Work Package 4: The main goal of the task is to identify the possible pollutant sources, the correlation between groundwater flowrates and particle travel times. To determine such information, past datas as well as monitoring campaign must be taken on the pilot area. To determine the elements of the campaign must be specialized for the pilot area. With collected datas and connections, refining and fine tuning of the built models are necessary for this project period.

1.2 Initially planned Milestones/Deliverables/Budget and the impact on the project

Work Package 2, Work Package 4: The next milestone of the project is the creation of an expert report on the hydrogeologic models of the pilot area built and calibrated by our company. The expert report includes the necessary calculations, data transformations and methods which were used during the model building and evaluation. The report will include the calculation methods developed to predict the quality and quantity of water extracted from RBF wells of the aforementioned region based on environmental parameters such as water level or the presence and concentration of different pollutants in different areas and distances from the active boreholes and the modelled end result analysis.

The project stages result is a well calibrated, refined model, which useful for determining production strategies for riverbank filtration wells as well as for preparing input parameters for any artificial intelligence algorithm that will be used to optimize the parameters of river bank filtration.

1.3 Current status (completed/ongoning/started) of the work packages, as well as status (achieved/on track/delayed) of tasks, deliverables and milestones

Work package 2: During this package we collected much available data through previous work and expertise reports. We analyzed, transformed and prepared the data to be implemented in the pilot areas models. With the data we built 4 different models which cover the whole pilot area. The models are calibrated via the monitoring campaigns data and we also evaluated information from our PLC system for further improvement.

Work package 4: We are monitoring the long-term change of water quality in the pilot area measuring the pollutants highlighted by our preliminary research. Measurements were taken during both ordinary and extraordinary operational procedure (with normal and high flooding water levels). During the monitoring campaign the water levels of monitoring wells are also examined, which is required to refine the prepared models. With the collected data we successfully calibrated the models and determined its limitations.

2 FUTURE EXPECTATIONS OF THE PROJECT

2.1 Information about the intermediate results obtained or any successes

Laboratory measurements are currently underway in the current phase of the project. The hydrogeologic models of the pilot area are built and calibrated based on the observed and system auto-recorded data.

The models are ready to receive the data generated in the next step of the project. In that step the already collected and continuously updated data regarding the operating parameters of the wells will be processed and fed to the Artificial Intelligence (AI) as separate databases. The data then will be used to teach and calibrate the AI. The calibrated and well working neural networks will produce estimations and forecasts regarding set parameters and tendencies. The forecasts will be checked and validated using the built models.

2.2 Indication whether the expectation of the project is still valid or whether there could be any deviation of the project in the medium term which can affect the financing, the planning and expected results

The measurements are carried out according to the timetable. There are no expected deviations from the project schedule. During the monitoring campaign normal work periods as well as extraordinary work periods appeared, which is likely due to the goals of the monitoring program.

The development of the models and used methodology was finished on time, the subsequent steps are ongoing, there are no delays. The models have the necessary accuracy to produce necessary data for any AI related usability of given and model generated data sources.