# GROUNDWATER SURVEY REPORT 2022 ARMENIA





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EU4Environment in Eastern Partner Countries: Water Resources and Environmental Data (ENI/2021/425-550)

# **ABOUT THIS REPORT**

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# ABOUT EU4ENVIRONMENT – WATER RESOURCES AND ENVIRONMENTAL DATA

This Programme aims at improving people's wellbeing in EU's Eastern Partner Countries and enabling their green transformation in line with the European Green Deal and the Sustainable Development Goals (SDGs). The programme's activities are clustered around two specific objectives: 1) support a more sustainable use of water resources and 2) improve the use of sound environmental data and their availability for policy-makers and citizens. It ensures continuity of the Shared Environmental Information System Phase II and the EU Water Initiative Plus for Eastern Partnership programmes.

The programme is implemented by five Partner organisations: Environment Agency Austria (UBA), Austrian Development Agency (ADA), International Office for Water (OiEau) (France), Organisation for Economic Co-operation and Development (OECD), United Nations Economic Commission for Europe (UNECE). The programme is principally funded by the European Union and co-funded by the Austrian Development Cooperation and the French Artois-Picardie Water Agency based on a budget of EUR 12,75 million (EUR 12 million EU contribution). The implementation period is 2021-2024.

https://eu4waterdata.eu

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# List of abbreviations

#### **Country Specific Abbreviations Armenia**

EMIC ..... Environmental Monitoring and Information Centre (until January 2020)

- HMC..... Hydrogeological Monitoring Centre (since February 2020)
- MNP ..... Ministry of Nature Protection
- RA ..... Republic of Armenia
- SCWS..... State Committee on Water Systems
- SWCIS..... State Water Cadastre Information System of Armenia
- WRMA ..... Water Resources Management Agency

# **Key messages**

The Northern RBD includes the river basins of Debed, Aghstev, Hakhum, Tavush, Khndzorut with their tributaries and covers an area of 7185 km<sup>2</sup>.

The main goal of the survey is the development of the national network of groundwater monitoring in the Northern RBD of the Republic of ARmenia. Currently, there are only 2 observation posts in the Northern RBD.

Taking into consideration the scarcity of hydrogeological monitoring observation points in Northern RBD, under the initiative of EU4Enviroment, a survey covering 30 groundwater springs for quantitative and qualitative studies in 2022 was accomplished. Finally, 13 monitoring sites were recommended for inclusion into the national groundwater monitoring network.

# **Executive Summary**

This report comprises a summary of a groundwater chemical survey, which took place in September 2022 in the Northern River Basin District (RBD) of Armenia. In the survey 30 wells and springs were sampled, aiming at finding appropriate, already existing wells and springs which could be candidates for their integration into the national groundwater monitoring network.

Each sample was analyzed for a comprehensive number of chemical substances and indicators. The groundwater chemical survey 2022 covered the following activities:

- Development of the survey manual;
- Field survey conducted by the hydrogeologists of the Hydrometeorology and Monitoring Centre (HMC) (29 August – 2 September 2022);
- Laboratory analyses incl. laboratory reports by the HMC laboratory;
- Interpretation of the results by the HMC hydrogeologists;
- Preparation of this groundwater survey report.

The newly gathered data for a comprehensive set of parameters acts as gap filling and as a kind of screening (surveillance monitoring) contributing to the characterisation of groundwater bodies and the risk and status assessment. All results and documents that were elaborated under this contract are public and finally accessible at the EU4Env Water and Data project website (https://eu4waterdata.eu/en/).

# 1. Summary of the survey 2022

# 1.1. General geological-hydrogeological conditions of the Northern RBD

The Northern river basin district (RBD) of Armenia includes the Debed, Aghstev, Hakhum, Tavush, Khndzorut and Voskepar river basins and together with their tributaries occupies an area of about 7,185 km2.

The area is mountainous. The steep mountain slopes, narrow and canyon-like river valleys, intermountain depressions with a limited surface area, large differences in hypsometric marks (430 m Debedavan, 3,081 m Maymekh L.) are characteristic of long-term average annual air temperatures (-2.5–12.3 °C), average annual precipitation (490–900 mm and more) and evaporation (300–500 mm).

Pre-Paleozoic and Meso-Cenozoic metamorphic, sedimentary, volcanic - sedimentary, volcanic, intrusive and volcanic rocks participate in the geological structure. Quaternary - modern lacustrine origin and loose debris and clay formations are common in intermountain hollows.

The mentioned rocks are represented by shales, limestones, sandstones, tufobreccias, tufosandstones, porphyrites, granitoids, andesites, basalts, tuffs and other varieties.

River boulders, gravel, granular sands, clays, loams are common in intermountain depressions and river valleys. Eluvial-deluvial sandy loams, loams and boulders of small thickness (up to 5 m) are widespread in the hillsides.

The structural structure, lithological composition, porosity and fracture of the mountain rocks in the vertical area together with the frequently changing complex bioclimatic conditions determine the complex hydrogeological conditions of the northern RBD.

In the conditions of cut relief, the main part of groundwater is discharged to the surface of the earth in the form of concentrated (springs) and scattered, linear, drainage flow.

In the Debed river basin, the waters of lacustrine formations formed in volcanic rocks and intermountain depressions are used for drinking water supply, and in Aghstev and other river basins, ground water of limestone formations, various tuffogens, granitoid rocks and pebble formations of narrow river valleys are used for drinking water supply.

# 1.2. Recommended observation points for improving groundwater monitoring

In the Northern RBD, in the Aghstevi river basin, there are currently 2 monitoring observation points, which are highly insufficient for the assessment of changes in the qualitative and quantitative indicators of groundwater in the described RBD.

In order to choose the right monitoring observation points, before the field research, we collected and summarized archival materials. From the 73 typical wells collected, 30 observation points were selected for field research, a brief description of which is given in Table 1.

It is planned to include at least 13 of the 30 observation points studied during the field research in the monitoring network, taking into account:

- 1. the presence of 13 water bodies separated in the monitoring network,
- 2. natural protection of observation points from possible pollution, and
- 3. possible mild changes of observed hydrodynamic parameters (flow, level).

# 2. General aspects

Date of survey	29. Aug–02. Sep 2022
Location	The survey is performed in the Northern River Basin District of Armenia
Overall responsibility.	Mr Harutyun Yeremyan, HMC
Scope of survey	In total 30 monitoring sites. The list of the monitoring sites and the passports of the sites are attached as Annex.
Objective of survey	To provide input for the delineation of groundwater bodies, the risk, status and trend assessment; To identify wells and springs which could be candidates for the upcoming monitoring network; To receive a first impression about geogenic background and effects of human pressures and impacts.
Sampling team	Ms Armine Hakobyan, Mr Gegham Muradyan Mr Harutyun Yeremyan (all HMC)

# **2.1.** Measured and analysed substances

#### Table 1: Field parameters – measured by the HMC hydrogeologists

Parameter/Indicator	Unit	Measurement device
Water temperature	°C	field device
Electrical conductivity	μS/cm	field device
Dissolved oxygen	mg/l	field device
pH value		field device / test strip
Odour		none
Colour		none
Taste		none
Turbidity		None
Depth to groundwater table	m	Field device
Water discharge	I/s	none

#### Table 2: Parameters analysed at HMC laboratory

Major ions	
Calcium Ca	mg/l
Magnesium Mg	mg/l
Sodium Na	mg/l
Potassium K	mg/l
Chloride Cl	mg/l
Nitrate NO3	mg NO3/I
Sulphate SO4	mg SO4/l
Hydrogen carbonate HCO3	mg/l
Total mineralisation	mg/l

Dissolved metals	
Iron Fe	mg/l
Manganese Mn	mg/l
Aluminium Al	mg/l
Arsenic As	mg/l
Lead Pb	mg/l
Cadmium Cd	mg/l
Chromium Cr	mg/l
Copper Cu	mg/l
Nickel Ni	mg/l
Zinc Zn	mg/l

# 2.2. Sampled wells and springs - 2022

Taking into consideration the scarcity of hydrogeological monitoring observation points in the Northern RBD, under the initiative of EU4Enviroment, in 2022 a survey of 30 groundwater springs was performed. Of the 30 points studied, 21 are springs, 7 are flowing wells, and 2 are ground wells.

During the field survey, the location, type, hydrogeological conditions, some physical and chemical indices, water consumption (level), temperature, purpose of use and other parameters were described. Water samples were taken for laboratory chemical analysis.

The present report briefly describes the sampled springs by sampling numbers. Sampling protocols of groundwater springs (Annex 1), as well as the results of laboratory chemical analysis (Annex 2) are presented in the annexes.

Taking into consideration the geological-hydrogeological conditions of the groundwater springs, the features of feeding, accumulation and discharge, 13 observation points are proposed to be include in the hydrogeological monitoring network of Northern River Basin District. They are the following sites: N1, N2, N6, N10, N11, N12, N13, N14, N15, N20, N25, N27 and N29.

#### 2.2.1. Site N 1 (flowing well, Lernavan village)

The flowing well is located in the administrative territory of Lernavan village of Lori region. The well was drilled in 1969. The depth is 188 m. Inner diametr of the well is 168 mm. The aquifer is set up at a depth of 160–178 m and is presented by sandstone.

Water level is at an altitude of 1.1 m above the Earth's surface. The discharge of the well is 0.5 l/s, water temperature is 19.9°C, the total mineralization is 499.48 mg/l, dissolved oxygen 5.99 mg/l, electrical conductivity is 545  $\mu$ S/cm (at 25°C), pH is 7.21.

The water flows into the river and is used for irrigation. The nitrate concentration is 10 mg/l, which does not exceed the drinking water norm (45 mg/l) approved by the Armenian Ministry of Health.

#### 2.2.2. Site N 2 (flowing well, Mets Parni village)

The flowing well is located in the administrative territory of Mets Parni village of Lori region. The well was drilled in years of 1968–1969. The depth is 188.6 m. Inner diametr of the well is 168 mm. The aquifer is presented by pebble-boulders gravel and sand.

Water level is at an altitude of 0.65 m above the Earth's surface. The discharge of well is 0.33 l/s, water temperature is 12.6°C, the total mineralization is 345.86 mg/l, dissolved oxygen 6.79 mg/l, electrical conductivity is 395  $\mu$ S/cm (at 25°C), pH-value is 7.95.

The well is utilized for drinking water supply by several houses. The nitrate concentration is 18.18 mg/l, which does not exceed the Armenian drinking water norm (45 mg/l).

#### 2.2.3. Site N 3 ("Qung" spring, Katnadjur village)

The spring is located in the administrative territory of Katnadjur village of Lori region, above the cemetery. The outflow of water is observed from tuffogenic rocks. The spring is not captured.

The discharge of the spring is 0.7 l/s, water temperature is 10.4°C, the total mineralization is 253.99 mg/l, dissolved oxygen 7.39 mg/l, electrical conductivity is 395  $\mu$ S/cm (at 25°C), pH-value is 7.92.

The well is utilized for drinking water supply by several houses. The nitrate concentration is 4.36 mg/l, which does not exceed the Armenian drinking water norm (45 mg/l).

#### 2.2.4. Site N 4 (flowing well, Geghasar village)

The flowing well is located in the administrative territory of Geghasar village of Lori region. The well was drilled in years of 1967–1969. The depth is 30 m. Inner diametr of well is 150 mm. The aquifer is presented by pebble-boulders.

Water level is at an altitude of 0.15 m above the Earth's surface. The discharge of well is 0.6 l/s, water temperature is 14.0°C, the total mineralization is 364.9 mg/l, dissolved oxygen 5.87 mg/l, electrical conductivity is 419  $\mu$ S/cm (at 25°C), pH-value is 7.87.

The well is utilized for drinking water supply. The nitrate concentration is 21.57 mg/l, which does not exceed the Armenian drinking water norm (45 mg/l).

#### 2.2.5. Site N 5 (spring, Nor Khachakap village)

The spring is located in the administrative territory of Nor Khachakap village of Lori region, above the cemetery. The outflow of water is observed from porphyritic rocks. The spring is captured, but damaged.

The discharge of the spring is 0.2 l/s, water temperature is  $11.2^{\circ}$ C, the total mineralization is 302.9 mg/l, dissolved oxygen 5.52 mg/l, electrical conductivity is  $343 \mu$ S/cm (at  $25^{\circ}$ C), pH-value is 7.96.

The well is utilized for drinking water supply by several houses. The nitrate concentration is 13.96 mg/l, which does not exceed the Armenian drinking water norm (45 mg/l).

#### 2.2.6. Site N 6 (spring, Darbas village)

The spring is located in the administrative territory of Darbas village of Lori region, near the cemetery. The outflow of water is observed from volcanic- sedimentary rocks. The spring is captured.

The discharge of the spring is 0.22 l/s, water temperature is 12.4°C, the total mineralization is 474.9 mg/l, dissolved oxygen 7.11 mg/l, electrical conductivity is 560  $\mu$ S/cm (at 25°C), pH-value is 7.8.

The water is used for livestock supply. The nitrate concentration is 40.19 mg/l, which does not exceed the Armenian drinking water norm (45 mg/l).

# 2.2.7. Site N 7 ("Avagenc" spring, Darbas village)

The spring is located in the administrative territory of Darbas village of Lori region, in the yard of Gulnaz Zaqaryan. The outflow of water is observed from volcanic- sedimentary rocks. The spring is captured.

The discharge of the spring is 0.18 l/s, water temperature is  $11.4^{\circ}$ C, the total mineralization is 592.14 mg/l, dissolved oxygen 4.87 mg/l, electrical conductivity is 725  $\mu$ S/cm (at 25°C), pH-value is 7.5.

The spring is used for drinking water supply. Spring water is polluted by anthropogenic impacts from the settlement; the nitrate concentration exceeds 47 mg/l, which is above the drinking water norm (45 mg/l).

# 2.2.8. Sample N 8 (spring, Saratovka village)

The spring is located in the administrative territory of Saratovka village of Lori region. The spring is located the right side of the river. The outflow of water is observed from volcanic- sedimentary rocks. The spring is captured.

The discharge of the spring is 0.19 l/s, water temperature is 10.4°C, the total mineralization is 403,8 mg/l, dissolved oxygen 5.55 mg/l, electrical conductivity is 480 µS/cm (at 25°C), pH-value is 7.61.

The water is not used. The nitrate is 7.7 mg/l, which does not exceed the drinking water norm.

# 2.2.9. Site N 9 (flowing well, Saratovka village)

The flowing well is located in the administrative territory of Saratovka village of Lori region. The well is located the left side of the river. The well was drilled in years of 1967–1970. The depth is 100 m. Inner diametr of well is 168 mm. The aquifer is presented by volcanic rocks.

Water level is at an altitude of 1.2 m above the Earth's surface. The discharge of the well is 0.1 l/s, water temperature is 13.4°C, the total mineralization is 1,074.63 mg/l, dissolved oxygen 1.65 mg/l, electrical conductivity is 1,276  $\mu$ S/cm (at 25°C), pH-value is 7.33.

The water is not used. The nitrate concentration is 0.92 mg/l, which is below the drinking water norm.

#### 2.2.10. Sample N 10 ("Xarlanov" or "Garniki" spring, Saratovka village)

The spring is located in the administrative territory of Saratovka village of Lori region.

The outflow of water is observed from volcanic rocks. The spring is captured.

The discharge of the spring is 8.5 l/s, water temperature is 8.9°C, the total mineralization is 162.9mg/l, dissolved oxygen 6.17mg/l, electrical conductivity is 194 μS/cm (at 25°C), pH-7.81.

The water is not used. The nitrate concentration is 5.69mg/l, which does not exceed the drinking water norm (45 mg/l) approved by the RA Ministry of Health.

# 2.2.11. Sample N 11 (flowing well, Tashir city)

The flowing well is located in the administrative territory of Tashir city of Lori region. The well was drilled in early 1970s. The depth is 115 m. Inner diametr of the well is 230 mm. The aquifer is presented by volcanic rocks.

Water level is at an altitude of 1.3m above the Earth's surface. The discharge of the well is 4.0 l/s, water temperature is 10.7°C, the total mineralization is 535.5 mg/l, dissolved oxygen 4.86 mg/l, electrical conductivity is 646  $\mu$ S/cm (at 25°C), pH-value is 7.4.

The water is not used and it flows into the Tashir River. The nitrate concentration is 36.6 mg/l, which does not exceed the drinking water norm (45 mg/l) approved by the RA Ministry of Health.

#### 2.2.12. Sample N 12 (flowing well, Getavan/Stepanavan village)

The flowing well is located in the administrative territory of Getavan/Stepanavan village of Lori region. The well was drilled in early 1970s. The depth is 93 m. Inner diametr of well is 219 mm. The aquifer is presented by volcanic rocks.

Water level is at an altitude of 2.6 m above the Earth's surface. The discharge of well is 60.0 l/s, water temperature is 8.0°C, the total mineralization is 104.7 mg/l, dissolved oxygen 6.34 mg/l, electrical conductivity is 129  $\mu$ S/cm (at 25°C), pH-value is 7.91.

The water is not used, flows into the river. The nitrate concentration is 3.19 mg/l.

#### 2.2.13. Sample N 13 (flowing well, Getavan/Stepanavan village)

The flowing well is located in the administrative territory of Getavan/Stepanavan village of Lori region.

The well was drilled in early 1970s. The depth is 85 m. Inner diametr of the well is 219 mm. The aquifer is presented by volcanic rocks.

Water level is at an altitude of 1.7 m above the Earth's surface. The discharge of the well is 14.0 l/s, water temperature is 9.1°C, the total mineralization is 116.67 mg/l, dissolved oxygen 6.25 mg/l, electrical conductivity is 140  $\mu$ S/cm (at 25°C), pH-value is 7.97.

The water is not used, flows into the river. The nitrate concentration is 2.91 mg/l.

# 2.2.14. Sitee N 14 ("Lusaghbyur "spring, Lori Berd village)

The spring is located in the administrative territory of Lori Berd village of Lori region. The outflow of water is observed from volcanic rocks. The spring is not captured.

The discharge of the spring is 13 l/s, water temperature is 9.5°C, the total mineralization is 158.59 mg/l, dissolved oxygen 5.93 mg/l, electrical conductivity is 194  $\mu$ S/cm (at 25°C), pH-value is 7.84.

The water is not used. The nitrate concentration is 4.89 mg/l.

#### 2.2.15. Site N 15 ("Agaraki" spring, Lori Berd village)

The spring is located in the administrative territory of Agarak village of Lori region. The outflow of water is observed from volcanic rocks. The spring is not captured.

The discharge of the spring is 5.5 l/s, water temperature is 9.8°C, the total mineralization is 212 mg/l, dissolved oxygen 7.8 mg/l, electrical conductivity is 267  $\mu$ S/cm (at 25°C), pH-value is 8.2.

The water is not used. The nitrate concentration is 8.47mg/l.

# 2.2.16. Sitle N 16 ("Kendanarar" spring, Odzun village)

The spring is located in the administrative territory of Odzun village of Lori region. The outflow of water is observed from volcanic rocks. The spring is captured.

The discharge of the spring is 0.22 l/s, water temperature is 10.4°C, the total mineralization is 135.1 mg/l, dissolved oxygen 7.58 mg/l, electrical conductivity is 179  $\mu$ S/cm (at 25°C), pH-value is 8.07.

The spring is utilized for drinking water supply. The nitrate concentration is 4.19 mg/l.

#### 2.2.17. Site N 17 ("Vardumyanneri" spring, Madan village)

The spring is located in the administrative territory of Madan village of Lori region. The outflow of water is observed from volcanic- sedimentary rocks. The spring is captured.

The discharge of the spring is 0.15 l/s, water temperature is 13.2°C, the total mineralization is 1,341.2 mg/l, dissolved oxygen 5.55 mg/l, electrical conductivity is 1,581  $\mu$ S/cm (at 25°C), pH-value is 7.16.

The spring is near the cemetery, and utilized for drinking water supply. Only 15 people live in the village. Spring water is polluted by anthropogenic inputs of the settlement, nitrate concentration exceeds 176 mg/l, which exceeds the drinking water norm (45 mg/l) approved by the RA Ministry of Health.

# 2.2.18. Site N 18 ("Kakali taki" spring, Shamlugh village (Bendik district))

The spring is located in the administrative territory of Shamlugh village (Bendik district) of Lori region. The outflow of water is observed from volcanic- sedimentary rocks. The spring is captured.

The discharge of the spring is 0.19 l/s, water temperature is 11.4°C, the total mineralization is 643.3 mg/l, dissolved oxygen 5.22 mg/l, electrical conductivity is 748 µS/cm (at 25°C), pH-value is 7.35.

The spring is near the cemetery, and utilized for drinking water supply. Only 15–20 people live in the village. The nitrate concentration is 39.5 mg/l.

#### 2.2.19. Site N 19 (spring, Tumanyan village (Kobayr Monastery))

The spring is located in the administrative territory of Tumanyan village (Kobayr Monastery) of Lori region. The outflow of water is observed from volcanic rocks. The spring is not captured. The outflow of the spring is through the church wall and is considered Holy water.

