

Work Package 4

Elaboration of studies

Deliverable 4.6.2

On site measurements (before and after the installation)

Beneficiary 6 (PB6) - Municipality of Petrich

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

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SUMMARY

The main activity for the municipality of Petrich in the GREEN PUMP project is the implementation of a pilot drilling - construction of a drilling well for non-drinking water in the area "The Church", in the land of the village of Kavrakirovo, Petrich municipality - **a new facility** with the technical name "TK-1 tube well with shaft".

The pilot drilling well is constructed within the period of December 2019 - January 2020.

Before starting the works Municipality of Petrich had to perform hydrological studies in order to receive the permit for water abstraction from groundwater, through a new water-ground facility under the Water Act.

- According to the requirements of the Ordinance No.1 on exploration, use and protection of groundwater (Article 156, Paragraph 3, Item 4) hydrological studies/justification of water abstraction were carried out, as well as the preparation of draft documentation for issuing of permit for water abstraction from groundwater, through a new water-ground facility under the Water Act, with the aim of building a well for non-potable water in the allocated site in the land of Kavrakirovo village, Municipality of Petrich.

A report was needed on the implementation of hydrogeological studies, since within the radius of one kilometer from the site of the requested water abstraction no other permits for water abstraction were issued from the underground water body "Cracked waters in Vlachino-Ograzhdensko-Maleshevo-Osogovo metamorphites with code BG4G56PIPz.1z 3, item 4 of Ordinance 1 for groundwater exploration, use and protection;

On the basis of the documentation a Permit No. 1520106/25.09.2019 for water abstraction from groundwater through a new ground water facility under the Water Act was issued.

All measurements of the new installation- Tube well (TK-1) for extraction of underground water under issued permit no 1520106/25.09.2019 are recorded in the geological journal and documents with the assistance of the technical expert.

Date	Type of Measurement	Documents
May 2020	<p>Experimental water abstraction with the maximum possible constant flow rate</p> <p>Q_{max.}=2,666 l/sec (9,6 m³/h)</p> <p>1. Static water level measured = 17,28 m (from the estuary)</p> <p>2. Duration of water abstraction - 24 hours. Stabilization of the water level was achieved at a drop of 19.16 m at the 345th minute at stabilized flow rate Q=2,666 l/sec. After 24th hour tracking water level recovery of the well is started.</p> <p>3. Tracking water level recovery: 855 min.</p>	Protocol #3 and Records

	(from 08:00 to 22:15 on 24.05.2020)	
May 2020	<p align="center">Experimental water abstraction with the permitted flow rate</p> <p align="center">Q_{av}.per day=0,66 l/sec</p> <ol style="list-style-type: none"> 1. Static water level measured = 17,28 m (from the mouth of the level measuring tube) 2. Duration of water abstraction - 24 hours. Stabilization of the water level was achieved at a drop of 19.16 m at the 90th minute at stabilized flow rate Q=0,66 l/sec. and continued 24 hours 3. Tracking water level recovery: 600 min. <p>(from 08:00 to 22:15 on 26.05.2020)</p>	Protocol #4 and Records
May 2020	<p align="center">Three-stage hydraulic test</p> <p align="center">Q₁=0,66 l/sec; Q₂=1,0 l/sec and Q₃=2,666 l/sec.</p> <ol style="list-style-type: none"> 1. Static water level measured = 17,28 m (from the mouth of the level measuring tube) 2. Duration of test - 3 hours. Full stabilization of the water level was not achieved: For Q₁=0,66 l/sec - S₁= 2,62 m; For Q₂=1,0 l/sec- S₂ = 4,30m and for Q₃=2,666 l/sec S₃= 11,21 m 3. Tracking water level recovery: 855 min. <p>(from 12:00 on 28.05.2020 to 02:15 on 29.05.2020)</p>	Protocol #5 and Records
May 2020	<p align="center">Experimental water abstraction with the maximum flow rate of the pump equipment</p> <p align="center">Q_{max}.=2,666 l/sec for 357 min.</p> <ol style="list-style-type: none"> 1. Static water level measured = 17,28 m (from the mouth of the level measuring tube) 2. Duration of water abstraction - 357 min. Stabilization of the water level was achieved at a drop of 19.16 m at the 357th minute at stabilized flow rate Q=2,666 l/sec , after that it stopped and the water level recovery tracking started. 3. Tracking water level recovery: 855 min. <p>(from 13:57 on 27.05.2020 to 04:12 on 28.05.2020)</p>	Protocol #6 and Records

The underground water has also been tested twice - the first time after the construction and cleaning of the well by the construction contractor in December 2019 and the second time after the test filtration activities were carried out in May 2020.

The chemical analysis of the groundwater samples 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 No.1 of 10.10.2007 on the exploration, use and protection of groundwater.

On 31.07.2020 the acceptance commission inspected and accepted on site the facility and after this the new facility was registered in West Aegean River Basin Directorate - Blagoevgrad.

The on-site inspection was carried out by representatives of the Control Directorate of the West Aegean River Basin Directorate - Blagoevgrad of the Ministry of Environment and Water together with representatives of Petrich Municipality.

The construction of new built facility - the tube well TK-1, is accepted.

At the time of the inspection, the static water level was measured, which is 17.41 from the mouth of the level measuring tube. An experimental water extraction was also carried out with a flow rate of 2.66 l/sec and with duration of 20 minutes. The constitutive protocol was signed without remarks.

To measure the volumes of water used, a "Belasitsa" water meter with serial number 19036532 was installed and with a reading at the time of the inspection of 00051 m³, which is also sealed with the seal of the Ministry of Environment and Water and a log is kept at the site for recording monthly reports of the readings of water meter.

Up to now, the reported amount of water is 8120 m³.

On site measurements before and after the installation of the new facility are included in reports - all data received before the installation in order the Permit No. 1520106/25.09.2019 for water abstraction from groundwater through a new ground water facility under the Water Act to be issued and all data after the installation in order the new facility to be accepted from representatives of the Control Directorate of the West Aegean River Basin Directorate - Blagoevgrad of the Ministry of Environment and Water.