

Work Package 5

Monitoring and evaluation of outputs

Deliverable 5.6.2

Evaluation of existing data and fixing of the measurement protocol

Beneficiary 6 (PB6) - Municipality of Petrich

**INTERREG V-A COOPERATION PROGRAMME:
GREECE – BULGARIA 2014-2020**

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Summary Report

For the supervision of the evaluation of the existing data and the fixing of measurement protocol an external expertise was assigned to HIDRORESURS LTD Company in fulfillment of the contract "Performance of technical services in implementation of the project „Groundwater REsource managemENT for non-Potable water pUrposes, baseMent protection, and heating - Pilot application”.

The new facility : Pilot drilling well - construction of a drilling well for non-drinking water in the area "The Church", in the land of the village of Kavrakirovo, Municipality of Petrich

Well design:

- Depth – 60m
- The well is built of an operational-filter PVC column with a diameter of $\varnothing 160 / 7.7$ mm, composed of blind pipes and filters in the range from 0 to 60 m and a conductor solid PVC column with a diameter of 200 / 3.9 mm in the range from 0 to 10 m.

Around the mouth of the well is built an water-meter shaft from reinforced concrete with dimensions 230 cm x 200 cm x H=280 cm, covered with a metal lid and locked with a padlock.

The main parameters of groundwater abstraction, according to the Permit for groundwater abstraction № 41520106 / 25.09.2019 are:

- Drawing period - seasonal (in the period 01.04 to 30.10 month of the year or about 214 days a year);
- The forecasted annual volume of groundwater abstraction \approx up to 20 780,5 m³ / year.
- Daily volume of pumping \approx up to 97.11 m³ / day.
- Average annual flow rate \approx 0.66 l / sec.
- Maximum pumping flow - 9.6 m³ / h (2,666 l / sec) / for a period of up to 10 hours and 7 minutes /.

Operating resources of the new facility are:

Technically possible annual flow rate calculated by hydrodynamic method is up to 53 926,56 m³ / year, and the possible annual flow rate calculated by hydraulic tests is up to 162 725,76 m³ / year.

Water flow on hourly basis – 9,6 m³/h

Water flow on daily basis – 97,11 m³/day

According to Physical -Chemical analysis of the groundwater samples:

Water temperature : + 13,5oC (means "cold")

Water type: Hydrogen Carbonate- Calcium-Magnesium- Sodium-Sulfate

On the basis of the value of the chemical indicators that determine the pollution of the groundwater with products from organic decay and decomposition of substances of animal and plant origin and fertilization with artificial fertilizers as follows:

(ammonia - <0.30 mg / l, oxidizability - 0.96 mgO₂ / l , chlorides - 36.29 mg / l, nitrites - <0.02 mg / l)

it can be concluded that the groundwater lacks such pollution.

The chemical composition of the groundwater entirely meets the criteria of Annex 1, Article 10, paragraph 2, item 1 of the Ordinance No.1 of 10.10.2007 on the exploration, use and protection of groundwater, excluding Fe content (Fe+2 + Fe+3) - 360 µg/l (the allowable value is 200 µg/l)

The tests for the quality composition of the groundwater are carried out in an accredited laboratory, having ISO 9001 and 9002, as the test methods are in compliance with the values of the ecological threshold for groundwater under Ordinance 1 No.1 of 10.10.2007 on the exploration, use and protection of groundwater.

Municipality of Petrich sent a notification to the West Aegean Basin Directorate with attached documents certifying that the well has been constructed and measurements were done in accordance with the Permit for groundwater abstraction № 41520106 / 25.09.2019 and described in the following documents:

1. Information about the equipment of the pipe well
2. Requirements for the operation of the water intake facility
3. Geological journal for the performed activities
4. Protocol 1 for designation of the work site
5. Protocol 2 for covert operations
6. Protocol 3 for conducted water abstraction with maximum flow - 24 hours
7. Protocol 4 for conducted water abstraction with average daily flow - 24 hours
8. Protocol 5 for a three-stage hydraulic test
9. Protocol 6 for conducted water abstraction with maximum flow - 357 minutes
10. Protocol 7 for geodetic survey of the coordinates of the well
11. Chemical analysis of a water sample from the well
12. Geological-lithological column and construction of the pipe well
12. Diagram of the equipment of the water meter shaft and the mouth of the pipe well
13. Documents - certificates of the materials and equipment
14. List of the persons who will be present at the admission commission
15. Substantiated request for updating the permitted flow and the maximum permissible lowering of the water level

On 31.07.2020 the acceptance commission inspected and accepted the facility and the new facility is registered in West Aegean Basin Directorate. (Deliverables D3.6.3 , D5.6.2)