The discharge of the spring is 0.01 l/s, water temperature is 14.1°C, the total mineralization is 696.65 mg/l, dissolved oxygen 6.45 mg/l, electrical conductivity is 855  $\mu$ S/cm (at 25°C), pH-value is 8.13.

The nitrate concentration is 31.5 mg/l, which does not exceed the drinking water norm (45 mg/l).

#### 2.2.20. Site N 20 (spring, Tumanyan village)

The spring is located in the administrative territory of Tumanyan village of Lori region, in the canyon of Kobayr. The outflow of water is observed from volcanic rocks. The spring is captured.

The discharge of the spring is 0.5 l/s, water temperature is 16.0°C, the total mineralization is 693.48 mg/l, dissolved oxygen 7.78 mg/l, electrical conductivity is 820  $\mu$ S/cm (at 25°C), pH-value is 7.81.

The spring is utilized for drinking water. The nitrate concentration is 32.2 mg/l.

#### 2.2.21. Site N 21 (spring, Dsegh village)

The spring is located in the administrative territory of Dsegh village of Lori region. The outflow of water is observed from volcanic- sedimentary rocks. The spring is captured, but needs repair.

The discharge of the spring is 0.15 l/s, water temperature is 13.0°C, the total mineralization is 433.4 mg/l, dissolved oxygen 7.17 mg/l, electrical conductivity is 472  $\mu$ S/cm (at 25°C), pH-value is 8.48.

The spring is utilized for drinking water by «Shakaryan Rancho» LTD. The nitrate concentration is 0.94 mg/l, which does not exceed the drinking water norm (45 mg/l).

#### 2.2.22. Site N 22 (ground well, Margahovit village)

The well is located in the administrative territory of Margahovit village of Tavush region, in the yard of Arsen Bekchyan. The well was drilled in 2020. The depth is 30 m. Inner diametr of well is 124 mm. The aquifer is presented by volcanic- sedimentary rocks.

Water level is at an altitude of 11.92 m bellow the Earth's surface. The discharge of well is 0.06 l/s, water temperature is 9.6°C, the total mineralization is 416.48 mg/l, dissolved oxygen 5.12 mg/l, electrical conductivity is 460  $\mu$ S/cm (at 25°C), pH-value is 7.12.

The well is utilized for drinking and irrigation water by the owner. Spring water is polluted by anthropogenic input of the settlement, nitrate concentration exceeds 50.0 mg/l.

# 2.2.23. Site N 23 ("Artzruni" spring, Dilijan city)

The spring is located in the administrative territory of Dilijan city of Tavush region, in the yard of Arshak Markosyan. The outflow of water is observed from volcanic- sedimentary rocks. The spring is captured, but needs repair.

The discharge of the spring is 0.01 l/s, water temperature is 13.4°C, the total mineralization is 812.3 mg/l, dissolved oxygen 5.59 mg/l, electrical conductivity is 500  $\mu$ S/cm (at 25°C), pH-value is 7.49.

The spring is utilized for drinking water by the owner. Spring water is polluted by anthropogenic inputs of the settlement, nitrate concentration exceeds 45.0 mg/l.

#### 2.2.24. Site N 24 ("Qor" spring, Dilijan city)

The spring is located in the administrative territory of Dilijan city of Tavush region, at Aygestan street in Shamaghyan district. The outflow of water is observed from volcanic- sedimentary rocks. The spring is captured.

The discharge of the spring is 0.05 l/s, water temperature is 13.7°C, the total mineralization is 389.3 mg/l, dissolved oxygen 6.2 mg/l, electrical conductivity is 400  $\mu$ S/cm (at 25°C), pH-value is 7.52.

The spring is utilized for drinking water and livestock supply. The nitrate concentration is 22.0 mg/l.

#### 2.2.25. Site N 25 ("Shnqar" spring, Hovq village)

The spring is located in the administrative territory of Hovq village of Tavush region. The outflow of water is observed from volcanic- sedimentary rocks.

The discharge of the spring is 0.3 l/s, water temperature is 11.4°C, the total mineralization is 373.8 mg/l, dissolved oxygen 8.03 mg/l, electrical conductivity is 427 µS/cm (at 25°C), pH-value is 7.6.

The spring is not captured and not used. The nitrate concentration is 10.5 mg/l.

#### 2.2.26. Site N 26 ("Dudinants" spring, Gandzaqar village)

The spring is located in the administrative territory of Gandzaqar village of Tavush region, in the yard of Samvel Hovhannisyan. The outflow of water is observed from volcanic- sedimentary rocks. The spring is not captured and flows into the river.

The discharge of the spring is 0.08 l/s, water temperature is 13.4°C, the total mineralization is 512.5 mg/l, dissolved oxygen 5.81 mg/l, electrical conductivity is 593 µS/cm (at 25°C), pH-value is 7.27.

The spring is not used. The nitrate concentration is 26.6 mg/l.

# 2.2.27. Site N 27 ("Zani" spring, Lusadzor village)

The spring is located in the administrative territory of Luszdzor village of Tavush region. The outflow of water is observed from volcanic- sedimentary rocks. The spring is captured.

The discharge of the spring is 0.4 l/s, water temperature is 13.5°C, the total mineralization is 622.4 mg/l, dissolved oxygen 6.69 mg/l, electrical conductivity is 690 µS/cm (at 25°C), pH-value is 7.43.

The spring is utilized for drinking water supply. The nitrate concentration is 12.4 mg/l.

#### 2.2.28. Site N 28 (ground well, Lusadzor village)

The flowing well is located in the administrative territory of Lusadzor village of Tavush region. The well is located in the area of Vigen Nerkararyan. The well was drilled in 2019. The depth is 5 m. Inner diametr of well is 400 mm. The aquifer is presented by sedimentary rocks.

Water level is at an altitude of 3.6 m bellow the Earth's surface. The discharge of well is 5.3 l/s, water temperature is 15.0°C, the total mineralization is 791.8 mg/l, dissolved oxygen 5.13 mg/l, electrical conductivity is 840  $\mu$ S/cm (at 25°C), pH-value is 7.3.

The well is utilized for fish farming. The nitrate concentration is 22.7 mg/l.

#### 2.2.29. Site N 29 ("Gyol" spring, Aygehovit village)

The spring is located in the administrative territory of Aygehovit village of Tavush region. The outflow of water is observed from volcanic- sedimentary rocks. The spring is captured.

The discharge of the spring is 1.2 l/s, water temperature is 15.1°C, the total mineralization is 844.5 mg/l, dissolved oxygen 5.91 mg/l, electrical conductivity is 925  $\mu$ S/cm (at 25°C), pH-value is 7.59.

Spring water is polluted by anthropogenic inputs of the settlement, the nitrate concentration exceeds 46.0 mg/l.

#### 2.2.30. Site N 30 ("Yolomi" spring, Vazashen village)

The spring is located in the administrative territory of Vazashen village of Tavush region. The outflow of water is observed from volcanic-sedimentary rocks. The spring is captured.

The discharge of the spring is 0.05 l/s, water temperature is 14.8°C, the total mineralization is 1,140.7 mg/l, dissolved oxygen 4.56 mg/l, electrical conductivity is 1,210  $\mu$ S/cm (at 25°C), pH-value is 7.09.

The spring is temporary, utilized for drinking water supply. The nitrate concentration is 7.3 mg/l.

N	Region	Location of observation point	Type of observation point	Coordinates	Water-bearing layer of RBD /geological index	code and number of RBD	Consum ption, l/s	Temp ℃	Total Minerali- zation, mg/l	Total Hard- ness	рН	Recomme nded (+)
1	Lori	Lernavan	Flowing borehole	X=40° 47' 01.2" Y=44° 09' 57.7" H= 1746	fragmented tufo- breccias £2	6G-1	0.5	19.9	0.5	5.83	7.3	+
2	Lori	Mets Parni	Flowing borehole	X=40° 50′ 38.1″ Y=44° 06′ 27.5″ H= 1673	pebble-boulders gravel, sand Q	6G-2	0.33	12.6	0.35	3.31	7.9	+
3	Lori	Katnadjur	spring («Qung»)	X=40° 49' 01.5" Y=44° 08' 01.2" H= 1798	tuffogenic rocks ₽2	6G-3	0.7	10.4	0.25	2.69	8.0	
4	Lori	Geghasar	Flowing borehole	X=40° 51' 01.9" Y=44° 10' 37.7" H= 1627	pebble-boulders Q	6G-2	0.6	14.0	0.36	3.23	7.9	
5	Lori	Nor Khachakap	spring	X=40° 49' 36.5" Y=44° 21' 11.5" H= 1660	porphyritic rocks P2	6G-3	0.2	11.2	0.3	2.87	7.9	
6	Lori	Darbas	spring	X=40° 50' 05.1" Y=44° 25' 25.0" H= 1384	volcanic- sedimentary rocks N1	6G-4	0.22	12.4	0.47	4.25	7.9	+
7	Lori	Darbas	spring («Avagenc»)	X=40° 50' 06.3" Y=44° 25' 37.0" H= 1360	volcanic- sedimentary rocks N <sub>1</sub>	6G-4	0.18	11.4	0.59	6.1	7.7	
8	Lori	Saratovka	spring	X=41°04′30.6″ Y=44°18′39.5″ H= 1481	volcanic rocks (bazalt) N2	6G-5	0.19	10.4	0.4	4.46	7.7	
9	Lori	Saratovka	Flowing borehole	X=41°04′29.7″ Y=44°18′42.0″ H= 1457	volcanic N <sub>2</sub>	6G-5	0.1	13.4	1.07	11.09	7.6	
10	Lori	Saratovka	spring («Kharlanov»)	X=41°04′51.7″ Y=44°18′02.9″ H= 1488	volcanic rocks N <sub>2</sub>	6G-5	8.5	8.9	0.16	1.65	7.7	+

# Table 3: Monitoring sites subject to the GW survey 2022. Recommended sites for inclusion into the GW monitoring network are indicated.

# 20 GROUNDWATER SURVEY REPORT 2022 - ARMENIA

N	Region	Location of observation point	Type of observation point	Coordinates	Water-bearing layer of RBD /geological index	code and number of RBD	Consum ption, l/s	Temp ℃	Total Minerali- zation, mg/l	Total Hard- ness	рН	Recomme nded (+)
11	Lori	Tashir	Flowing borehole	X=41°06′07.6″ Y=44°17′56.8″ H=1481	volcanic N <sub>2</sub>	6G-5	4.0	10.7	0.53	6.03	7.8	+
12	Lori	Getavan	Flowing borehole	X=41°02′03.0″ Y=44°21′12.8″ H= 1421	volcanic N <sub>2</sub>	6G-6	60.0	8.0	0.1	1.01	7.9	+
13	Lori	Stepanavan	Flowing borehole	X=41°02′01.5″ Y=44°21′12.4″ H= 1403	volcanic N <sub>2</sub>	6G-7	14.0	9.1	0.12	1.18	7.7	+
14	Lori	Lori berd	spring «Lusaghbyur»	X=41°00′13.3″ Y=44°25′52.3″ H= 1402	volcanic N <sub>2</sub>	6G-8	13.0	9.5	0.16	1.71	8.2	+
15	Lori	Agarak	spring	X=41°00′10.5″ Y=44°27′48.6″ H=1260	volcanic N <sub>2</sub>	6G-8	5.5	9.8	0.21	2.38	7.9	+
16	Lori	Odzun	spring («Kendanarar» )	X=41°03′6.3″ Y=44°35′26.5″ H= 1282	volcanic N <sub>2</sub>	6G-8	0.22	11.2	0.13	1.54	7.9	
17	Lori	Madan	spring «Vardumyann eri»	X=41°07′29.2″ Y=44°39′09.6″ H= 1099	volcanic- sedimentary rocks J	6G-9	0.15	13.2	1.34	16.45	7.3	
18	Lori	Shamlugh (Bendik )	spring «Kakali taki»	X=41° 09' 22.7" Y=44° 43' 03.5" H= 1217	volcanic- sedimentary rocks J	6G-9	0.19	11.4	0.64	7.79	7.8	
19	Lori	Tumanyan	spring	X=41°00′17.9″ Y=44°38′05.4″ H= 910	volcanic N <sub>2</sub>	6G-10	0.01	14.1	0.7	4.89	8.2	
20	Lori	Tumanyan	spring	X=41° 00' 28.3" Y=44° 38' 10.4" H= 937	volcanic N <sub>2</sub>	6G-10	0.5	16.0	0.69	4.75	8.5	+
21	Lori	Dsegh	spring	X=40° 56' 40.0" Y=44° 40' 57.1" H= 914	volcanic- sedimentary rocks J	6G-11	0.15	13.0	0.43	5.43	8.3	

N	Region	Location of observation point	Type of observation point	Coordinates	Water-bearing layer of RBD /geological index	code and number of RBD	Consum ption, l/s	Temp °C	Total Minerali- zation, mg/l	Total Hard- ness	рН	Recomme nded (+)
22	Tavush	Margahovit	well	X=40° 43' 59.2" Y=44° 41' 30.5" H= 1737	volcanic- sedimentary rocks N <sub>1</sub>	6G-12	0.06	9.6	0.42	4.90	7.3	
23	Tavush	Dilijan	spring «Artsruni»	X=40 <sup>°</sup> 44' 29.1" Y=44 <sup>°</sup> 49' 47.7" H= 1345	volcanic- sedimentary rocks N <sub>1</sub>	6G-12	0.01	13.4	0.81	6.55	7.7	
24	Tavush	Dilijan /Shamaghy an/	spring («Qor spring»)	X=40 <sup>o</sup> 45' 0.01" Y=44 <sup>o</sup> 49' 45.6" H= 1465	volcanic- sedimentary rocks N <sub>1</sub>	6G-12	0.05	13.7	0.39	4.75	7.8	
25	Tavush	Hovq	spring («Shnqar»)	X=40° 47' 30.7" Y=45° 03' 43.4" H= 881	volcanic- sedimentary rocks J	6G-12	0.3	11.4	0.37	4.79	7.7	+
26	Tavush	Gandzaqar	spring («Dudinyants»)	X=40 <sup>o</sup> 50' 47.3" Y=45 <sup>o</sup> 09' 30.3" H= 894	volcanic- sedimentary rocks J	6G-12	0.08	13.4	0.51	6.41	7.6	
27	Tavush	Lusadzor	spring («Zani»)	X=40 <sup>o</sup> 56' 03.3" Y=45 <sup>o</sup> 08' 25.3" H= 706	volcanic- sedimentary rocks J	6G-12	0.4	13.5	0.62	8.2	8.3	+
28	Tavush	Lusadzor	ground well	X=40° 56' 22.8" Y=45° 09' 47.7" H= 594	sedimentary Q	6G-13	5.3	15.0	0.79	8.75	8.3	
29	Tavush	Aygehovit	spring («Gyoli»)	X=40 <sup>o</sup> 58' 41.7" Y=45 <sup>o</sup> 14' 53.7" H= 709	volcanic- sedimentary rocks J	6G-12	1.2	15.1	0.84	8.71	8.2	+
30	Tavush	Vazashen	spring («Yolomi»)	X=40 <sup>°</sup> 59' 54.8" Y=45 <sup>°</sup> 17' 52.4" H= 704	volcanic- sedimentary rocks J	6G-12	0.05	14.8	1.14	11.85	7.7	



Table 4: Location of monitoring sites in the Northern RBD in 2022

# Annex I: Sampling protocols composed in Northern RBD in 2022

SAMPLING PRO	TOCOL – GROUNDW				
Project:	"EU4Environment -	Wat	er Resources an	d Environmental Da	ta" Project
General					
	he sampling point:	Arm	nenia, Lori Regio	n, Lernavan village	
The coordinates	of the			CARDA MAR	Charles and the second
sampling point					
X=40 <sup>°</sup> 47' 01.2	"				
$X=40^{\circ} 47^{\circ} 01.2^{\circ}$ Y=44° 09' 57.7'			14.55	A RESTAR	A COMPANY AND A
H = 1746m	and the			ALC MASSIN	and the stand it -
Π- 1/40III		24			Service Survey
		40			The Westmann
		10			
				A show and	in a start and a start and a start a st
Sampling Date:	Aug 29, 2022 T	ime (	hh:mm): 10:00	Sample ID:	N1
Sampling person:	Mr Harutyun Yeremyan		Institute	Ministry of Nature	Protection
	s Armine Hakobyan			eteorology and Mor	
	r Gegham Muradyan		Try ar Office		
Sampling site	N14		Truck of converting		
Sampling site ID:				g site: Flowing we	
Inner diameter o					well head (m): 0.95
	(m below well head): +			vell (m below well h	ead): 188
	ion of the sampling site			well was drilled in	1969.
The water flows	into the river and is us	ed fo	r irrigation		
Sampling				1	
Type of sampling		h pur		Abstraction device	•
Pumping duration			Abstraction r	ate / discharge (I/se	c): 0.5 l/sec
Field parameters	(at the sampling)				
Weather:	Colour:		Turbidity:	Sediment:	Smell:
🗆 sunny	colourless		<u> </u>	<u> </u>	<u> odorless</u>
cloudy	slight		□ low	□ low	🗆 putrid
changing	□ strong		moderate	moderate	🗆 fishy
🗆 rain	🗆 brown		strong	□ strong	chemical
🗆 heat	□ grey		□	□	□ chlor
Measuring device	e:	<u> </u>			
pH-value:	Water temperature	(°C):	Diss	olved oxygen (mg/l	):
7.21	19.9 °C			5.99 mg/l (67.7	%)
	tivity incl. reference ter			• •	25 °C
Sample treatmen				bilised with acid	
Contacts: He	ead of Lernavan admini	strati	ive district: Nels	on Beglaryan (Tel	+37493-161-163)
Execution of the sa	mpling and of the above	works	s according to the	sampling manual and	I the requirements of th
laboratory.			0		
	er:			Date:	

	DTOCOL – GROUND	WATE	R				
Project:	"EU4Environme			Resources	and E	nvironmenta	I Data" Project
General							,
The location of	he sampling point:	Arı	menia,	Lori Region	, Mets	<b>Parni</b> village	
The coordinates	of the	1		I THE			n
sampling point		いる			181		
					1		V Cardina and An
X=40 <sup>0</sup> 50' 38.1"	Des Town		Terre .			There berger	THE REAL BURN
Y=44 <sup>0</sup> 06' 27.5"		2				EL PR	- Althering
H= 1673m		West .				T	
						DA S	
	10 81		-		37 J	N. A.	
	A SAME			S.			
Sampling Date:	Aug 29, 2022	Time	(hh:m	m): 11:00		Sample ID:	N2
Sampling persor		an		Institute: N	Ministr	y of Nature P	rotection
	Ms Armine Hakobyan Mr Gegham Muradyan					ogy and Monit	
Sampling site				l			
			<b>-</b>	-f !!		classic "	
Sampling site ID						Flowing well	
Inner diameter o	of well (mm): 168		Dista	nce betwee	n land	surface and v	vell head (m): 0.45
	(m below well head):			•	-		
	tion of the sampling s					drilled in yea	rs of 1968-1969
	ed for drinking wate	r suppl	y by se	everal house	es.		
Sampling							
Type of sampling	g: 🗆 <b>with bailer</b> 🗆 🗤	with pu					plastic bucket
				straction rat	to / dia	charge (1/cae	
Pumping duration	on (min): -		Ab		le / uis	scharge (i/sec	): 0.33 l/sec
• -	on (min): - s (at the sampling)		Ab		le / us		): 0.33 l/sec
Pumping duratic Field parameter Weather:	· ·	-	Turbi			ment:	): 0.33 l/sec Smell:
Field parameter	s (at the sampling)					ment:	
Field parameter Weather: sunny cloudy	s (at the sampling) Colour: <u>colourless</u> slight		Turbi <u>no</u> low	dity:	Sedin <u>no</u> lov	ment:	Smell: <u>odorless</u> putrid
Field parameter Weather: <u>sunny</u> cloudy changing	s (at the sampling) Colour: <u>colourless</u> slight strong		Turbi <u>no</u> low mo	<b>dity:</b> derate	Sedin <u>no</u> lov mo	ment: v oderate	Smell: <u>odorless</u> putrid fishy
Field parameter Weather: <u>sunny</u> cloudy changing rain	s (at the sampling) Colour: colourless slight strong brown		Turbi <u>no</u> low	<b>dity:</b> derate	Sedin no lov mo str	ment: v oderate ong	Smell: <u>odorless</u> putrid fishy chemical
Field parameter Weather: <u>sunny</u> cloudy changing rain heat	s (at the sampling) Colour: colourless slight strong brown grey		Turbi <u>no</u> low mo stro	<b>dity:</b> derate	Sedin no lov mo str	ment: v oderate	Smell: <u>odorless</u> putrid fishy chemical chlor
Field parameter Weather: <u>sunny</u> cloudy changing rain heat frost	s (at the sampling) Colour: <u>colourless</u> slight strong brown grey yellow		Turbi <u>no</u> low mo stro	dity: derate	Sedin no lov mo str	ment: v oderate ong	Smell: <u>odorless</u> putrid fishy chemical
Field parameter Weather: <u>sunny</u> cloudy changing rain heat frost Measuring device	s (at the sampling) Colour: colourless slight strong brown grey yellow		Turbi <u>no</u> low mo stro	dity: derate ong	Sedii <u>no</u> lov str 	ment: v oderate ong	Smell: <u>odorless</u> putrid fishy chemical chlor gasoline/oil
Field parameter Weather: <u>sunny</u> cloudy changing rain heat frost Measuring device	s (at the sampling) Colour: <u>colourless</u> slight strong brown grey yellow	ure (°C)	Turbi <u>no</u> low mo stro	dity: derate ong	Sedii <u>no</u> lov str 	ment: v oderate ong	Smell: <u>odorless</u> putrid fishy chemical chlor gasoline/oil
Field parameter Weather: <u>sunny</u> cloudy changing rain heat frost Measuring device pH-value: 7.95	s (at the sampling) Colour: Colourless slight strong brown grey yellow ce: Water temperate		Turbi <u>no</u> low mo strc 	dity: derate ong Disso	Sedii <u>no</u> lov str 	ment: v oderate ong  xygen (mg/l): mg/l (69.1%	Smell: <u>odorless</u> putrid fishy chemical chlor gasoline/oil
Field parameter Weather: sunny cloudy changing rain heat frost Measuring device pH-value: 7.95 Electrical conduct	s (at the sampling) Colour: Colourless Sight Strong Brown Grey See: Water temperate 12.6 °C	tempe	Turbi <u>no</u> low mo strc 	dity: derate ong Dissc (μS/cm): Ξ	Sedii <u>no</u> lov str str 	ment: v oderate ong  xygen (mg/l): mg/l (69.1%	Smell: <u>odorless</u> putrid fishy chemical chlor gasoline/oil
Field parameter Weather: sunny cloudy changing rain heat frost Measuring device pH-value: 7.95 Electrical conduce Sample treatme	s (at the sampling) Colour: Colourless Sight Strong Brown Grey See: Water temperate 12.6 °C	tempe	Turbi	dity: derate ong Dissc (μS/cm): Ξ stab	Sedii <u>no</u> lov str str  olved o 6.79 395 μ pilised	ment: v oderate ong xygen (mg/l): mg/l (69.1% S/cm	Smell: <u>odorless</u> putrid fishy chemical chlor gasoline/oil
Field parameter Weather: sunny cloudy changing rain heat frost Measuring device pH-value: 7.95 Electrical conduce Sample treatme Contacts: H	s (at the sampling) Colour: Colourless I slight Strong brown grey yellow ce: Water temperate 12.6 °C ctivity incl. reference nt: <u>chilled</u> ead of Mets Parni ad	tempe fili ministr	Turbi	dity: derate ong  Dissc (µS/cm): ≦ □ stab listrict: Gor	Sedii <u>no</u> lov str str  olved o 6.79 395 μ pilised Ashug	ment: v oderate ong 	Smell: <u>odorless</u> putrid fishy chemical chlor gasoline/oil 25 °C el +3749380-69-50)
Field parameter Weather: sunny cloudy changing rain heat frost Measuring device pH-value: 7.95 Electrical conduce Sample treatment Contacts: H Execution of the	s (at the sampling) Colour: <u>colourless</u> slight strong brown grey yellow ce: Water temperate 12.6 °C ctivity incl. reference nt: <u>chilled</u> ead of Mets Parni ad re sampling and of	tempe fili ministr	Turbi	dity: derate ong  Dissc (µS/cm): ≦ □ stab listrict: Gor	Sedii <u>no</u> lov str str  olved o 6.79 395 μ pilised Ashug	ment: v oderate ong 	Smell: <u>odorless</u> putrid fishy chemical chlor gasoline/oil 25 °C el +3749380-69-50)
Field parameter Weather: sunny cloudy changing rain heat frost Measuring device pH-value: 7.95 Electrical conduce Sample treatment Contacts: H Execution of th requirements of	s (at the sampling) Colour: <u>colourless</u> slight strong brown grey yellow ce: Water temperate 12.6 °C ctivity incl. reference nt: <u>chilled</u> ead of Mets Parni ad re sampling and of	tempe filt ministr the al	Turbi	dity: derate ong Disso (μS/cm): Ξ o stab listrict: Gor works accor	Sedii <u>no</u> lov str str  olved o 6.79 395 µ pilised Ashug rding	ment: v oderate ong xygen (mg/l): mg/l (69.1% S/cm □ at 2 with acid hatoyan (To to the samp	Smell: <u>odorless</u> putrid fishy chemical chlor gasoline/oil

SAMPLING PROT	OCOL – GROUND	WATE	R					
Project:	"EU4Environment	t - Wate	er Resource	s and Env	vironmental	l Data'	" Project	
General								
The location of the	e sampling point:	Arme	enia, Lori Re	egion, <b>Ka</b>	atnadjur villa	age		
The coordinates of					No.			
sampling point								
			1.20		R All			
X=40 <sup>0</sup> 49' 01.5"				Sec.	Charles I.		A SE	
Y=44 <sup>0</sup> 08' 01.2"			THE A	N SIL				
H= 1798m								
				20287			Kall P	
			ALC: NO	- FF - 30				
			Self in		14. A			
			and the second					
					1999 A		SUB A MAGE	
Sampling Date: A	ug 29, 2022	Time (	hh:mm): 12	2:50	Sample	e ID:	N3	
Sampling perso	n: Mr Harutyun	Yeren	1. /	ature Pro				
	Mr Gegham Muradyan		'Hyd	rometeo	prology and I	Monit	oring Center	
Sampling site								
Sampling site ID: N	13		Type of sar	npling sit	te: Spring	(«Qu	ng»)	
Inner diameter of	well (mm): -						/ell head (m):  -	
Calm water level (	m below well head):	: -	Final depth	n of well (	(m below we	ell hea	ad): -	
Calm water level ( Further informatic	m below well head): on of the sampling si	ite (e.g. o	Final depth coordinates): <b>T</b>	n of well ( T <b>he sprin</b>	(m below we	ell hea tured	ad): - . the head of the	
Calm water level ( Further informatic <b>open, and the sp</b>	m below well head):	ite (e.g. o	Final depth coordinates): <b>T</b>	n of well ( T <b>he sprin</b>	(m below we	ell hea tured	ad): - . the head of the	
Calm water level ( Further informatic open, and the sp cemetery	m below well head): on of the sampling si	ite (e.g. o	Final depth coordinates): <b>T</b>	n of well ( T <b>he sprin</b>	(m below we	ell hea tured	ad): - . the head of the	
Calm water level ( Further informatic open, and the sp cemetery Sampling	m below well head): on of the sampling si ring is utilized for	i: - site (e.g. c <b>drinkin</b>	Final depth coordinates): <b>T</b> ng water su	n of well ( The sprin upply by	(m below we ng is not cap y several ho	ell hea tured ouses.	ad): - . the head of the The spring is al	
Calm water level ( Further informatic open, and the sp cemetery Sampling Type of sampling:	m below well head): on of the sampling si ring is utilized for <u>u with bailer</u> uw	i: - site (e.g. c <b>drinkin</b>	Final depth coordinates): <b>T</b> ng water su mp  _ at a	n of well ( The sprin upply by tap Ab	(m below we ng is not cap y several ho ostraction de	ell hea tured buses.	ad): - . the head of the The spring is al plastic bucket	• •
Calm water level ( Further informatic open, and the sp cemetery Sampling Type of sampling: Pumping duration	m below well head): on of the sampling si ring is utilized for <u>with bailer</u> w (min): -	i: - site (e.g. c <b>drinkin</b>	Final depth coordinates): <b>T</b> ng water su mp  _ at a	n of well ( The sprin upply by tap Ab	(m below we ng is not cap y several ho	ell hea tured buses.	ad): - . the head of the The spring is al plastic bucket	• •
Calm water level ( Further informatic open, and the sp cemetery Sampling Type of sampling: Pumping duration Field parameters (	m below well head): on of the sampling si ring is utilized for <u>with bailer</u> w (min): - (at the sampling)	i: - bite (e.g. d drinkin with pur	Final depth coordinates): <b>T</b> ng water su mp 🗆 at a Abstract	tap Ab	(m below we ng is not cap y several ho ostraction de / discharge (	ell hea tured buses.	ad): - . the head of the The spring is al plastic bucket : 0.7 l/sec	• •
Calm water level ( Further informatic open, and the sp cemetery Sampling Type of sampling: Pumping duration Field parameters Weather:	m below well head): on of the sampling si ring is utilized for <u>with bailer</u> w (min): - (at the sampling) Colour:	i: - bite (e.g. d drinkin with pur	Final depth coordinates): <b>T</b> ng water su mp  _ at a	tap Ab	(m below we ng is not cap y several ho ostraction de	ell hea tured buses.	ad): - . the head of the The spring is al plastic bucket : 0.7 l/sec Smell:	• •
Calm water level ( Further informatic open, and the sp cemetery Sampling Type of sampling: Pumping duration Field parameters Weather: Sunny	m below well head): on of the sampling si ring is utilized for <u>with bailer</u> w (min): - (at the sampling) Colour: <u>colourless</u>	i: - site (e.g. c drinkin	Final depth coordinates): <b>T</b> ng water su mp at a Abstract <b>Turbidity:</b> <u>no</u>	tap Ab	(m below weight of the several host of the sev	ell hea tured buses.	ad): - . the head of the The spring is al plastic bucket : 0.7 l/sec Smell: <u>odorless</u>	• •
Calm water level (i Further informatic open, and the sp cemetery Sampling Type of sampling: Pumping duration Field parameters ( Weather: sunny cloudy	m below well head): on of the sampling si ring is utilized for <u>with bailer</u> • w (min): - (at the sampling) Colour: <u>colourless</u> • slight	i: - site (e.g. c drinkin	Final depth coordinates): <b>T</b> ng water su mp at a Abstract <b>Turbidity:</b> <u>no</u> low	tap Ab ion rate	(m below weight of the several host of the sev	ell hea tured buses.	ad): - the head of the The spring is al plastic bucket : 0.7 l/sec Smell: <u>odorless</u> putrid	• •
Calm water level (i Further informatic open, and the sp cemetery Sampling Type of sampling: Pumping duration Field parameters Weather: Sunny cloudy changing	m below well head): on of the sampling si ring is utilized for <u>with bailer</u> w (min): - (at the sampling) Colour: <u>colourless</u> slight strong	i: - bite (e.g. d drinkin	Final depth coordinates): T ng water su mp at a Abstract Turbidity: <u>no</u> low moderat	e of well ( The springupply by tap Ab Ab S C C C C C C C C C C C C C	(m below we ng is not cap y several ho ostraction de / discharge ( Gediment: no low moderate	ell hea tured buses.	ad): - the head of the The spring is al plastic bucket : 0.7 l/sec Smell: <u>odorless</u> putrid putrid fishy	• •
Calm water level (i Further informatic open, and the sp cemetery Sampling Type of sampling: Pumping duration Field parameters Weather: Sunny cloudy changing rain	m below well head): on of the sampling si ring is utilized for <u>with bailer</u> • w (min): - (at the sampling) Colour: • colourless • slight • strong • brown	i: - site (e.g. d drinkin	Final depth coordinates): <b>T</b> ng water su mp at a Abstract <b>Turbidity:</b> <u>no</u> low moderat strong	e e for the spring tap Ab	(m below we ng is not cap y several ho ostraction de / discharge ( Sediment: no low low moderate strong	ell hea tured buses.	ad): the head of the The spring is al plastic bucket : 0.7 l/sec Smell: Odorless putrid fishy chemical	• •
Calm water level (i Further informatic open, and the sp cemetery Sampling Type of sampling: Pumping duration Field parameters ( Weather: Sunny cloudy changing rain heat	m below well head): on of the sampling si ring is utilized for <u>with bailer</u> • w (min): - (at the sampling) Colour: • colourless • slight • strong • brown • grey	i: - site (e.g. d drinkin	Final depth coordinates): T ng water su mp at a Abstract Turbidity: <u>no</u> low moderat	e e for the spring tap Ab	(m below we ng is not cap y several ho ostraction de / discharge ( Gediment: no low moderate	ell hea tured buses.	ad): the head of the The spring is al plastic bucket : 0.7 l/sec Smell: _ odorless _ putrid _ fishy _ chemical _ chlor	• •
Calm water level (i Further informatic open, and the sp cemetery Sampling Type of sampling: Pumping duration Field parameters Weather: Sunny Cloudy cloudy changing rain heat frost	m below well head): on of the sampling si ring is utilized for <u>with bailer</u> w (min): - (at the sampling) Colour: <u>colourless</u> slight strong brown grey yellow	i: - site (e.g. d drinkin	Final depth coordinates): <b>T</b> ng water su mp at a Abstract <b>Turbidity:</b> <u>no</u> low moderat strong	e e for the spring tap Ab	(m below weight of the serveral host of the servera	ell hea tured buses.	ad): the head of the The spring is al plastic bucket : 0.7 l/sec Smell: Odorless putrid fishy chemical	• •
Calm water level (i Further informatic open, and the sp cemetery Sampling Type of sampling: Pumping duration Field parameters ( Weather: Sunny cloudy changing rain heat frost Measuring device	m below well head): on of the sampling si ring is utilized for <u>with bailer</u> • w (min): - (at the sampling) Colour: • colourless • slight • strong • brown • grey • yellow	i: - site (e.g. d drinkin	Final depth coordinates): <b>T</b> ng water su mp at a Abstract <b>Turbidity:</b> no low low strong	e contraction of well (	(m below we ng is not cap y several ho ostraction de / discharge ( Sediment: no low moderate strong	ell hea tured buses. evice: (I/sec)	ad): the head of the The spring is al plastic bucket : 0.7 l/sec Smell: _ odorless _ putrid _ fishy _ chemical _ chlor	
Calm water level (i Further informatic open, and the sp cemetery Sampling Type of sampling: Pumping duration Field parameters ( Weather: Sunny cloudy cloudy changing rain heat frost Measuring devices	m below well head): on of the sampling si ring is utilized for <u>with bailer</u> • w (min): - (at the sampling) Colour: • colourless • slight • strong • brown • grey • yellow : Water temperatu	i: - site (e.g. d drinkin	Final depth coordinates): <b>T</b> ng water su mp at a Abstract <b>Turbidity:</b> no low low strong	e Dissolve	(m below weight of the serveral hostraction de several hostraction de discharge (sediment:	ell hea tured ouses. evice: (I/sec)	ad): - the head of the The spring is al plastic bucket : 0.7 l/sec Smell: <u>odorless</u> <u>putrid</u> fishy chemical chlor gasoline/oil	
Calm water level (i Further informatic open, and the sp cemetery Sampling Type of sampling: Pumping duration Field parameters (i Weather: Sunny cloudy changing rain heat frost Measuring devices pH-value: 7.92	m below well head): on of the sampling si ring is utilized for <u>with bailer</u> • w (min): - (at the sampling) Colour: • colourless • slight • strong • brown • grey • yellow : Water temperatu 10.4 °C	i: - site (e.g. c drinkin with pur	Final depth coordinates): <b>T</b> ng water su mp at a Abstract <b>Turbidity:</b> no low low strong	e Dissolve	(m below we ng is not cap y several ho ostraction de / discharge ( Sediment: no low moderate strong strong ded oxygen (r 7.39 mg/l (7)	ell hea tured buses. evice: (l/sec) (l/sec) mg/l): 71.3%	ad): - the head of the The spring is al plastic bucket : 0.7 l/sec Smell: <u>odorless</u> putrid fishy chemical chlor gasoline/oil	• •
Calm water level (i Further informatic open, and the sp cemetery Sampling Type of sampling: Pumping duration Field parameters ( Weather: Sunny Cloudy cloudy changing rain heat frost Measuring devices pH-value: 7.92 Electrical conducti	m below well head): on of the sampling si ring is utilized for with bailer we (min): - (at the sampling) Colour: colourless slight strong slight strong yellow water temperatu 10.4 °C vity incl. reference t	i: - site (e.g. o drinkin with pur with pur ure (°C): tempera	Final depth coordinates): <b>T</b> ng water su mp at a Abstract <b>Turbidity:</b> no low low moderat strong strong ature (µS/c	e Dissolve 7 m): 327	(m below weight is not caping is not caping is not caping several homostraction de discharge ( betraction de discharge ( bediment: no low low low low low low strong low strong low low low low low low low low low low	ell hea tured buses. (I/sec) (I/sec) mg/I): 71.3% □ at 2	ad): - the head of the The spring is al plastic bucket : 0.7 l/sec Smell: <u>odorless</u> putrid fishy chemical chlor gasoline/oil	• •
Calm water level (i Further informatic open, and the sp cemetery Sampling Type of sampling: Pumping duration Field parameters ( Weather: Sunny cloudy changing cloudy changing rain heat frost Measuring devices pH-value: 7.92 Electrical conducti Sample treatment	m below well head): on of the sampling si ring is utilized for <u>with bailer</u> w (min): - (at the sampling) Colour: <u>colourless</u> slight strong brown grey yellow : Water temperatu 10.4 °C vity incl. reference t	i: - site (e.g. c drinkin with pur with pur ure (°C): tempera	Final depth coordinates): <b>T</b> ng water su mp at a Abstract <b>Turbidity:</b> ature (µS/c rated	e Dissolve 7 m): 322	(m below we ng is not cap y several ho ostraction de / discharge ( Sediment: no low moderate strong strong ed oxygen (r 7.39 mg/l (7 7 μS/cm 1 sed with acid	ell hea tured buses. (I/sec) (I/sec) mg/I): 71.3% □ at 2 d	ad): the head of the The spring is al plastic bucket : 0.7 l/sec Smell:      odorless     putrid     fishy     chemical     chlor     gasoline/oil  5 °C	• •
Calm water level (i Further informatic open, and the sp cemetery Sampling Type of sampling: Pumping duration Field parameters ( Weather: Sunny cloudy cloudy changing rain heat frost Measuring devices pH-value: 7.92 Electrical conducti Sample treatment Contacts: Heat	m below well head): on of the sampling si ring is utilized for <u>with bailer</u> • w (min): - (at the sampling) Colour: • colourless • slight • strong • brown • grey • yellow : Water temperatu 10.4 °C vity incl. reference t • chilled ad of Katnadjur adm	i: - site (e.g. o drinkin with pur with pur ure (°C): tempera ininistrat	Final depth coordinates): <b>T</b> <b>ng water su</b> <b>mp</b> at a Abstract <b>Turbidity:</b> <b>no</b> low moderat strong strong ature (µS/c rated	e Dissolve 7 m): 327	(m below weight is not caping is not caping is not caping several homestraction defined for the straction defined for the strong strong strong for the stro	ell hea tured puses. (I/sec) (I/sec) mg/l): 71.3% d (Tel +3	ad): - the head of the The spring is al plastic bucket : 0.7 l/sec Smell: Odorless putrid fishy chemical chlor gasoline/oil 5 °C	bove the
Calm water level (i Further informatic open, and the sp cemetery Sampling Type of sampling: Pumping duration Field parameters ( Weather: Sunny cloudy cloudy changing rain heat frost Measuring devices pH-value: 7.92 Electrical conducti Sample treatment Contacts: Heat	m below well head): on of the sampling si ring is utilized for <u>with bailer</u> w (min): - (at the sampling) Colour: <u>colourless</u> slight strong brown grey yellow : Water temperatu 10.4 °C vity incl. reference t	i: - site (e.g. o drinkin with pur with pur ure (°C): tempera ininistrat	Final depth coordinates): <b>T</b> <b>ng water su</b> <b>mp</b> at a Abstract <b>Turbidity:</b> <b>no</b> low moderat strong strong ature (µS/c rated	e Dissolve 7 m): 327	(m below weight is not caping is not caping is not caping several homestraction defined for the straction defined for the strong strong strong for the stro	ell hea tured puses. (I/sec) (I/sec) mg/l): 71.3% d (Tel +3	ad): - the head of the The spring is al plastic bucket : 0.7 l/sec Smell: Odorless putrid fishy chemical chlor gasoline/oil 5 °C	bove the
Calm water level (i Further informatic open, and the sp cemetery Sampling Type of sampling: Pumping duration Field parameters Weather: Sunny cloudy cloudy changing rain heat frost Measuring devices pH-value: 7.92 Electrical conducti Sample treatment Contacts: Hea Execution of the sa of the laboratory.	m below well head): on of the sampling si ring is utilized for <u>with bailer</u> • w (min): - (at the sampling) Colour: • colourless • slight • strong • brown • grey • yellow : Water temperatu 10.4 °C vity incl. reference t • chilled ad of Katnadjur adm	i: - site (e.g. of drinkin with pur with pur ure (°C): tempera tempera above v	Final depth coordinates): <b>T</b> <b>ng water su</b> <b>mp</b> at a Abstract <b>Turbidity:</b> <u>no</u> low noderat strong strong ature (μS/c rated tive district: works acco	e Sissolve Training to the spring of well (	(m below we ng is not cap y several ho ostraction de / discharge ( Gediment: no low low moderate strong strong woderate strong moderate (7.39 mg/l (7 7 μS/cm ) sed with acio Papoyan (1 the sampling	ell hea tured puses. evice: (l/sec) mg/l): 71.3% at 2 d (Tel +3 g man	ad): - the head of the The spring is al plastic bucket : 0.7 l/sec Smell: Odorless putrid fishy chemical chlor gasoline/oil 5 °C	irements

SAMPLING PROT	OCOL – GROUNDW	ATFR	2						
Project:	"EU4Environmen			esou	rces	and E	nviron	nenta	l Data" Proiect
General					1000			morrida	
The location of the	sampling point:	Arm	enia.	l ori R	egior	n Gegh	nasar vil	lage	
The coordinates of					CBIOI	, <b>CC</b>		iuge	
sampling point					a de	-2014	A CONTRACT	- HAN	
					1 Contraction	N.C.			
X=40°51'01.9"	AT THE REAL				S	AL AL			
Y=44 <sup>°</sup> 10' 37.7"									
H= 1627m		A.	Marke	A CONTRACTOR	1	I AC	24		A C C CONTRACTOR
				and a state				D	
			1ST			( Bend	All C		The states
	XY				ANILE ST		pt-		A TO AN END
		Ser 1				1 AL	in		
			R.C.	11	X77				
Sampling Date: Au	וg 29, 2022	Time (ł	h:mr	n): 14	:05		Sample	e ID:	N4
	Mr Harutyun Yeremyan			Instit	ute:	Ministr	y of Na	ture Pr	rotection
	Armine Hakobyan						-		oring Center
Sampling site	Gegham Muradyan								-
Sampling site ID: N4	1	- 1-	Type (	of sam	nling	z site:	Flowin	g well	
Inner diameter of v								-	vell head (m): 0.0
	below well head): +								ad): 30 m
-	n of the sampling site			•		-			
	for drinking water s			tes). II	ie we	en was	unneu	iii yeai	5 01 1907-1909.
Sampling	Tor uninking water 5	uppiy.	•						
Jamping									
Type of sampling:	□ with bailer □ wit	th pun	ם חו	at a t	tap	Abstra	iction d	evice:	plastic bucket
Pumping duration (	min): -		Abs	tracti	on ra	te / dis	scharge	(l/sec)	: 0.6 l/sec
Field parameters (a	at the sampling)								
Weather:	Colour:	٦	Furbio	dity:		Sedi	ment:		Smell:
<u>□ sunny</u>	colourless	[	<u>no</u> 1			<u>□ no</u>			odorless
□ cloudy	🗆 slight	[	low			□ lov	v		🗆 putrid
changing	strong	[	noc	derate	è	□ mo	oderate		🗆 fishy
🗆 rain	🗆 brown	[	🗆 stro	ng		🗆 str	ong		chemical
🗆 heat	🗆 grey	[				□			🗆 chlor
□ frost	yellow								gasoline/oil
Measuring device:									
pH-value:	Water temperature	e (°C):			Disso	olved o	xygen (	mg/l):	
7.87	14.0 °C					5.87	mg/l (	60.6%	)
	ity incl. reference te				-			🗆 at 2	5 °C
Sample treatment:	□ chilled	🗆 filtr					with ac		
	d of Geghasar admin								
	mpling and of the ab	ove wo	orks a	ccord	ing to	o the sa	ampling	manua	al and the requirements
of the laboratory.									
Signature of sample	er:						Date	:	
Name of sampler:									

SAMPLING PROTOCOL – GROUN	NDWATE	R					
Project: "EU4Environr	ment - W	ater R	lesources	and E	nvironmenta	I Data" Project	
General							
The location of the sampling point	: Arr	nenia,	Lori Region	, Nor k	Khachakap vill	age	
The coordinates of the							
sampling point					A Sector	A CARLON	
X=40 <sup>°</sup> 49' 36.5"						A TOP TO	
Y=44 <sup>0</sup> 21' 11.5"							
H= 1660m							
Sampling Date: Aug 29, 2022	Time	(hh:mr	n): 15:10		Sample ID:	N5	
Sampling person:       Mr Harutyun Yeremyan         Ms Armine Hakobyan       Institute:         Mr Gegham Muradyan       'Hydrometeorology and Monitoring Center							
Sampling site							
Sampling site ID: N5		Туре	of sampling	site:	Spring		
Inner diameter of well (mm): -		Distar	Distance between land surface and well head (m): -				
Calm water level (m below well hea	ad): -	Final	depth of we	ell (m b	elow well hea	ad): -	
Further information of the sampling	-		•	-	•	-	
The spring is utilized for drinking w	vater sup	ply by	several hou	uses. T	he spring is a	bove the cemetery	
Sampling							
Type of sampling: <u> with bailer</u>	🗆 with pu	mp ⊏	at a tap	Abstra	ction device:	plastic bucket	
Pumping duration (min): -		Abs	straction rat	te / dis	charge (I/sec)	): 0.2 l/sec	
Field parameters (at the sampling)				T			
Weather: Colour:		Turbi	dity:	Sedir	nent:	Smell:	
<u>sunny</u> <u>colourless</u>		<u> </u>		<u> </u>		odorless	
□ cloudy □ slight		□ low		□ lov		□ putrid	
□ changing □ strong			derate		oderate	□ fishy	
□ rain □ brown		□ stro	-	□ str	-	chemical	
□ heat □ grey		□		□		□ chlor	
□ frost □ yellow						gasoline/oil	
Measuring device:	(%)		0.00	1			
pH-value: Water temper 7.96 11.2 °C		:	Disso		xygen (mg/l):		
		aturo	(us/cm)		$\frac{\text{mg/l}}{\text{S/cm}}$	۶. ۲	
Electrical conductivity incl. reference		rated		· · ·	with acid	5 L	
Sample treatment: <u>chilled</u> Contacts: Head of Nor Khachakap					with acid (Tel +37494-8	28-87-74)	
Execution of the sampling and c						,	
requirements of the laboratory.		ove w	JUINS ALLUI	ung l	o the sampl		
Signature of sampler:					Date:		
Name of sampler:							

	"ELIAEnvironr	nont - M	lator Rosou	rces and	d Environme	ntal Data" Project
Project: General						
	the sampling point	· Δri	menia, Lori R	egion D	arbas village	
The coordinates						
sampling point					and the second	
X=40 <sup>o</sup> 50' 05.1"			Part of the			
Y=44 <sup>o</sup> 25' 25.0"		-				men all
H= 1384ú						
Sampling Date:	Aug 29, 2022	Time	(hh:mm): 15	:55	Sample ID	): <b>N6</b>
	<ol> <li>Mr Harutyun Yerem</li> <li>Ms Armine Hakobyan</li> <li>Mr Gegham Muradyan</li> </ol>	yan			istry of Natur rology and Mo	e Protection onitoring Center
Sampling site						
Sampling site ID	: N6		Type of sam	pling sit	e: <b>Spring</b>	
Inner diameter o	of well (mm): -		Distance be	tween la	and surface an	id well head (m):  -
Calm water leve	l (m below well hea	d): -	Final depth	of well (	m below well	head): -
	tion of the sampling ad for livestock sup	-			-	
Sampling	•					
	g: 🛛 with bailer 🛛	u with pu	imp □atat	ap Abs	straction device	ce: plastic bucket
Type of samplin		u with pu			straction devic	· · · · · · · · · · · · · · · · · · ·
Type of samplin Pumping duratio		with pu				· · · · · · · · · · · · · · · · · · ·
Type of samplin Pumping duratio Field parameter	on (min): -	with pu		on rate /		· · · · · · · · · · · · · · · · · · ·
Type of samplin Pumping duratio Field parameter Weather:	on (min): - rs (at the sampling)	i with pu	Abstractio	on rate /	discharge (I/s	sec): 0.22 l/sec
Type of samplin Pumping duratio Field parameter Weather:	on (min): - rs (at the sampling) Colour:	with pu	Abstractio	on rate /	discharge (I/s	sec): 0.22 l/sec
Type of samplin Pumping duratio Field parameter Weather: <u>sunny</u> cloudy	on (min): - rs (at the sampling) Colour: <u>colourless</u>	with pu	Abstractio	on rate /	discharge (I/s ediment: <u>no</u>	sec): 0.22 l/sec Smell: Odorless
Type of samplin Pumping duratio	on (min): - rs (at the sampling) Colour: <u>colourless</u> slight	with pu	Abstraction	on rate /	′ discharge (I/s ediment: no low	sec): 0.22 l/sec Smell: <u> odorless</u> putrid
Type of samplin Pumping duratio Field parameter Weather: <u>sunny</u> cloudy changing	on (min): - rs (at the sampling) Colour: Colourless Slight Strong	with pu	Abstraction	on rate /	discharge (I/s ediment: no low moderate	sec): 0.22 l/sec Smell: Odorless Outrid fishy
Type of samplin Pumping duratio Field parameter Weather: Sunny cloudy changing rain heat frost	on (min): - rs (at the sampling) Colour: Colourless Slight Strong Strong Strong Grey Grey Grey	with pu	Abstraction	on rate /	discharge (I/s ediment: no low moderate	sec): 0.22 l/sec Smell: <u>odorless</u> <u>putrid</u> fishy chemical
Type of samplin Pumping duratio Field parameter Weather: Sunny cloudy changing rain heat frost	on (min): - rs (at the sampling) Colour: Colourless Slight Strong Strong Strong Grey Grey Grey	with pu	Abstraction	on rate /	discharge (I/s ediment: no low moderate	sec): 0.22 l/sec Smell: <u>odorless</u> putrid fishy chemical chlor
Type of samplin Pumping duratio Field parameter Weather: Sunny cloudy changing changing rain heat frost Measuring devi	on (min): - rs (at the sampling) Colour: Colourless Slight Strong Strong Strong Grey Grey Grey	ature (°C)	Abstraction	Dissolve	discharge (I/s ediment: no low moderate	sec): 0.22 l/sec Smell: <u>odorless</u> putrid fishy chemical chlor gasoline/oil
Type of samplin Pumping duratio Field parameter Weather: Sunny cloudy changing rain heat frost Measuring devi pH-value: 7.8	on (min): - rs (at the sampling) Colour: <u>colourless</u> slight strong brown grey yellow ce: Water tempera	ature (°C)	Abstraction	Dissolve 7.	discharge (I/s ediment: <u>no</u> low moderate strong ed oxygen (mg 11 mg/I (71.	sec): 0.22 l/sec Smell: <u>odorless</u> putrid fishy chemical chlor gasoline/oil
Type of samplin Pumping duratio Field parameter Weather: Sunny cloudy changing cloudy changing rain heat frost Measuring devi pH-value: 7.8 Electrical condu	on (min): - rs (at the sampling) Colour: <u>colourless</u> slight strong brown grey yellow ce: Water tempera 12.4 °C ctivity incl. reference	ature (°C) C re tempe	Abstraction	Dissolve 7. n): <b>560</b>	discharge (I/s ediment: <u>no</u> low moderate strong ed oxygen (mg 11 mg/I (71.	sec): 0.22 l/sec Smell: <u>odorless</u> putrid fishy chemical chlor gasoline/oil //): 1%)
Type of samplin Pumping duratio Field parameter Weather: Sunny Cloudy Cloudy Changing Changing Changing Frain Cheat Frost Measuring devi Changing devi Chang	on (min): - rs (at the sampling) Colour: <u>colourless</u> slight strong brown grey yellow ce: Water tempera 12.4 °C ctivity incl. reference	ature (°C) c re tempe fil	Abstraction	Dissolve 7. n): <b>560</b>	discharge (I/s ediment: <u>no</u> low moderate strong ed oxygen (mg 11 mg/l (71. μS/cm α ed with acid	sec): 0.22 l/sec Smell: <u>odorless</u> putrid fishy chemical chlor gasoline/oil //): 1%)
Type of samplin Pumping duratio Field parameter Weather: Sunny Cloudy Changing Changing Changing Frain Cheat Frost Measuring devi Contacts: Heat Contacts: H	on (min): - rs (at the sampling) Colour: Colour: Colourless Slight Strong Stron	ature (°C) c re tempe dminist	Abstraction	Dissolve 7. n): 560 stabilis	discharge (I/s ediment: <u>no</u> low moderate strong d oxygen (mg 11 mg/l (71. μS/cm α ed with acid c (Tel +3749	sec): 0.22 l/sec Smell: odorless putrid fishy chemical chlor gasoline/oil //): 1%) at 25 °C
Type of samplin Pumping duratio Field parameter Weather: Sunny Cloudy Changing Changing Changing Firit Heat Firit Heat Contacts: Heat Contacts: Heat Contacts: Heat Contacts of th requirements of	on (min): - rs (at the sampling) Colour: Colourless slight strong brown grey yellow ce: Water tempera 12.4 °C ctivity incl. reference nt: <u>chilled</u> d of Nor Khachakap	eture (°C) e tempe 	Abstraction	Dissolve 7. n): 560 stabilis t: Martik accordin	discharge (I/s ediment: <u>no</u> low moderate strong d oxygen (mg 11 mg/l (71. μS/cm α ed with acid c (Tel +3749	sec): 0.22 l/sec Smell: <u>odorless</u> putrid fishy chemical chlor gasoline/oil //): 1%) at 25 °C

SAMPLING PROT	OCOL – GROUNDWATE	R		
Project:	"EU4Environment - W	ater Resource	s and Environment	al Data" Project
General				
The location of the	e sampling point: Arme	nia, Lori Region,	Darbas village	
The coordinates of		The second		- Alace and
sampling point				
X=40 <sup>o</sup> 50' 06.3"	A SANT			
Y=44 <sup>0</sup> 25' 37.0"				States and the states
H= 1360m				
Sampling Date: Au	ισ 29 2022 Time	(hh:mm): 16:25	Sample ID:	N7
	Mr Harutyun Yeremyan		•	
	Armine Hakobyan		: Ministry of Nature	
	Gegham Muradyan	Hydrom	eteorology and Mon	itoring Center
Sampling site		-		
Sampling site ID: N	7	Type of samplin	ng site: <b>Spring</b> («A	Avagenc»)
Inner diameter of v	well (mm): -	Distance betwe	en land surface and	well head (m): -
Calm water level (r	n below well head): -	Final depth of v	vell (m below well he	ead): -
Further informatio	n of the sampling site (e.g.	coordinates): The s	pring is captured.	
	ed for drinking water sup	ply. The spring i	s located in the yard	of Gulnaz Zaqaryan.
Sampling				
Type of sampling:	□ with bailer □ with pu	ump 🗆 at a tap	Abstraction device	plastic bucket
Pumping duration	(min): -	Abstraction r	ate / discharge (l/se	c): 0.18 l/sec
Field parameters (	at the sampling)			
Weather:	Colour:	Turbidity:	Sediment:	Smell:
🗆 sunny	colourless	<u> </u>	<u> </u>	odorless
□ cloudy	🗆 slight	□ low	□ low	🗆 putrid
changing	□ strong	🗆 moderate	moderate	🗆 fishy
🗆 rain	🗆 brown	□ strong	□ strong	chemical
🗆 heat	□ grey	□	□	□ chlor
□ frost	□ yellow			gasoline/oil
Measuring device:				
pH-value:	Water temperature (°C	): Dis	solved oxygen (mg/l)	:
7.5	11.4 °C		4.87 mg/l (49.39	%)
Electrical conductiv	vity incl. reference tempe	rature (µS/cm):	725 µS/cm □ at	25 °C
			abilised with acid	
Sample treatment:	<u>□ chilled</u> □ fil	trated 🗆 st		
Sample treatment:	□ chilled □ fil f Nor Khachakap adminis			88-82-24)
Sample treatment: Contacts: Head o		trative district: N	1artik (Tel +37494-	•
Sample treatment: Contacts: Head o	f Nor Khachakap adminis sampling and of the al	trative district: N	1artik (Tel +37494-	•
Sample treatment: Contacts: Head o Execution of the requirements of th	f Nor Khachakap adminis sampling and of the al	trative district: M bove works acc	1artik (Tel+37494- ording to the samp	•

SAMPLING PRO	TOCOL – GROUNE	OWATE	R			
Project:	"EU4Environme	ent - W	/ater Re	sources	and Environmen	tal Data" Project
General						
The location of the	ne sampling point:	Armei	nia, Lori I	Region, Sa	aratovka village	
The coordinates o	of the	1 A				
sampling point	And the	CA ?		and the		
X=41 <sup>0</sup> 04'		1 de	A State of the sta		A ANT	LA MARKEN
Y=44 <sup>0</sup> 18'		-in-		4 27	the second second	ACTION
H= 1481n		3	E C	-	ALL THE ALL AND	
	A CASE					and the main of the second
						Est.
	*		A	No.	A Star	
		MA	Polar			AN MARY
	AT A PARTY OF		Nº1	The second second	A ING	
		1 and		11.4	· · ·····	IF I
<u> </u>						
Sampling Date: /	-		(hh:mm)	): 10:20	Sample ID:	N8
	Mr Harutyun Yeremya Is Armine Hakobyan	in	1	nstitute:	Ministry of Nature	Protection
	Ar Gegham Muradyan		<b>'</b>	Hydrome	teorology and Mo	nitoring Center
Sampling site						
Sampling site ID:	N8		Type of	sampling	g site: Spring	
Inner diameter of					n land surface and	d well head (m): -
	(m below well head	l): - Final depth of well (m below well head): -				
	on of the sampling s	-		•		
	ted the right side o			•	0	
Sampling						
Type of sampling	<u>u with bailer</u>	with pu	imp ⊡a	at a tap	Abstraction device	e: bucket
Pumping duration					te / discharge (I/se	
	(at the sampling)					• •
Weather:	Colour:		Turbidi	ty:	Sediment:	Smell:
🗆 sunny	□ colourless		□ no		🗆 no	odorless
□ cloudy	□ slight		□ low		□ low	🗆 putrid
changing	□ strong		🗆 mode	erate	🗆 moderate	🗆 fishy
🗆 rain	🗆 brown		□ stron	g	□ strong	chemical
🗆 heat	🗆 grey		□		□	□ chlor
frost	□ yellow					gasoline/oil
Measuring device	2:					
pH-value:	Water temperat	ure (°C	):	Disso	olved oxygen (mg/	l):
7.61	10.4 °C				5.55 mg/l (83.4	1%)
Electrical conduct	ivity incl. reference	tempe	rature (µ	.S/cm):	<b>480</b> μS/cm 🗆 at	t 25 °C
Sample treatmen	t: <u> </u>	□ fil	trated	🗆 stal	oilised with acid	
Contacts: Head	of Saratovka admini	istrativ	e district	: Garnik N	Martoyan (Tel +3	37499-04-55-50)
Execution of the	sampling and of	the al	ove wo	rks acco	rding to the sam	pling manual and the
requirements of t	•					
c	alor				Date:	
Signature of sam	Jei					

SAMPLING PROTO	DCOL – GROUNDWATE	R		
Project:	"EU4Environment - W	/ater Reso	urces and Environme	ntal Data" Project
General				-
The location of the	sampling point Armenia	, Lori Regio	n, Saratovka village	
The coordinates of t	the	COLUMN TWO		A LAST ACT
sampling point				
		15 16 Z		- manual and a second
X=41 <sup>0</sup> 04' 29.7"		and an		State of the state
Y=44 <sup>o</sup> 18' 42.0"		The speet	- Contraction	
H= 1457m		Cast And	A State of the sta	
		Marian		And the states
		and the second		A HELL SERVER
			4/4 Stillings	
			Cu. C. Plan	The second second
Compling Datas Ass	~ 20 2022 Time	(hh:mm): 1		
Sampling Date: Aug		<u>(nn:mm): 1</u>	0:40 Sample IE	): <b>N9</b>
Sampling person:	Mr Harutyun Yeremyan Armine Hakobyan	Inst	tute: Ministry of Natur	e Protection
	Gegham Muradyan		Irometeorology and Mo	
	0 ,	,		
Sampling site				
Sampling site ID: N9	)	Type of sa	mpling site: Flowing w	vell
Inner diameter of w	ell (mm): 168	Distance b	etween land surface an	d well head (m): 1.0
Calm water level (m	below well head): +1.2	Final dept	n of well (m below well	head): 100
Further information	of the sampling site (e.g.	coordinates): 1	he well was drilled in	/ears of 1969-1970.
	the left side of the river.			
Sampling				
Type of sampling: [	<u> with bailer</u> ເມ with pu	ımp ⊡ata	tap Abstraction device	ce: bucket
Pumping duration (r			ion rate / discharge (I/s	sec): 0.1 l/sec
Field parameters (a	•			
	Colour:	Turbidity:	Sediment:	Smell:
🗆 sunny	colourless	, □ no	□ no	odorless
	□ slight	□ low	□ low	□ putrid
•	□ strong	moderat	e 🗆 moderate	□ fishy
	□ brown	□ strong	□ strong	chemical
	□ grey	□	U U	□ chlor
□ frost	□ yellow			gasoline/oil
Measuring device:			·	·
pH-value:	Water temperature (°C	):	Dissolved oxygen (mg	/l):
7.33	13.4 °C		1.65 mg/l (15.	
	ity incl. reference tompo	rature (µS/o	rm): <b>1276</b> μS/cm 🗆 a	
Electrical conductivi	ity multiple reference tempe			
Electrical conductivi Sample treatment:	<i>i</i>	trated	stabilised with acid	
Sample treatment:	<u>□ chilled</u> □ fil			el +37499-04-55-50)
Sample treatment: Contacts: Head	□ chilled □ fil of Saratovka administra	ative district	: Garnik Martoyan (T	
Sample treatment: Contacts: Head Execution of the s	□ chilled □ fil l of Saratovka administra ampling and of the al	ative district	: Garnik Martoyan (T	
Sample treatment: Contacts: Head Execution of the s requirements of the	□ chilled □ fil l of Saratovka administra ampling and of the al	ative district	: Garnik Martoyan (T according to the sar	el+37499-04-55-50) npling manual and the

SAMPLING PR	OTOCOL – GROUND	WATE	R			
Project:	"EU4Environme	ent - W	ater R	esources	and Environme	ntal Data" Project
General						
The location of	the sampling point:	Armen	ia, Lor	i Region, Sa	aratovka village	
The coordinates	of the					
sampling point	No	and the second			WE ALL ATTENDED TO THE ALL AND	
X=41 <sup>0</sup> 04′ 51.7″	and a state of the	T. Charton		NO. WAY	ingen and the	
Y=44 <sup>o</sup> 18' 02.9" H= 1488m	and the second second			S. M. C.		
H= 1488111	A MAY AN	Stank.	A CAR	CALINE N		A CLARK CONT
		9 . A.			网络学校教	
	Salaria Viveli d				1. 《小器》为	
		A. M. S.				A THREE AND
		Carl State				
Sampling Date:	Aug 20, 2022	Time	(bb·mr	n): 11:20	Sample ID	): <b>N10</b>
	Aug 50, 2022       1: Mr Harutyun Yeremya		(1111.1111	-		
	Ms Armine Hakobyan				Ministry of Natur	
	, Mr Gegham Muradyan			Hydrome	teorology and Mo	onitoring Center
Sampling site		T				
Sampling site ID						arlanov» or «Garniki»
Inner diameter						id well head (m): -
	I (m below well head)				ell (m below well	head): -
	tion of the sampling s	ite (e.g. o	coordina	tes): <b>The sp</b>	ring is captured.	
Sampling						• • •
		with pu		•	Abstraction devi	
Pumping duratio		_	Abs	traction ra	te / discharge (I/s	sec): 8.5 l/sec
-	rs (at the sampling)					
Weather:	Colour:		Turbi	dity:	Sediment:	Smell:
<u>□ sunny</u> □ cloudy	<u>□ colourless</u> □ slight		<u>□ no</u> □ low		<u>□ no</u> □ low	<u>□ odorless</u> □ putrid
□ changing	□ slight □ strong			derate	□ moderate	□ putrid □ fishy
□ rain	□ brown				□ strong	□ chemical
□ heat	□ grey			סיי 		□ chlor
□ frost	□ yellow		_			□ gasoline/oil
Measuring devi						0
pH-value:	Water temperati	ure (°C):		Disso	olved oxygen (mg	:/l):
7.81	8.9 °C				6.17 mg/l (60.	
Electrical condu	ctivity incl. reference	temper	ature	(µS/cm):	<b>194</b> μS/cm □ a	at 25 °C
Sample treatme	nt: <u>chilled</u>	🗆 filt	rated	🗆 stal	oilised with acid	
	d of Saratovka admini				, ,	-37499-04-55-50)
Execution of th	ne sampling and of	the ab	ove w	orks acco	rding to the sar	mpling manual and the
•	the laboratory.					
-	npler:				Date:	
Name of sample	er:					

SAMPLING PROT	OCOL – GROUNDWAT	ER					
Project:	"EU4Environment - V	Vater Res	sources	and Environ	menta	I Data" Project	
General							
The location of the	e sampling point Armenia	a, Lori Reg	ion, Tash	ir city			
The coordinates					-		
of the			ANT	- AND A	Als I		
sampling point	and the second s					AT SUP ALL	
0		an pri	Elson of A	TWAL PLANT			
X=41 <sup>0</sup> 06' 07.6" Y=44 <sup>0</sup> 17' 56.8"	the second second						
H= 1481m		10 ×	×r				
-	and the second s	A start and		And the second s			
				Carolina Carolina	-	S SALL SE	
	CRIME PROVIDE					A print of	
	the second	1 and		the state of the s			
	- La si Maria	and the second	、定文	C. C. S. S. S.		A CAR O	
	SO PAR	A A A A					
Sampling Date: Au		e (hh:mm)	: 12:20	Samp	le ID:	N11	
	Mr Harutyun Yeremyan	Ir	nstitute: N	Ministry of Na	ature P	rotection	
	s Armine Hakobyan <sup>-</sup> Gegham Muradyan	'H	lydromet	eorology and	d Monit	toring Center	
Sampling site							
Sampling site ID: N	11	Type of	sampling	site Elowin	ng well		
Inner diameter of v			Type of sampling site: Flowing well Distance between land surface and well head (m): 0.8				
	m below well head): +1.3	-				· ·	
	n of the sampling site (e.g		-				
	sed, flows into the Tashi		). The ne	in thus unlicu	in cui	y 19703.	
Sampling							
Type of sampling:	□ with bailer □ with p	ump 🗆 a	t a tap	Abstraction c	levice:	bucket	
Pumping duration			•	te / discharge			
Field parameters (							
Weather:	Colour:	Turbidit	v:	Sediment:		Smell:	
<u>u sunny</u>	□ colourless	□ no		□ no		odorless	
□ cloudy	🗆 slight	□ low		□ low		🗆 putrid	
□ changing	□ strong	□ mode	rate	moderate		□ fishy	
🗆 rain	□ brown	🗆 strong	S	□ strong		🗆 chemical	
🗆 heat	🗆 grey	□		□		🗆 chlor	
frost	□ yellow					gasoline/oil	
Measuring device:							
pH-value:	Water temperature (°C	:):	Disso	lved oxygen	(mg/l):		
7.4	10.7 °C			4.86 mg/l	(48.2%	5)	
Electrical conductiv	vity incl. reference tempe	erature (µ	S/cm):	<b>646</b> μS/cm	□ at 2	25 °C	
Sample treatment:	<u>□ chilled</u> □ fi	ltrated	🗆 stab	oilised with a	cid		
Contacts: Head of	Tashir Urban Planning an	d Agricult	ure Depa	rtment, Chie	f Archit	tect	
Slavik Anakhasyan	(Tel +37494-39-48-08)						
	ing and of the above works ac	cording to th				ements of the laboratory.	
Signature of sampler: _ Name of sampler:			Date	•			
wante of sampler.							

SAMPLING PROT	OCOL – GROUNDWATE	R			
Project:	"EU4Environment - W	ater Reso	urces	and Environmenta	I Data" Project
General					
The location of the	e sampling point Armenia	, Lori Regioi	n, Geta	avan/Stepanavan vil	lage
The coordinates	2	12 2 4 m 1 1 1	$\sim 6.2$		
of the	Ends and Mith				
sampling point	A MAR A MAR	CON DE	No.	and the second	- Starter
X=41 <sup>0</sup> 02'03.0"			2-16-6	the said of the	
Y=44 <sup>o</sup> 21' 12.8"		- Andre		C Stall M	- A Contractory
H= 1421m				El Carlo	ALL
		a put of the			· TASTA
	South States	1.7.	1		
		A VANE			
		Lingell .		Marca M	
					Station to
Sampling Date: Au	ισ 30, 2022 Time	(hh:mm): 1	5.05	Sample ID:	N12
	Mr Harutyun Yeremyan			•	
	Armine Hakobyan			Ministry of Nature P	
	Gegham Muradyan	'Hyc	romet	eorology and Monit	toring Center
Sampling site		-			
Sampling site ID: N	12	Type of sa	npling	site: Flowing well	
Inner diameter of v	well (mm): 219	Distance b	etwee	n land surface and v	vell head (m): 0.35
Calm water level (r	n below well head): +2.6	Final depth	n of we	ell (m below well hea	ad): 93
Further informatio	n of the sampling site (e.g.	coordinates): T	he we	II was drilled in ear	y 1970s.
The well is not use	d.				
Sampling					
Type of sampling:	□ with bailer □ with pu	mp 🗆 at a	tap /	Abstraction device:	bucket
Pumping duration	(min): -	Abstract	ion rat	te / discharge (l/sec)	): 60 l/sec
Field parameters (	at the sampling)				
Weather:	Colour:	Turbidity:		Sediment:	Smell:
🗆 sunny	colourless	<u> </u>		<u>□ no</u>	odorless
□ cloudy	🗆 slight	□ low		□ low	🗆 putrid
changing	strong	🗆 moderat	e	🗆 moderate	🗆 fishy
🗆 rain	🗆 brown	□ strong		□ strong	chemical
🗆 heat	🗆 grey	□		□	□ chlor
🗆 frost	□ yellow				gasoline/oil
Measuring device:					
pH-value:	Water temperature (°C)	:	Disso	lved oxygen (mg/l):	
7.91	8.0 °C			6.34 mg/l (63%)	
Electrical conductiv	vity incl. reference tempe	rature (µS/c	m): 1	129 μS/cm 🛛 🗆 at 2	25 °C
Sample treatment:	□ chilled □ filt	trated	🗆 stab	oilised with acid	
Contacts: -					
	and of the above works according			and the requirements of the	e laboratory.
Signature of sampler: Name of sampler:		Date:			

Due le et.				and Environ	mental Date" Draigat
Project:	EU4Environmer	it - Water Re	sources	and Environi	mental Data" Project
General				10.	
	the sampling point Arr	nenia, Lori Reg	gion, Get	avan/Stepanav	/an village
The coordinate	S				
of the			and the same	and the second	
sampling				C	
point		AT TOTAL			
X=41 <sup>0</sup> 02'01.5"				一个人交通	
Y=44 <sup>o</sup> 21' 12.4"		There are	Same.		
H= 1403m		Charles .			
				Contraction of the second	
				100-50	
	A second second	Contraction of the			and the second second
	Contraction of the second		and a		
	Care 235 May	how the		A PARTIE	C. C. A. Martin
Sampling Date:	Aug 30, 2022	Time (hh:mm)	: 15:45	Sample	e ID: <b>N13</b>
	n: Mr Harutyun Yeremyan				ture Protection
1 01	, Ms Armine Hakobyan			•	Monitoring Center
	Mr Gegham Muradyan		lyuronne		
Sampling site					
Sampling site ID				g site: Flowin	
Inner diameter	of well (mm): 219	Distance	e betwee	en land surface	and well head (m): 1.0
Calm water leve	el (m below well head):	+1.7 Final de	pth of w	ell (m below w	ell head): 85
Further informa	ation of the sampling sit	:e (e.g. coordinates	i): The we	ell was drilled	in early 1970s.
The well is not	used.				
Sampling					
Type of samplir	ng: <u>    with bailer</u> wi	ith pump 🛛 a	it a tap	Abstraction de	evice: <b>bucket</b>
Pumping durati	on (min): -	Abstr	action ra	ite / discharge	(l/sec): <b>14 l/sec</b>
Field paramete	rs (at the sampling)				
		Turbidit	ty:	Sediment:	Smell:
Weather:	Colour:			o cument.	Sillell.
	Colour:	<u> </u>			odorless
🗆 sunny					
□ <b>sunny</b> □ cloudy	□ colourless	<u> </u>	erate	<u> </u>	<u>□ odorless</u>
Weather: <u>sunny</u> cloudy changing rain	<u>□ colourless</u> □ slight	<u>□ no</u> □ low		<u>□ no</u> □ low	<u>□ odorless</u> □ putrid
□ <b>sunny</b> □ cloudy □ changing	<ul> <li>□ colourless</li> <li>□ slight</li> <li>□ strong</li> </ul>	<u>□ no</u> □ low □ mode	g	<u>□ no</u> □ low □ moderate	<ul> <li>□ odorless</li> <li>□ putrid</li> <li>□ fishy</li> </ul>
□ <b>sunny</b> □ cloudy □ changing □ rain □ heat	<ul> <li>□ colourless</li> <li>□ slight</li> <li>□ strong</li> <li>□ brown</li> </ul>	<u>□ no</u> □ low □ mode □ strong	g	□ <b>no</b> □ low □ moderate □ strong	<ul> <li>□ odorless</li> <li>□ putrid</li> <li>□ fishy</li> <li>□ chemical</li> </ul>
□ <b>sunny</b> □ cloudy □ changing □ rain □ heat □ frost	<ul> <li>□ colourless</li> <li>□ slight</li> <li>□ strong</li> <li>□ brown</li> <li>□ grey</li> <li>□ yellow</li> </ul>	<u>□ no</u> □ low □ mode □ strong	g	□ <b>no</b> □ low □ moderate □ strong	<ul> <li>odorless</li> <li>putrid</li> <li>fishy</li> <li>chemical</li> <li>chlor</li> </ul>
<ul> <li><u>sunny</u></li> <li>cloudy</li> <li>changing</li> <li>rain</li> <li>heat</li> <li>frost</li> </ul>	<ul> <li>□ colourless</li> <li>□ slight</li> <li>□ strong</li> <li>□ brown</li> <li>□ grey</li> <li>□ yellow</li> </ul>	<u>□ no</u> □ low □ mode □ strong □	g 	□ <b>no</b> □ low □ moderate □ strong	<ul> <li>odorless</li> <li>putrid</li> <li>fishy</li> <li>chemical</li> <li>chlor</li> <li>gasoline/oil</li> </ul>
<ul> <li><u>sunny</u></li> <li>cloudy</li> <li>changing</li> <li>rain</li> <li>heat</li> <li>frost</li> <li>Measuring devi</li> </ul>	<ul> <li>□ colourless</li> <li>□ slight</li> <li>□ strong</li> <li>□ brown</li> <li>□ grey</li> <li>□ yellow</li> </ul>	<u>□ no</u> □ low □ mode □ strong □	g 	<ul> <li><u>no</u></li> <li>low</li> <li>moderate</li> <li>strong</li> <li></li> </ul>	<ul> <li>odorless</li> <li>putrid</li> <li>fishy</li> <li>chemical</li> <li>chlor</li> <li>gasoline/oil</li> </ul>
<ul> <li><u>sunny</u></li> <li>cloudy</li> <li>changing</li> <li>rain</li> <li>heat</li> <li>frost</li> <li>Measuring devi</li> <li>pH-value: 7.97</li> </ul>	<ul> <li>□ colourless</li> <li>□ slight</li> <li>□ strong</li> <li>□ brown</li> <li>□ grey</li> <li>□ yellow</li> </ul>	□ <u>no</u> □ low □ strong □ re (°C):	g Diss	<ul> <li>no</li> <li>low</li> <li>moderate</li> <li>strong</li> <li></li> <li>olved oxygen (</li> </ul>	<ul> <li>odorless</li> <li>putrid</li> <li>fishy</li> <li>chemical</li> <li>chlor</li> <li>gasoline/oil</li> </ul>
<ul> <li>□ sunny</li> <li>□ cloudy</li> <li>□ changing</li> <li>□ rain</li> <li>□ heat</li> <li>□ frost</li> <li>Measuring devi</li> <li>pH-value:</li> <li>7.97</li> </ul>	ice: Water temperatur 9.1 °C Water. temperatur 9.1 °C	□ <u>no</u> □ low □ strong □ re (°C):	g Disse S/cm):	□ no □ low □ moderate □ strong □ olved oxygen ( 6.25 mg/l (	<ul> <li>□ odorless</li> <li>□ putrid</li> <li>□ fishy</li> <li>□ chemical</li> <li>□ chlor</li> <li>□ gasoline/oil</li> </ul> mg/l): 62.7%) □ at 25 °C
<ul> <li><u>sunny</u></li> <li>cloudy</li> <li>changing</li> <li>rain</li> <li>heat</li> <li>frost</li> <li>Measuring devi</li> <li>pH-value:         <ul> <li>7.97</li> </ul> </li> </ul>	ice: Water temperatur 9.1 °C Water. temperatur 9.1 °C	<u>no</u> low mode strong  re (°C):	g Disse S/cm):	<ul> <li><u>no</u></li> <li>low</li> <li>moderate</li> <li>strong</li> <li></li> <li>olved oxygen (</li> <li>6.25 mg/l (</li> <li>140 μS/cm</li> </ul>	<ul> <li>□ odorless</li> <li>□ putrid</li> <li>□ fishy</li> <li>□ chemical</li> <li>□ chlor</li> <li>□ gasoline/oil</li> </ul> mg/l): 62.7%) □ at 25 °C
<ul> <li><u>sunny</u></li> <li>cloudy</li> <li>changing</li> <li>rain</li> <li>heat</li> <li>frost</li> <li>Measuring devi</li> <li>pH-value:         <ul> <li>7.97</li> <li>Electrical condu</li> <li>Sample treatme</li> </ul> </li> </ul>	ice: Water temperatur 9.1 °C Water. temperatur 9.1 °C	<u>no</u> low mode strong  re (°C):	g Disse S/cm):	<ul> <li><u>no</u></li> <li>low</li> <li>moderate</li> <li>strong</li> <li></li> <li>olved oxygen (</li> <li>6.25 mg/l (</li> <li>140 μS/cm</li> </ul>	<ul> <li>□ odorless</li> <li>□ putrid</li> <li>□ fishy</li> <li>□ chemical</li> <li>□ chlor</li> <li>□ gasoline/oil</li> </ul> mg/l): 62.7%) □ at 25 °C
<ul> <li>sunny</li> <li>cloudy</li> <li>changing</li> <li>rain</li> <li>heat</li> <li>frost</li> <li>Measuring devi</li> <li>pH-value:         <ul> <li>7.97</li> <li>Electrical condu</li> <li>Sample treatme</li> <li>Contacts: -</li> </ul> </li> </ul>	ice: Water temperatur 9.1 °C Water. temperatur 9.1 °C	□ no □ low □ mode □ strong □ re (°C): emperature (μ □ filtrated	g Disso S/cm): □ sta	<ul> <li>no</li> <li>low</li> <li>moderate</li> <li>strong</li> <li></li> <li>olved oxygen (</li> <li>6.25 mg/l (</li> <li>140 μS/cm</li> <li>bilised with ac</li> </ul>	<ul> <li>□ odorless</li> <li>□ putrid</li> <li>□ fishy</li> <li>□ chemical</li> <li>□ chlor</li> <li>□ gasoline/oil</li> </ul> mg/l): 62.7%) □ at 25 °C id

SAMPLING PROTO	DCOL – GROUNDWATE	R				
Project:	"EU4Environment - W	ater F	Resource	s and Enviro	nmenta	l Data" Project
General						
The location of the	sampling point: Armer	nia, Lor	i Region,	Lori Berd villa	ge	
The coordinates of	the				Ser.	State State State State State
sampling point	and the second second	and the state	6-1-200			W CONSTRUCTION
		P and the	MAL .		£ 21	
X=41°00' 13.3" Y=44° 25' 52.3"	Contraction and the second	19 ·				
H= 1402m		and a	and services	Add to the second		
11- 1402111		A STATE	Cherter .	A start and		
	The second second		CARLE	A State State State		
		1	all brie	Taxe les		The second second
			Que to			
		and the second	P. Carlos		15 U	A PARAMAN
	· 一般的 在 》集	A Street	Cale di	W. A. A. A.		P P LAN 201 . Mail
			1 10 10		- 16	
Sampling Date: Au		(hh:mi	m): 10:10	Sam	ple ID:	N14
Sampling person:	Mr Harutyun Yeremyan Armine Hakobyan		Institute	: Ministry of N	Nature P	rotection
	Gegham Muradyan		'Hydrom	eteorology ar	nd Monit	oring Center
Sampling site						
Sampling site ID: N	14	Type	of samplir	ng site: Spri	ng «Lusa	ghbyur»
Inner diameter of w					-	vell head (m): -
	n below well head): -			well (m below		
	n of the sampling site (e.g.					
Sampling			,		•	
	□ with float □ with pum	מם מו	at a tap	Abstraction	device:	float
Pumping duration (		· · ·	-	rate / discharg		
Field parameters (a				, (	<u>, , , , , , , , , , , , , , , , , , , </u>	-
Weather:	Colour:	Turbi	dity:	Sediment	:	Smell:
🗆 sunny	colourless	□ no		□ no		odorless
□ cloudy	🗆 slight	□ low		□ low		🗆 putrid
□ changing	□ strong	□ mo	derate	🗆 modera	te	□ fishy
🗆 rain	□ brown	□ stro	ong	□ strong		chemical
🗆 heat	□ grey	□	-			□ chlor
□ frost	□ yellow					gasoline/oil
Measuring device:						
pH-value:	Water temperature (°C)	:	Dis	solved oxyger	n (mg/l):	
7.84	9.5 °C			5.83 mg/l	<u>(61.7%</u>	)
Electrical conductiv	ity incl. reference tempe	rature	(µS/cm):	<b>194</b> μS/cm	🗆 at 2	25 °C
Sample treatment:	□ chilled □ filt	trated	🗆 sta	abilised with a	acid	
Contacts:						
	ng and of the above works acc	ording to	o the sampli	ing manual and t	he require	ements of the laboratory.
Signature of sampler:			Da	ate:		
Name of sampler:						
SAMPLING PROT	DCOL – GROUNDWAT	ER				
---	------------------------------	-----------	-----------	---------	--------------------------------------	----------------------------
Project:	"EU4Environment - V	Vater F	Resourc	ces a	nd Environmen	tal Data" Project
General						
The location of the	sampling point: Arme	nia, Loi	ri Regior	n, Aga	arak village	
The coordinates of the sampling point						
X=41°00' 10.5" Y=44° 27' 48.6"					a and	
H= 1260m						
Sampling Date: Au	ig 31, 2022 Time	e (hh:m	m): 11:3	30	Sample ID:	N15
	Armine Hakobyan				inistry of Nature orology and Mor	
Sampling site	Gegham Muradyan		1 -			-
Sampling site ID: N	14	Type	of same	oling (	site: Spring «Ag	araki»
Inner diameter of w						well head (m): -
	n below well head): -				l (m below well h	
	n of the sampling site (e.g					
Sampling		,				•••
	□ with float □ with pur	mn 🗆	at a tap	Δ	bstraction device	e: float
Pumping duration (					e / discharge (l/se	
Field parameters (a		7 10	511401101			
Weather:	Colour:	Turbi	dity:		Sediment:	Smell:
<u>□ sunny</u>	□ colourless	□ no			no	□ odorless
□ cloudy	□ slight	□ low	,		□ low	□ putrid
□ changing	□ strong		derate		moderate	□ fishy
□ rain	□ brown	□ stro			□ strong	□ chemical
□ heat	□ grey					□ chlor
□ frost	□ yellow					□ gasoline/oil
Measuring device:						
pH-value:	Water temperature (°C	C):	Г	Dissol	ved oxygen (mg/	):
8.2	9.8 °C				7.8 mg/l (75.7%	-
	ity incl. reference tempe	erature	(µS/cm			: <b>25 °C</b>
Sample treatment:		Itrated			lised with acid	
Contacts:				51001		
	ng and of the above works ac	cording t	o the sam	noling	manual and the requ	irements of the laboratory
Name of sampler:						

	DCOL – GROUNDWA	TER				
Project:	"EU4Environment -	Water F	Resources	and Environ	menta	l Data" Project
General						
he location of the	sampling point: Arm	enia, Loi	i Region, O	)dzun village		
The coordinates of	the					
ampling point (=41° 03′ 6.3″ /=44° 35′ 26.5″ H= 1282m			X	A LANGE AND A LANG		SC S
			K			
Sampling Date: Au		ie (hh:m	m): 12:45	Samp	le ID:	N16
Sampling person: Mr Harutyun Yeremyan Ms Armine Hakobyan Mr Gegham Muradyan				Ministry of Na teorology and		
Sampling site						
Sampling site ID: N2		Туре	of sampling	g site: Sprin	g «Kend	lanarar»
nner diameter of w	vell (mm): -	Dista	nce betwee	en land surfac	e and w	vell head (m): -
Calm water level (m	n below well head): -	Final	depth of w	ell (m below v	well hea	ad): -
<sup>;</sup> urther informatior	n of the sampling site (e	e.g. coordina	ates): The sp	oring is captur	ed. The	e spring is utilized fo
drinking water sup	ply.					
Sampling						
Type of sampling:	🗆 <b>with bailer</b> 🗆 with p	pump 🛛	🛛 at a tap	Abstraction of	levice:	bucket
Pumping duration (	min): -	Ab	straction ra	ate / discharge	e (l/sec)	: 0.22 l/sec
ield parameters (a	at the sampling)					
Neather:	Colour:	Turbi	dity:	Sediment:		Smell:
sunny	colourless	<u> </u>		<u> </u>		odorless
□ cloudy	🗆 slight	🗆 low		□ low		🗆 putrid
changing	□ strong	🗆 mo	derate	🗆 moderate	9	🗆 fishy
🗆 rain	🗆 brown	🗆 stro	ong	□ strong		chemical
∃ heat	🗆 grey	□		□		🗆 chlor
∃ frost	□ yellow					gasoline/oil
Measuring device:						
oH-value:	Water temperature (°	°C):	Diss	olved oxygen	(mg/l):	
8.07	10.4 °C	-			(81.1%	)
lectrical conductiv	ity incl. reference temp	perature	(µS/cm):		🗆 at 2	
Sample treatment:		filtrated		bilised with a	cid	
•	taff of Odzun communi	ity: Haru				67-20)
	ng and of the above works a					· · · · · · · · · · · · · · · · · · ·

SAMPLING PRO	FOCOL – GROUNDWATE	R		
Project:	"EU4Environment - W	ater Resources	and Environment	al Data" Project
General				•
The location of th	e sampling point: Armer	nia, Lori Region, N	1adan village	
The coordinates o	f the			
sampling point		A STATISTICS		
X=41 <sup>0</sup> 07' 29.2"			To The way	
Y=44 <sup>0</sup> 39' 09.6"		TOTAL STATE	A CONTRACTOR	
H= 1099m			A PER	
			A CONT	
			Harris Con	
	A PERSON			
			The second secon	- Antonio The
		Care Is		Contract of the second
		A martine		
Sampling Date: A	ug 31. 2022 Time	(hh:mm): 14:20	Sample ID:	N17
	Mr Harutyun Yeremyan	· /	· ·	
	s Armine Hakobyan		Ministry of Nature teorology and Mon	
	r Gegham Muradyan	нуаготте	teorology and wor	itoring Center
Sampling site		1		
Sampling site ID: N			g site: Spring «Vai	
Inner diameter of			en land surface and	
•	m below well head): -		ell (m below well he	•
Further information	on of the sampling site (e)	- an ordinator). The c	• • • •	
-	lized for drinking water su			
Sampling	lized for drinking water so	upply. Only 15 pe	ople live in the villa	age
Sampling Type of sampling:	lized for drinking water su	upply. Only 15 per	ople live in the villa Abstraction device	age : bucket
Sampling Type of sampling: Pumping duration	lized for drinking water su <u>with bailer</u> with pu (min): -	upply. Only 15 per	ople live in the villa	: bucket
Sampling Type of sampling:	lized for drinking water su <u>with bailer</u> with pu (min): - (at the sampling)	upply. Only 15 per	ople live in the villa Abstraction device te / discharge (l/se	age : bucket
Sampling Type of sampling: Pumping duration	lized for drinking water su <u>with bailer</u> with pu (min): - (at the sampling) Colour:	upply. Only 15 per	ople live in the villa Abstraction device	sge bucket c): 0.15 l/sec Smell:
Sampling Type of sampling: Pumping duration Field parameters Weather: Sunny	lized for drinking water su <u>with bailer</u> with pu (min): - (at the sampling) Colour: <u>colourless</u>	Imp I at a tap Abstraction ra Turbidity: I no	Abstraction device te / discharge (I/sec Sediment:	age : bucket c): 0.15 l/sec Smell: <u>odorless</u>
Sampling Type of sampling: Pumping duration Field parameters Weather: <u>sunny</u> cloudy	lized for drinking water su <u>with bailer</u> with pu (min): - (at the sampling) Colour: <u>colourless</u> slight	Abstraction ra	Abstraction device te / discharge (l/second Sediment: <u>no</u> low	sige : bucket c): 0.15 l/sec Smell: <u>odorless</u> <u>putrid</u>
Sampling Type of sampling: Pumping duration Field parameters Weather: <u>sunny</u> cloudy changing	lized for drinking water su <u>with bailer</u> with pu (min): - (at the sampling) Colour: <u>colourless</u> slight strong	upply. Only 15 per         ump       at a tap         Abstraction ra         Turbidity:         no         low         moderate	Abstraction device te / discharge (l/set Sediment: <u>no</u> low moderate	sige : bucket c): 0.15 l/sec Smell: <u>odorless</u> o putrid ofishy
Sampling Type of sampling: Pumping duration Field parameters Weather: sunny cloudy changing rain	lized for drinking water su <u>with bailer</u> with pu (min): - (at the sampling) Colour: <u>colourless</u> slight strong brown	Abstraction ra Abstraction ra Turbidity: Dow	Abstraction device te / discharge (l/sec Sediment: <u>no</u> low moderate strong	sige : bucket c): 0.15 l/sec Smell: <u>odorless</u> <u>o</u> putrid <u>o</u> fishy <u>o</u> chemical
Sampling Type of sampling: Pumping duration Field parameters Weather: Sunny cloudy changing rain heat	lized for drinking water su <u>with bailer</u> with pu (min): - (at the sampling) Colour: <u>colourless</u> slight strong brown grey	upply. Only 15 per         ump       at a tap         Abstraction ra         Turbidity:         no         low         moderate	Abstraction device te / discharge (l/set Sediment: <u>no</u> low moderate	sge : bucket c): 0.15 l/sec Smell: <u>odorless</u> <u>putrid</u> fishy chemical chlor
Sampling Type of sampling: Pumping duration Field parameters Weather: Sunny cloudy cloudy changing rain heat frost	lized for drinking water su with bailer with put (min): - (at the sampling) Colour: colourless slight strong brown grey yellow	Abstraction ra Abstraction ra Turbidity: Dow	Abstraction device te / discharge (l/sec Sediment: <u>no</u> low moderate strong	sige : bucket c): 0.15 l/sec Smell: <u>odorless</u> <u>o</u> putrid <u>o</u> fishy <u>o</u> chemical
Sampling Type of sampling: Pumping duration Field parameters Weather: <u>sunny</u> cloudy cloudy changing rain heat frost Measuring device	lized for drinking water su with bailer with puriod (min): - (at the sampling) Colour: colourless slight strong brown grey yellow :	Abstraction ra Abstraction ra Turbidity: Only 15 per Inco	Abstraction device te / discharge (l/sec Sediment: <u>no</u> low moderate strong 	sige : bucket c): 0.15 l/sec Smell: <u>odorless</u> <u>putrid</u> fishy chemical chlor gasoline/oil
Sampling Type of sampling: Pumping duration Field parameters Weather: Sunny cloudy cloudy changing rain heat frost Measuring device pH-value:	lized for drinking water su <u>with bailer</u> with pu (min): - (at the sampling) Colour: <u>colourless</u> slight strong brown grey yellow : Water temperature (°C	Abstraction ra Abstraction ra Turbidity: Only 15 per Inco	Abstraction device te / discharge (l/sec Sediment: <u>no</u> low moderate strong 	sige : bucket c): 0.15 l/sec Smell: <u>odorless</u> <u>putrid</u> fishy chemical chlor gasoline/oil
Sampling Type of sampling: Pumping duration Field parameters Weather: Sunny cloudy changing rain heat frost Measuring device pH-value: 7.16	lized for drinking water su with bailer with pu (min): - (at the sampling) Colour: colourless slight strong brown grey yellow : Water temperature (°C) 13.2 °C	Abstraction ra Abstraction ra Turbidity: Only 15 per Strong Strong Disso	Abstraction device te / discharge (l/section Sediment: <u>no</u> low moderate strong 	sige : bucket c): 0.15 l/sec Smell: <u>odorless</u> <u>putrid</u> fishy chemical chlor <u>gasoline/oil</u> : %)
Sampling Type of sampling: Pumping duration Field parameters Weather: sunny cloudy cloudy changing rain heat frost Measuring device pH-value: 7.16 Electrical conducti	ized for drinking water sum         with bailer       with put         (min): -       with put         (at the sampling)       Colour:         Colourless       slight         slight       strong         brown       grey         yellow       :         Water temperature (°C)       13.2 °C         vity incl. reference temperature       *	upply. Only 15 per         ump       at a tap         Abstraction ra         Turbidity:         no         low         moderate         strong            Disso         rature (µS/cm):	Abstraction device te / discharge (l/set Sediment: <u>no</u> low moderate strong strong  plved oxygen (mg/l) 5.55 mg/l (56.35 1581 µS/cm <b>at</b>	sige : bucket c): 0.15 l/sec Smell: <u>odorless</u> <u>putrid</u> fishy chemical chlor <u>gasoline/oil</u> : %)
Sampling Type of sampling: Pumping duration Field parameters Weather: Sunny cloudy changing rain heat frost Measuring device pH-value: 7.16 Electrical conducti Sample treatment	ized for drinking water survey         with bailer       with put         (min): -       with put         (at the sampling)       Colour:         colourless       slight         slight       strong         brown       grey         yellow       :         Water temperature (°C)       13.2 °C         vity incl. reference tempe       ifiled	upply. Only 15 per         ump       at a tap         Abstraction ra         Turbidity:         no         low         moderate         strong         strong         Disso         rature (µS/cm):         trated       stal	Abstraction device te / discharge (l/set Sediment: <u>no</u> low moderate strong  blved oxygen (mg/l) 5.55 mg/l (56.35 1581 µS/cm <b>at</b> polised with acid	sige : bucket c): 0.15 l/sec Smell: <u>odorless</u> <u>putrid</u> fishy chemical chlor gasoline/oil
Sampling Type of sampling: Pumping duration Field parameters Weather: Sunny cloudy changing rain heat frost Measuring device pH-value: 7.16 Electrical conducti Sample treatment Contacts: resident	lized for drinking water su with bailer with pur (min): - (at the sampling) Colour: colourless slight strong brown grey yellow : Water temperature (°C) 13.2 °C ivity incl. reference tempe colourless file of the village: Juliya Grigo	Imp       at a tap         Imp       at a tap         Abstraction ra         Turbidity:         no         low         moderate         strong         strong         oryan         (Tated         stated         stated         at a tap         mo         bisso         ano         bisso         bisso         ano         bisso         bisso         ano         bisso         bisso         bisso         ano         bisso         ano         bisso         bisso         ano         bisso         ano         bisso         bisso         bisso         bisso <td>Abstraction device te / discharge (l/set Sediment: no low moderate strong strong strong blved oxygen (mg/l) 5.55 mg/l (56.35 1581 µS/cm at pilised with acid 5-78-06-22)</td> <td><pre>sige sige sige sight bucket c): 0.15 l/sec smell:</pre></td>	Abstraction device te / discharge (l/set Sediment: no low moderate strong strong strong blved oxygen (mg/l) 5.55 mg/l (56.35 1581 µS/cm at pilised with acid 5-78-06-22)	<pre>sige sige sige sight bucket c): 0.15 l/sec smell:</pre>
Sampling Type of sampling: Pumping duration Field parameters Weather: sunny cloudy changing rain heat frost Measuring device pH-value: 7.16 Electrical conducti Sample treatment Contacts: resident	ized for drinking water sum         with bailer       with put         (min): -       with put         (at the sampling)       Colour:         Colourless       slight         slight       strong         brown       grey         yellow       :         Water temperature (°C)       13.2 °C         ivity incl. reference tempe       fill         of the village: Juliya Grigo       sampling and of the all	Imp       at a tap         Imp       at a tap         Abstraction ra         Turbidity:         no         low         moderate         strong         strong         oryan         (Tated         stated         stated         at a tap         mo         bisso         ano         bisso         bisso         ano         bisso         bisso         ano         bisso         bisso         bisso         ano         bisso         ano         bisso         bisso         ano         bisso         ano         bisso         bisso         bisso         bisso <td>Abstraction device te / discharge (l/set Sediment: no low moderate strong strong strong blved oxygen (mg/l) 5.55 mg/l (56.35 1581 µS/cm at pilised with acid 5-78-06-22)</td> <td><pre>sige sige sige sight bucket c): 0.15 l/sec smell:</pre></td>	Abstraction device te / discharge (l/set Sediment: no low moderate strong strong strong blved oxygen (mg/l) 5.55 mg/l (56.35 1581 µS/cm at pilised with acid 5-78-06-22)	<pre>sige sige sige sight bucket c): 0.15 l/sec smell:</pre>
Sampling Type of sampling: Pumping duration Field parameters Weather: Sunny cloudy changing rain heat frost Measuring device pH-value: 7.16 Electrical conducti Sample treatment Contacts: resident Execution of the requirements of th	ized for drinking water summary         with bailer       with put         (min): -       with put         (at the sampling)       Colour:         colourless       slight         slight       strong         brown       grey         yellow       :         Water temperature (°C)       13.2 °C         ivity incl. reference tempe       filition         cof the village: Juliya Grigon       sampling and of the all         e laboratory.       and of the all	Imp       at a tap         Abstraction ra         Turbidity:         no         low         moderate         strong         strong         Disso         rature (μS/cm):         trated       stal         oryan       (Tel +37495)         pove       works	Abstraction device te / discharge (l/sec Sediment: <u>no</u> low moderate strong  blved oxygen (mg/l) 5.55 mg/l (56.35 1581 µS/cm <u>at</u> bilised with acid 5-78-06-22) rding to the samp	sige : bucket c): 0.15 l/sec Smell: <u>odorless</u> <u>putrid</u> fishy chemical chlor gasoline/oil : %) 25 °C
Sampling Type of sampling: Pumping duration Field parameters Weather: Sunny cloudy changing rain heat frost Measuring device pH-value: 7.16 Electrical conducti Sample treatment Contacts: resident Execution of the requirements of th	ized for drinking water sum         with bailer       with put         (min): -       with put         (at the sampling)       Colour:         Colourless       slight         slight       strong         brown       grey         yellow       :         Water temperature (°C)       13.2 °C         ivity incl. reference tempe       fill         of the village: Juliya Grigo       sampling and of the all	apply. Only 15 per         imp       at a tap         Abstraction ra         Turbidity:         no         low         moderate         strong         strong         oryan (Tel +37495)         pove works accord         Date	Abstraction device te / discharge (l/set Sediment: no low moderate strong strong strong blved oxygen (mg/l) 5.55 mg/l (56.35 1581 µS/cm at pilised with acid 5-78-06-22)	sige : bucket c): 0.15 l/sec Smell: <u>odorless</u> <u>putrid</u> fishy chemical chlor gasoline/oil : %) 25 °C

SAMPLING PR	OTOCOL – GROUND	WATE	R						
Project:	"EU4Environme	ent - W	/ater Resou	urces a	and Envir	onmenta	al Data" Project		
General									
The location of	the sampling point:	Armei	nia, Lori Reg	ion, Sh	amlugh vi	llage (Be	ndik district)		
The coordinates	s of the		3			1. 1. 1.			
sampling point							and the second second		
X=41 <sup>0</sup> 09'22.7"							AND AND A STATE		
Y=44° 43' 03.5"									
H= 1217									
				-	Sec.				
							A		
			(hh:mm): 1	5:20	San	nple ID:	N18		
Sampling persor	Insti	tute: N	/inistry of	Nature P	rotection				
	'Hyd	romet	eorology a	nd Moni	toring Center				
Sampling site	Mr Gegham Muradyan								
Sampling site ID	)· N18	-	Type of sar	nnling	site: <b>Snr</b>	ing «Kak	ali taki»		
Inner diameter of well (mm): -					•				
	el (m below well head)	· _		Distance between land surface and well head (m): - Final depth of well (m below well head): -					
	tion of the sampling s				-		auj		
	ar the cemetery, and			-		ureu.			
	live in the village	utilize		ig wat	ei suppiy.				
Sampling									
	g: <u>     with bailer</u> v	with pr	ump ⊓ata	tap	Abstractio	n device:	bucket		
Pumping duration					e / discha				
· •	rs (at the sampling)		7100011000			80 (1) 500	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,		
Weather:	Colour:		Turbidity:		Sedimen	t:	Smell:		
	□ colourless		□ no		□ no				
□ cloudy	□ slight		□ low		□ low		□ putrid		
□ changing	□ strong		□ moderat	e	□ modera	ate	□ fishy		
□ rain	□ brown		□ strong	•	□ strong		□ chemical		
□ heat	□ grey						□ chlor		
□ frost	□ yellow						□ gasoline/oil		
Measuring devi							0		
pH-value:	Water temperatu	ure (°C	):	Disso	lved oxyge	en (mg/l):			
7.35	11.4 °C				5.22 mg/				
	ctivity incl. reference	tempe	rature (uS/c	m): 7		🗆 at 2	-		
Sample treatme	,		<b>N</b> 1		ilised with				
	of Shamlugh administ						-535376)		
	village: Sos Aghababy					, • • • • • • • • • •	5550101		
	ne sampling and of					ne camp	ling manual and th		
	f the laboratory.	the di		accor	ung iu li	ic samp	mis manual and th		
	npler:				Л	ate			
Name of sample					U	ute			
same or sample	-··								

SAMPLING PROTO	DCOL – GROUNDWATE	R			
Project:	"EU4Environment - W	ater Resou	irces	and Environmenta	l Data" Project
General					
The location of the	sampling point: Armer	nia, Lori Regi	on, Tu	umanyan village (Kol	bayr Monastery)
The coordinates					
of the		3 4 M 10			
sampling point		The part of the second	in.		CON CONTRACTOR
X=41 <sup>0</sup> 00' 17.9"	Start Start Mark	19413			The second
Y=44 <sup>o</sup> 38' 05.4"					
H= 910					
Sampling Date: Se	n 01 2022 Time	(hh:mm): 10	)·11	Sample ID:	N19
Sampling person:					
	Armine Hakobyan			Ministry of Nature P	
Mr Gegham Muradyan 'Hydrometeorology and Monitoring Center					
Sampling site					
Sampling site ID: N1	19	Type of sar	npling	site: Spring	
Inner diameter of w	vell (mm): -	Distance b	etwee	n land surface and w	vell head (m): -
Calm water level (m	n below well head): -	Final depth	of we	ell (m below well hea	ad): -
	n of the sampling site (e.g		-		d. The output of the
spring is through th	e church wall and is con	sidered Hol	y wate	er.	
Sampling					
Type of sampling:	🗆 <b>with bailer</b> 🛛 with pu	mp 🗆 at a	tap /	Abstraction device:	bucket
Pumping duration (	min): -	Abstract	ion rat	te / discharge (I/sec)	: 0.01 l/sec
Field parameters (a	it the sampling)				
Weather:	Colour:	Turbidity:		Sediment:	Smell:
🗆 sunny	colourless	□ no		🗆 no	odorless
□ cloudy	□ slight	□ low		□ low	🗆 putrid
$\Box$ changing	□ strong	🗆 moderat	е	moderate	□ fishy
🗆 rain	□ brown	□ strong		□ strong	chemical
🗆 heat	□ grey	□	•	□	□ chlor
□ frost	□ yellow				gasoline/oil
Measuring device:	•	•			
pH-value:	Water temperature (°C)	:	Disso	lved oxygen (mg/l):	
8.13	14.1 °C			6.45 mg/l (74.8%	
Electrical conductiv	ity incl. reference tempe	rature (µS/c	m): <b>8</b>		-
Sample treatment:	□ chilled □ filt	trated	⊐ stab	oilised with acid	
Contacts:					
	ng and of the above works acc			g manual and the require :	ements of the laboratory.

	ROTOCOL – GROUN							
Project:	"EU4Environr	nent - W	ater Resou	rces a	and Environn	nental	Data" Project	
General							• •	
	the sampling point	: Armenia	, Lori Regior	ı, Tum	anyan village	(In the	e canyon of Kobayr	
The coordinate	S	1 2		11		100	a Brack	
of the			A SHIP			14	CALL BAR	
sampling point			A TONAL		AL AL	HA		
X=41 <sup>0</sup> 00' 28.3		X				Y	A CARLER AND	
Y=44 <sup>o</sup> 38' 10.4'	,		2					
H= 937								
Sampling Date:	Sen 01 2022	Time	(hh:mm): 11	•10	Sample		N20	
· •	•		,		· · ·			
Sampling person: Mr Harutyun Yeremyan Ms Armine Hakobyan				Institute: Ministry of Nature Protection				
Mr Gegham Muradyan 'Hydrometeorology and Monitoring Center						oring Center		
Sampling site								
Sampling site I	D: N20		Type of sam	npling	site: Spring			
Inner diameter	of well (mm): -		Distance be	tweer	n land surface	and w	ell head (m): -	
Calm water lev	el (m below well hea	ad): -	Final depth	of we	ll (m below w	ell hea	d): -	
Further inform	ation of the sampling	g site (e.g. d	coordinates): Th	ne spri	ing is capture	d.		
The spring is ut	tilized for drinking w	ater supp	oly.	-				
Sampling								
Type of samplin	ng: 🗆 with bailer 🛛	🗆 with pu	np ⊡atat	tap /	Abstraction de	vice:	bucket	
Pumping durat	-	· · ·			e / discharge	(I/sec):	0.5 l/sec	
	ers (at the sampling)				, 0	(, ,	•	
Weather:	Colour:		Turbidity:		Sediment:		Smell:	
sunny	□ colourless		□ no		□ no		odorless	
□ cloudy	□ slight		□ low		□ low		□ putrid	
□ changing	□ strong		□ moderate	د د	□ moderate		□ fishy	
□ rain	□ brown		□ strong	-	□ strong		□ chemical	
□ heat	□ grey						□ chlor	
□ frost	□ yellow		_				□ gasoline/oil	
Measuring dev					l.		J	
pH-value:	Water tempera	ature (°C)		Disso	lved oxygen (I	ng/I)·		
7.81	16.0 °			2,550	7.78 mg/l (			
	uctivity incl. reference		ature (uS/cr	n): <b>R</b>		□ at 2!	5 °C	
Sample treatme				-	ilised with aci			
Contacts:				. 5145		~		
	ampling and of the above	works acco	ording to the sa	mpling	manual and the	reauire	ments of the laborator	
			0					
Signature of sampl Name of sampler:_	er:			Date:				

SAMPLING PROT	OCOL – GROUNDWATE	R				
Project:	"EU4Environment - W		urces	and Enviror	menta	I Data" Proiect
General						,
The location of th	e sampling point: Armenia	a, Lori Regio	on, Dse	gh village		
The coordinates						
of the	MAX -	ANT REPORT	Anter	State State		
sampling point	Y TAKEN	TAP TO		2 DX	N SAM	
X=40 <sup>0</sup> 56' 40.0"	Fred and the M					
Y=44 <sup>0</sup> 40' 57.1"						
H= 1596						
Sampling Date: S	en 01 2022 Time	(hh:mm): 1	2 15	Samp		N21
	Mr Harutyun Yeremyan					
Sampling person: Mr Harutyun Yeremyan Ms Armine Hakobyan Mr Cortham Muraduan Mr Cortham Muraduan						
	r Gegham Muradyan	Чус	dromet	eorology and	d Monit	coring Center
Sampling site						
Sampling site ID: N	121	Type of sa	mpling	site: Sprin	g	
Inner diameter of	well (mm): -	Distance b	etweer	n land surfac	e and w	vell head (m): -
Calm water level (	m below well head): -	Final dept	h of we	ell (m below v	well hea	ad): -
	on of the sampling site (e.g.				r <mark>ed, bu</mark> t	t need repair.
The spring is utiliz	ed for drinking water by	«Shakaryan	Ranch	o» LTD.		
Sampling						
Type of sampling:		imp 🗆 at a	tap /	Abstraction of	levice:	
Pumping duration	(min): -	Abstrac	tion rat	e / discharge:	e (I/sec)	: 0.15 l/sec
Field parameters	(at the sampling)	T		1		1
Weather:	Colour:	Turbidity:		Sediment:		Smell:
🗆 sunny	<u>□ brown</u>	<u>□ low</u>		<u>□ low</u>		odorless
□ cloudy	colourless	□ no		🗆 no		🗆 putrid
changing	slight	moderat	te	🗆 moderate	5	🗆 fishy
🗆 rain	□ strong	strong		strong		chemical
🗆 heat	🗆 grey	□		□	•	□ chlor
frost	□ yellow					gasoline/oil
Measuring device	:					
pH-value:	Water temperature (°C	):	Disso	lved oxygen	(mg/l):	
8.48	13.0 °C			7.17 mg/l	(72.4%	)
Electrical conducti	ivity incl. reference tempe	rature (µS/o	cm): 4	<b>172</b> μS/cm	□ at 2	5 °C
Sample treatment	: <u>    chilled</u>	trated	🗆 stab	ilised with a	cid	
Contacts: Director	of «Shakaryan Rancho» L	TD : A.Shaq	aryan	(Tel +37455-	-00-41-2	21)
Execution of the samp Signature of sampler: Name of sampler:	ling and of the above works acc	ording to the	sampling Date:		e require	ements of the laboratory.

SAMPLING PROTO	COL – GROUNDW	VATE	R			
Project:	"EU4Environmen	t - W	ater Res	sources	and Environment	al Data" Project
General						
The location of the	sampling point Arm	nenia	, Tavush	Region, N	Aargahovit village	
The coordinates						A A Der porton
of the		+ 1				
sampling point				ALE AL		
X=40 <sup>0</sup> 43' 59.2"				16 CON		N ALAN AN AN
Y=44 <sup>0</sup> 41' 30.5"			o series			CON A CONTRACT
H= 1737	Contraction of the second	204	ALL STREET	Carlos A	Carles M	
	BALL S			SALS.		
		19		1.A.		
	Marth Ch		32			
		(D)		March 1		
	the second second			AAP	alles Min-	
Sampling Date: Sep	01.2022	Time	(hh:mm)	: 16:40	Sample ID:	N22
Sampling person:					· ·	
	Armine Hakobyan				Ainistry of Nature I	
Mr Gegham Muradyan 'Hydrometeorology and Monitoring Center						
Sampling site			•			
Sampling site ID: N2			Type of	sampling	site: Well	
Inner diameter of w	ell (mm): 124		Distance	e betweei	n land surface and	well head (m): 0.36
Calm water level (m belc	ow well head): (-11.92	)	Final de	pth of we	ell (m below well he	ead): 30
Further information	of the sampling site	<b>e</b> (e.g.	coordinates	: The we	ll was drilled in 202	20. The well is located
in the yard of Arsen	Bekchyan.The wel	l is u	tilized fo	r <mark>drinkin</mark> g	and irrigation wa	ter by the owner.
Sampling				T		
Type of sampling: <a>[</a>		th ba			Abstraction device:	
Pumping duration (r	min): -		Abstr	action rat	e / discharge (l/seo	c): 0.06 l/sec
Field parameters (a	t the sampling)					
Weather:	Colour:		Turbidit	y:	Sediment:	Smell:
□ sunny	colourless		<u> </u>		<u> </u>	<u>□ odorless</u>
□ cloudy	🗆 slight		□ low		□ low	🗆 putrid
00	strong		🗆 mode	rate	moderate	🗆 fishy
🗆 rain	🗆 brown		🗆 strong	S	strong	chemical
	🗆 grey		□		□	□ chlor
frost	yellow					gasoline/oil
Measuring device:						
pH-value:	Water temperature	e (°C)	:	Disso	lved oxygen (mg/l)	
7.12	9.6 °C				5.12 mg/l (49.7%	
Electrical conductivi	,					25 °C
Sample treatment:	<u>□ chilled</u>		trated		ilised with acid	
<u> </u>	r. Arson Bokchyan	(Tel +	37477-7	05-809)		
Contacts: land owne						
Contacts: land owne Execution of the sampling a Signature of sampler:	nd of the above works acc	ording	to the samp			ne laboratory.

SAMPLING PROT	OCOL – GROUND	WATE	R				
Project:	"EU4Environme	nt - W	ater Resou	rces a	and Environ	menta	l Data" Project
General	•						-
The location of the	sampling point: A	rmen	ia, Tavush Re	egion,	Dilijan city, S	Str.Kali	nin
The coordinates of	the		X				
sampling point						AN AS	
X=40 <sup>o</sup> 44' 29.1"							
Y=44 <sup>o</sup> 49' 47.7"							
H= 1345							
Sampling Date: Se	p 01, 2022	Time	(hh:mm): 17	':20	Samp	le ID:	N23
Sampling person:	Mr Harutyun Yeremyan		Instit	ute N	/linistry of Na	ature Pi	rotection
Ms Armine Hakobyan Mr Gegham Muradyan					•		oring Center
Sampling site			r				
					site: Spring		
Inner diameter of v							vell head (m): -
Calm water level (n					ll (m below v		
				-			e spring is located in
the yard of Arshak	Markosyan.The sp	ring is	utilized for	drinki	ng water by	the ow	ner.
Sampling							
Type of sampling:	·	ith pu		· · ·	Abstraction d		
Pumping duration (	,		Abstract	on rat	e / discharge	e (l/sec)	: 0.01 l/sec
Field parameters (a							
Weather:	Colour:		Turbidity:		Sediment:		Smell:
<u> </u>			<u> </u>		<u>□ no</u>		odorless
□ cloudy	slight		□ low		□ low		□ putrid
□ changing	□ strong		moderate	5	moderate	2	□ fishy
🗆 rain	🗆 brown		□ strong		□ strong		chemical
□ heat	□ grey		□	•	□		□ chlor
□ frost	□ yellow						gasoline/oil
Measuring device:	14/-11	(00)		D'		( /1)	
pH-value:	Water temperatu	re (°C)	:	DISSO	lved oxygen		N N
7.49	13.4 °C		watu wa lu Cla		5.59 mg/l	(57.4%	
Electrical conductiv	•				-		5 C
Sample treatment:	<u>chilled</u>				ilised with ac	.10	
Contacts: land own	,				-	comol	ing manual and the
			JOVE WORKS	accor	ung to the	sampi	ing manual and the
requirements of the Signature of sample	•				Date	<b>.</b> .	
Name of sampler:							
rivanie of samplef.							

SAMPLING PROT	OCOL – GROUNDW	VATER					
Project:	"EU4Environmen	t - Wat	er Resources	and Environment	al Data" Project		
General							
The location of the	sampling point: Arm	nenia, T	avush Region,	Dilijan city, Shamag	hyan, Str.Aygestan		
The coordinates		and the second			No.		
of the	A A A A A A A A A A A A A A A A A A A			8			
sampling point				A NO AN			
	Land March		NO CHE	Carlos and the second			
X=40 <sup>o</sup> 45' 0.01"		and and	Mr. Que				
Y=44 <sup>0</sup> 49' 45.6"	The particular		and the second				
H= 1465	Contraction of the			St. States			
	Set De State			And a state of the			
		C3-200	-		CARLAR DAY		
Sampling Date: Se		lime (h	h:mm): 09:30	Sample ID:	N24		
	Mr Harutyun Yeremyan		Institute:	Ministry of Nature	Protection		
Ms Armine Hakobyan Mr Gegham Muradyan 'Hydrometeorology and Monitoring Center							
Sampling site							
Sampling site ID: N	24	T	ype of samplin	g site: Spring «Qor	*		
Inner diameter of	well (mm): -	D	istance betwee	en land surface and	well head (m): -		
Calm water level (r	n below well head): -	- Fi	inal depth of w	ell (m below well h	ead): -		
Further informatio	n of the sampling site	e (e.g. coo	ordinates): The sp	oring is captured.			
The spring is utilize	ed for drinking wate	r and liv	estock supply	·			
Sampling							
Type of sampling:	□ with bailer □ wit	th pum	p 🗆 at a tap	Abstraction device	: bucket		
Pumping duration	(min): -		Abstraction ra	ate / discharge (l/se	c): 0.05 l/sec		
Field parameters (	at the sampling)						
Weather:	Colour:	Т	urbidity:	Sediment:	Smell:		
🗆 sunny	colourless		no	<u> </u>	odorless		
cloudy	🗆 slight		low	□ low	🗆 putrid		
changing	□ strong		moderate	moderate	🗆 fishy		
🗆 rain	🗆 brown		strong	□ strong	chemical		
🗆 heat	🗆 grey			□	□ chlor		
🗆 frost	□ yellow				gasoline/oil		
Measuring device:	-						
pH-value:	Water temperature	e (°C):	Diss	olved oxygen (mg/l	):		
7.52	13.7 °C			6.2 mg/l (62.6%	)		
Electrical conductiv	vity incl. reference te	mperat			25 °C		
	□ chilled	🗆 filtra	ted 🗆 sta	bilised with acid			
Sample treatment:		- ·	(T-L - 27400	5-04-43-76)			
	of the village: Rustan	n Davty	an (Tel +37496	, 04 43 70			
Contacts: resident	-				oling manual and the		
Contacts: resident	sampling and of th				bling manual and the		
Contacts: resident Execution of the requirements of th	sampling and of th	ne abov	ve works acco	ording to the samp	bling manual and the		

SAMPLING PROT	OCOL – GROUNDWATE	R				
Project:	"EU4Environment - W	/ater F	Resources	s and Environr	nental	Data" Project
General						-
The location of the	sampling point: Armenia	, Tavus	sh Region,	Hovq village		
The coordinates						
of the		and a	1		The second	
sampling point			12:00 51	120 A	the second	
		1	Sime 1			1/100
X=40 <sup>o</sup> 47' 30.7"			1AN		Sec.	
Y=45 <sup>o</sup> 03' 43.4"		1-5				and the second
H= 881				4		A VAL DE
					ST SI	Line Read
	A AN				Co Martin	
	12		AC		and a	A ROOMER
			3			
	A Star					A A A
			CAN SHO		S. Contra (C	
			and the second	Columna Carlo		NEW SCIENCE
Sampling Date: Se	p 02, 2022 Time	(hh:m	m): 10:40	Sample	e ID:	N25
	Mr Harutyun Yeremyan		Instituto	Ministry of Na		tection
Ms	Armine Hakobyan			eteorology and		
	Gegham Muradyan		Tryuronie	eteorology and	wome	
Sampling site		1				
Sampling site ID: N			-	ng site: Spring «	-	
Inner diameter of w		1		en land surface		
	n below well head): -			vell (m below w		-
Further information	n of the sampling site (e.g.	coordina	tes): The sp	oring is not cap	tured a	nd not used.
Sampling				T		
Type of sampling:	□ with bailer □ with pu	imp 🛛	🛛 at a tap	Abstraction de	evice: <b>k</b>	
Pumping duration	(min): -	Ab	straction ra	ate / discharge	(I/sec):	0.3 l/sec
Field parameters (a	at the sampling)					
Weather:	Colour:	Turbi	dity:	Sediment:		Smell:
🗆 sunny	colourless	<u> </u>		<u> </u>		odorless
□ cloudy	🗆 slight	□ low	,	□ low		🗆 putrid
changing	□ strong	□ mo	derate	🗆 moderate		🗆 fishy
🗆 rain	🗆 brown	🗆 stro	ong	□ strong		🗆 chemical
🗆 heat	🗆 grey	□		□		🗆 chlor
□ frost	□ yellow					gasoline/oil
Measuring device:						
pH-value:	Water temperature (°C	):	Diss	solved oxygen (	mg/l):	
7.6	11.4 °C			8.03 mg/l (	77.8%)	
Electrical conductiv	vity incl. reference tempe	rature	(µS/cm):	<b>427</b> μS/cm	🗆 at 25	<b>°C</b>
Sample treatment:	□ chilled □ fil	trated	🗆 sta	abilised with aci	d	
Contacts: Head of I	Hovq administrative distri	ict: Ho	vhannes N	aghdalyan (Te	+3747	7-05-15-51)
resident o	f the village: Marat (Tel +	37498	-76-54-93)	)		
	pling and of the above worl		-		al and th	e requirements of the
laboratory.						
	:			Date:		
Name of sampler:						

SAMPLING PROT	OCOL – GROUND	WATE	R			
Project:	"EU4Environme	ent - W	ater Resou	rces and	Environmenta	al Data" Project
General						
The location of the	sampling point: Ar	menia	, Tavush Reg	ion, Gandz	agar village	
The coordinates	1 01			the second second		
of the						
sampling point				A STANK		
X=40 <sup>0</sup> 50' 47.3"				A BUS		the state of the second of the
Y=45 <sup>0</sup> 09' 30.3"				- Hara ya an		The second
H= 894			E.L.	Read The Not		
				F. Carlos		Children S
			The second second			
			<b>x</b> -5,			
				- And	SPACE -	
				( Bacal		- 20%
			4.2	- We Dat		
Sampling Date: Se	p 02, 2022	Time	(hh:mm): 11	:50	Sample ID:	N26
Sampling person:	Mr Harutyun Yeremya	n	Instit	ute: Minist	try of Nature P	Protection
	Armine Hakobyan				logy and Moni	
	Gegham Muradyan					
Sampling site						
Sampling site ID: N			Spring «Dudi			
Inner diameter of v						well head (m): -
Calm water level (n					below well he	
					-	ed and not used. The
spring is located th	e right side of the	river.	The spring is	located in	the yard of Sa	amvel Hovhannisyan.
Sampling						
Type of sampling:	□ with bailer □ v	vith pu	mp 🗆 at a		action device:	
Pumping duration (	(min): -		Abstracti	on rate / d	ischarge (I/sec	): 0.08 l/sec
Field parameters (a	at the sampling)					
Weather:	Colour:		Turbidity:	Sed	iment:	Smell:
🗆 sunny	colourless		<u> </u>	<u> </u>	<u>D</u>	odorless
□ cloudy	🗆 slight		□ low	🗆 lo	w	🗆 putrid
changing	□ strong		moderate	e 🗆 m	oderate	🗆 fishy
🗆 rain	🗆 brown		strong	□ st	rong	chemical
🗆 heat	🗆 grey		□	. 🗆		□ chlor
□ frost	□ yellow					gasoline/oil
Measuring device:						
pH-value:	Water temperati	ure (°C)	:	Dissolved	oxygen (mg/l)	:
7.27	13.4 °C			5.81	. mg/l (59.1%	б <b>)</b>
Electrical conductiv	vity incl. reference	tempe	rature (µS/ci	n): <b>593</b> μ	S/cm 🗆 at 2	25 °C
Sample treatment:	□ chilled			stabilised		
	Gandzaqar adminis	trative	district: Var	dges Dovla	tbekyan (Tel	+37494-60-60-41)
	•			-		,
	r the village: Samv				/	
resident o	f the village: Samve pling and of the abo			o the sampli	ng manual and	the requirements of the
resident o				o the sampli	ng manual and	the requirements of the
resident o Execution of the sam	pling and of the abo	ve work	s according to		ng manual and te:	

SAMPLING PROTOCOL – GROUNDWATER									
Project:	"EU4Environment -	Water F	Resources a	and Environmenta	I Data" Project				
General					-				
The location of the	sampling point: Armer	nia, Tavus	h Region, Lu	usadzor village					
The coordinates									
of the									
sampling point					Contraction of the second				
X=40 <sup>o</sup> 56' 03.3"									
Y=45 <sup>0</sup> 08' 25.3"					C. Constant of the				
H= 706									
				20					
					A CARLES OF				
				10 M					
					and the second second				
	Γ								
Sampling Date: Se		ne (hh:mi	m): 13:00	Sample ID:	N27				
Sampling person:			Institute: N	Ainistry of Nature P	rotection				
	Armine Hakobyan Gegham Muradyan		'Hydromet	eorology and Monit	toring Center				
Sampling site									
Sampling site ID: N2	27	Type	of sampling	site: Spring «Zani»	•				
Inner diameter of w				n land surface and w					
	n below well head): -			ll (m below well he					
	n of the sampling site (		•						
Sampling									
Type of sampling:	<b>with bailer</b> with	pump 🗆	at a tap	Abstraction device:	bucket				
Pumping duration (				e / discharge (l/sec					
Field parameters (a				, , , , , , , , , , , , , , , , , , , ,	, .				
Weather:	Colour:	Turbi	dity:	Sediment:	Smell:				
<u>□ sunny</u>	□ colourless	□ no	<b>/</b>	□ no	odorless				
□ cloudy	□ slight	□ low			□ putrid				
□ changing	□ strong		derate	🗆 moderate	□ fishy				
□ rain	□ brown	□ stro		□ strong	□ chemical				
🗆 heat	□ grey			□	□ chlor				
□ frost	□ yellow				□ gasoline/oil				
Measuring device:	,								
pH-value:	Water temperature (	°C):	Disso	lved oxygen (mg/l):					
7.43 13.5 °C 6.69 mg/l (67.6%)									
	ity incl. reference tem	perature							
Sample treatment:	,	filtrated		ilised with acid					
Contacts: Head of L	usadzor administrative	e district:	Vardan Sard	daryan (Tel +37494	1-55-86-59)				
	of the village administ								
	pling and of the above w		-		the requirements of the				
laboratory.			-	-					
Signature of sampler:				Date:					
Name of sampler:									

SAMPLING PR	OTOCOL – GROUNDW	ATER			
Project:	"EU4Environment	- Water Reso	ources and	Environmen	tal Data" Project
General					
The location of	the sampling point Arm	enia, Tavush R	egion, Lusad	or village	
The coordinates	5	R.			Real La d
of the		and a	HTTTL.		
sampling point				1	A Par
X=40 <sup>o</sup> 56' 22.8"			a chief	The Party	
Y=45 <sup>°</sup> 09' 47.7"		11/2			
H= 594					
Sampling Date:	Sep 02, 2022 T	ime (hh:mm):	13:40	Sample ID:	N28
Sampling perso	n: Mr Harutyun Yeremyan	Ins	titute: Minis	rv of Nature	Protection
	Ms Armine Hakobyan			•	nitoring Center
Sompling site	Mr Gegham Muradyan				
Sampling site	N N 20	Turne of a		Mall.	
Sampling site ID			ampling site:		
	of well (mm): 400				d well head (m): 0.40
	n below well head): (-3.6)		th of well (m		
	tion of the sampling site				019. The well is located
Sampling	igen Nerkararyan.The w	ren is utilized i	or fish farmi	ng.	
	g: <u>       with pump</u> wit	h hailer ⊓at	a tan Abstr	action devic	e: bucket
Pumping durati	· · · · · · · · · · · · · · · · · · ·		ction rate / d		
·	rs (at the sampling)	Abstra			. <b>J.J 1/320</b>
Weather:	Colour:	Turbidity	· Sed	iment:	Smell:
					□ odorless
□ cloudy	$\Box$ slight	□ low			□ putrid
□ changing	□ strong			oderate	□ fishy
□ rain	□ brown			rong	$\Box$ chemical
□ heat					$\Box$ chlor
	□ yellow				□ gasoline/oil
Measuring devi					
pH-value:	Water temperature	e (°C):	Dissolved	oxygen (mg/	(I):
7.3	15.0 °C			8 mg/l (54.2	
	ctivity incl. reference ter	mperature (µS			t 25 °C
Sample treatme		□ filtrated	□ stabilised		
	owner: Vigen Nerkararya				
	sampling and of the above			ng manual an	d the requirements of the
laboratory.			,		a me requiremento of the
,	a la m		De		
Signature of sam	bier:		Da	te:	

SAMPLING PRO	TOCOL – GROUNDWAT	ER			
Project:	"EU4Environment - W	/ater Resou	urces	and Environment	al Data" Project
General					,
The location of th	e sampling point: Armenia	, Tavush Reg	gion, A	vgehovit village	
The coordinates		<u> </u>			
of the		S Key			and the second of
sampling point	Carlo Carlos		1 and		
X=40 <sup>°</sup> 58' 41.7"		1		Article Sec	
Y=45 <sup>0</sup> 14' 53.7"	and the second second	M		Mr. Carl	State (1)
H= 709					
Sampling Date: S	en 02, 2022 Time	(hh:mm): 14	4:30	Sample ID:	N29
, ,	Mr Harutyun Yeremyan	<u> </u>		• •	
	s Armine Hakobyan			Ministry of Nature teorology and Mon	
	1r Gegham Muradyan	Пус	Tomet		
Sampling site					
Sampling site ID:				site: Spring «Gyo	
Inner diameter of				n land surface and	
	(m below well head): -			ell (m below well he	
	on of the sampling site (e.g	. coordinates): <b>1</b>	he spi	ring is captured. Th	ne spring is utilized for
drinking water su	pply.				
Sampling					
	<u>□ with bailer</u> □ with pu			Abstraction device	
Pumping duration		Abstract	ion rat	te / discharge (I/se	c): 1.2 l/sec
<b>Field parameters</b>					
Weather:	Colour:	Turbidity:		Sediment:	Smell:
🗆 sunny	colourless	<u> </u>		<u> </u>	odorless
□ cloudy	slight	□ low		□ low	🗆 putrid
changing	□ strong	moderat	е	moderate	🗆 fishy
🗆 rain	🗆 brown	□ strong		strong	chemical
🗆 heat	□ grey	□	••	□	□ chlor
□ frost	□ yellow				gasoline/oil
Measuring device	:		1		
pH-value:	Water temperature (°C	):	Disso	olved oxygen (mg/l)	):
7.59	15.1 °C			5.91 mg/l (64.2%	
Electrical conduct	ivity incl. reference tempe		m): 9	925 μS/cm 🛛 🗆 at	25 °C
Sample treatmen	t: <u> </u>	trated	🗆 stab	oilised with acid	
Contacts: Head of	Aygehovit administrative	district: Lev	on Gri	goryan (Tel +3749	3-433-182)
	mpling and of the above wor	ks according t	o the s	ampling manual and	the requirements of the
laboratory.					
Signature of sampler Name of sampler:	er:			Date:	
Name and the second second					

SAMPLING PROTO	COL – GROUND	WATE	R			
Project:	"EU4Environme	nt - W	ater R	esources	and Environmer	ntal Data" Project
General						,
The location of the s	ampling point: Ar	menia	. Tavus	h Region. V	√azashen village	
The coordinates						the second
of the			1 Total			
sampling point		a starter				
oab9 b ot		1		se apple to the		A STATE OF THE STATE OF
X=40 <sup>0</sup> 59' 54.8"		a				
Y=45° 17' 52.4"				14		
H= 704				1 A		
H= 704					THE AND	Caller
			1. 14			
		200				
				Care 7		
		e Para				
			A MA			
						Part of the second s
Sampling Date: Sep	02, 2022	Time	(hh:mr	n): 16:20	Sample ID	: N30
Sampling person: N		n		Institute:	Ministry of Nature	Protection
	rmine Hakobyan				teorology and Mo	
Sampling site	Segham Muradyan					-
	0		Turne	af ag man line	site. Covins vVs	1ئا
Sampling site ID: N3					g site: Spring «Yo	
Inner diameter of w						d well head (m): -
Calm water level (m					ell (m below well l	nead): -
Further information					ring is captured.	
The spring is tempo	orary, utilized for a	drinkir	ng wate	er supply.		
Sampling						
Type of sampling:		/ith pu	1		Abstraction devic	
Pumping duration (r			Abs	traction ra	te / discharge (l/s	ec): 0.05 l/sec
Field parameters (a	t the sampling)				-	
Weather:	Colour:		Turbi	dity:	Sediment:	Smell:
🗆 sunny	colourless		<u> </u>		<u> </u>	odorless
□ cloudy	🗆 slight		□ low		□ low	putrid
changing	strong		□ mo	derate	moderate	🗆 fishy
🗆 rain	🗆 brown		🗆 stro	ng	□ strong	chemical
🗆 heat	🗆 grey		□		□	□ chlor
□ frost	🗆 yellow					gasoline/oil
Measuring device:						
pH-value:	Water temperatu	re (°C)	:	Disso	olved oxygen (mg/	/l):
7.09	14.8 °C				4.56 mg/l (50%)	
Electrical conductivi	ty incl. reference t	empe	rature	(µS/cm): 1	1210 μS/cm 🛛 🗆 a	t 25 °C
Sample treatment:		· ·	trated		oilised with acid	
Contacts: Head of V	azashen administr	ative o	listrict:	Lorik Badi	ryan (Tel +37477	-06-09-55)
						d the requirements of the
laboratory.	-			-		•
Signature of sampler:					Date:	
Name of sampler:						

Annex II: The results of laboratory analysis conducted in Northern RBD in 2022

Sam ple ID	Provie nce	Location of observation point	Type of observation point	Sampling date	Water temp. (°C) field	EC μS/cm (at 25°C) field	Dissolved oxygen mg/l, field	pH field	pH Lab.	Hydrogen Carbonate, HCO₃ g/L	Sulfate, SO₄. mg/L	Chloride, Cl. mg/L	Nitrate NO <sub>3</sub> , mg/L
1	Lori	Lernavan	Flowing well	8/29/2022	19.9	545	5.99	7.21	7.3	356.97	10.98	3.406	10.078
2	Lori	Mets Parni	Flowing well	8/29/2022	12.6	395	6.79	7.95	7.9	231.88	5.43	4.089	18.183
3	Lori	Katnadjur	spring («Qung»)	8/29/2022	10.4	327	7.39	7.92	8.0	167.81	16.76	2.809	4.362
4	Lori	Geghasar	Flowing borehole	8/29/2022	14.0	419	5.87	7.87	7.9	231.88	19.18	6.009	21.577
5	Lori	Nor Khachakap	spring	8/29/2022	11.2	343	5.52	7.96	7.9	213.57	6.83	3.307	13.962
6	Lori	Darbas	spring	8/29/2022	12.4	560	7.11	7.8	7.9	286.79	31.51	4.194	40.194
7	Lori	Darbas	spring («Avagenc»)	8/29/2022	11.4	725	4.87	7.5	7.7	356.97	42.08	13.751	47.217
8	Lori	Saratovka	spring	8/30/2022	10.4	480	5.55	7.61	7.7	280.69	20.33	7.738	7.717
9	Lori	Saratovka	Flowing well	8/30/2022	13.4	1276	1.65	7.33	7.6	677.32	86.57	70.738	0.925
10	Lori	Saratovka	spring («Kharlanov»)	8/30/2022	8.9	194	6.17	7.82	7.9	115.94	3.82	2.130	5.692
11	Lori	Tashir	Flowing well	8/30/2022	10.7	646	4.86	7.4	7.7	332.56	26.32	16.371	36.647
12	Lori	Getavan	Flowing well	8/30/2022	8.0	129	6.34	7.91	7.8	73.22	2.11	2.860	3.196
13	Lori	Stepanavan	Flowing well	8/30/2022	9.1	140	6.25	7.97	7.9	82.38	1.94	3.002	2.912
14	Lori	Lori berd	spring («Lusaghbyur»)	8/31/2022	9.5	194	5.83	7.84	7.7	109.84	3.86	3.966	4.898
15	Lori	Agarak	spring	8/31/2022	9.8	267	7.8	8.2	8.2	143.40	7.10	5.073	8.471
16	Lori	Odzun	spring («Kendanarar»)	8/31/2022	11.2	179	7.58	8.07	7.9	73.22	22.23	1.773	4.194
17	Lori	Madan	spring («Vardumyanneri»)	8/31/2022	13.2	1581	5.55	7.16	7.3	356.97	429.25	47.877	176.467
18	Lori	Shamlugh (Bendik)	spring («Kakali taki»)	8/31/2022	11.4	748	5.22	7.35	7.8	381.38	60.12	13.215	39.594
19	Lori	Tumanyan	spring	8/31/2022	14.1	855	6.45	8.13	8.2	326.46	145.81	16.656	31.540
20	Lori	Tumanyan	spring	8/31/2022	16.0	820	7.78	7.81	8.5	332.56	143.24	16.155	32.263
21	Lori	Dsegh	spring	9/1/2022	13	472	7.17	8.48	8.3	299.00	25.02	2.546	0.943
22	Tavush	Margahovit	ground well	9/1/2022	9.6	460	5.12	7.12	7.3	210.52	34.55	15.009	50.026
23	Tavush	Dilijan	spring («Artsruni»)	9/1/2022	13.4	500	5.59	7.49	7.7	463.75	68.82	17.450	45.846

Table 5: The results of laboratory analysis conducted in Northern RBD in 2022

Sam ple ID	Provie nce	Location of observation point	Type of observation point	Sampling date	Water temp. (°C) field	EC μS/cm (at 25°C) field	Dissolved oxygen mg/l, field	pH field	pH Lab.	Hydrogen Carbonate, HCO₃ g/L	Sulfate, SO₄. mg/L	Chloride, Cl. mg/L	Nitrate NO <sub>3</sub> , mg/L
24	Tavush	Dilijan/Shamaghyan/	spring («Qor spring»)	9/1/2022	13.7	140	6.2	7.52	7.8	256.28	14.63	3.857	22.003
25	Tavush	Hovq	spring («Shnqar»)	9/1/2022	11.4	427	8.03	7.6	7.7	247.13	19.01	3.945	10.506
26	Tavush	Gandzaqar	spring («Dudinyants»)	9/1/2022	13.4	593	5.81	7.27	7.6	302.05	45.85	11.989	26.604
27	Tavush	Lusadzor	spring («Zani»)	9/2/2022	13.5	690	6.69	7.43	8.3	427.14	28.43	8.005	12.401
28	Tavush	Lusadzor	ground well	9/2/2022	15.0	840	5.13	7.3	8.3	396.63	144.55	19.406	22.732
29	Tavush	Aygehovit	spring («Gyoli»)	9/2/2022	15.1	925	5.91	7.59	8.2	527.82	41.63	15.797	46.105
30	Tavush	Vazashen	spring («Yolomi»)	9/2/2022	14.8	1210	4.56	7.09	7.7	555.28	257.21	27.812	7.397

Sam ple ID	Provie nce	Location of observation point	Type of observation point	Sampling date	Nitrite NO2, mg/L	Ammonia, NH4, mg/L	Calcium, Ca, mg/L	Magne sium, Mg, g/L	Sodium, Na, mg/L	Potassium, K, mg/L	Na+K, mg/L
1	Lori	Lernavan	Flowing borehole	8/29/2022	0.0	0.0	101.9	8.9	6.2	1.0	7.23
2	Lori	Mets Parni	Flowing borehole	8/29/2022	0.0	0.0	54.5	7.1	23.5	1.2	24.72
3	Lori	Katnadjur	spring («Qung»)	8/29/2022	0.0	0.0	46.0	4.7	11.3	0.2	11.48
4	Lori	Geghasar	Flowing borehole	8/29/2022	0.0	0.0	51.3	8.0	25.2	1.8	26.95
5	Lori	Nor Khachakap	spring	8/29/2022	0.0	0.1	39.0	11.0	14.4	0.9	15.27
6	Lori	Darbas	spring	8/29/2022	0.0	0.1	62.0	13.8	35.3	1.1	36.40
7	Lori	Darbas	spring («Avagenc»)	8/29/2022	0.0	0.1	89.2	19.7	15.5	7.7	23.24
8	Lori	Saratovka	spring	8/30/2022	0.0	0.1	65.7	14.1	5.8	1.7	7.57
9	Lori	Saratovka	Flowing borehole	8/30/2022	0.0	0.8	97.2	74.7	59.6	7.5	67.11
10	Lori	Saratovka	spring («Kharlanov»)	8/30/2022	0.0	0.1	21.8	6.7	5.3	1.5	6.80
11	Lori	Tashir	Flowing borehole	8/30/2022	0.0	0.1	89.8	18.5	12.8	2.5	15.31
12	Lori	Getavan	Flowing borehole	8/30/2022	0.0	0.0	11.7	5.1	5.4	1.1	6.50

## GROUNDWATER SURVEY REPORT 2022 - ARMENIA

Sam ple ID	Provie nce	Location of observation point	Type of observation point	Sampling date	Nitrite NO2, mg/L	Ammonia, NH4, mg/L	Calcium, Ca, mg/L	Magne sium, Mg, g/L	Sodium, Na, mg/L	Potassium, K, mg/L	Na+K, mg/L
13	Lori	Stepanavan	Flowing borehole	8/30/2022	0.0	0.1	13.5	6.1	5.7	1.1	6.79
14	Lori	Lori berd	spring («Lusaghbyur»)	8/31/2022	0.0	0.1	20.9	8.0	5.8	1.3	7.08
15	Lori	Agarak	spring	8/31/2022	0.0	0.1	30.1	10.5	5.9	1.4	7.28
16	Lori	Odzun	spring («Kendanarar»)	8/31/2022	0.0	0.1	24.4	3.9	5.0	0.4	5.42
17	Lori	Madan	spring («Vardumyanneri»)	8/31/2022	0.0	0.4	259.1	41.9	18.9	10.6	29.53
18	Lori	Shamlugh (Bendik )	spring («Kakali taki»)	8/31/2022	0.0	0.3	116.5	23.6	8.1	0.7	8.87
19	Lori	Tumanyan	spring	8/31/2022	0.0	0.4	30.0	40.7	102.0	3.4	105.43
20	Lori	Tumanyan	spring	8/31/2022	0.0	0.4	25.3	41.8	99.7	2.4	102.10
21	Lori	Dsegh	spring	9/1/2022	0.0	0.4	84.9	14.3	6.2	0.5	6.71
22	Tavush	Margahovit	well	9/1/2022	0.0	0.1	71.1	16.2	18.2	0.8	19.06
23	Tavush	Dilijan	spring («Artsruni»)	9/1/2022	0.0	0.2	91.7	23.5	100.1	1.1	101.16
24	Tavush	Dilijan/Shamaghyan/	spring («Qor spring»)	9/1/2022	0.0	0.1	71.3	14.2	6.6	0.5	7.03
25	Tavush	Ноvq	spring («Shnqar»)	9/1/2022	0.0	0.1	71.1	14.8	6.6	0.7	7.27
26	Tavush	Gandzaqar	spring («Dudinyants»)	9/1/2022	0.0	0.1	98.7	17.7	7.5	2.1	9.64
27	Tavush	Lusadzor	spring («Zani»)	9/2/2022	0.0	0.3	95.3	41.2	7.9	2.1	9.97
28	Tavush	Lusadzor	ground well	9/2/2022	0.0	0.3	106.7	41.0	58.3	2.4	60.72
29	Tavush	Aygehovit	spring («Gyoli»)	9/2/2022	0.0	0.5	98.4	45.5	67.6	1.6	69.25
30	Tavush	Vazashen	spring («Yolomi»)	9/2/2022	0.0	0.6	134.2	61.8	93.0	3.9	96.99

Sam ple ID	Provie nce	Location of observation point	Type of observation point	Sampling date	Suspended particles, mg/L	Total Hardness	Total Mine- ralization, mg/L	Iron, Fe, mg/L	Dry residue, mg/L	Color, rade
1	Lori	Lernavan	Flowing borehole	8/29/2022	17	5.834	499.48	0.44	311	15
2	Lori	Mets Parni	Flowing borehole	8/29/2022	17	3.314	345.86	0.23	212	15
3	Lori	Katnadjur	spring («Qung»)	8/29/2022	8	2.695	253.99	0.19	166	10
4	Lori	Geghasar	Flowing borehole	8/29/2022	8	3.233	364.93	0.21	227	10
5	Lori	Nor Khachakap	spring	8/29/2022	8	2.869	302.99	0.16	182	10
6	Lori	Darbas	spring	8/29/2022	11	4.253	474.98	0.26	291	15
7	Lori	Darbas	spring («Avagenc»)	8/29/2022	9	6.098	592.14	0.35	366	15
8	Lori	Saratovka	spring	8/30/2022	8	4.459	403.83	0.27	256	15
9	Lori	Saratovka	Flowing borehole	8/30/2022	14	11.088	1074.63	0.42	735	15
10	Lori	Saratovka	spring («Kharlanov»)	8/30/2022	10	1.654	162.98	0.09	99	15
11	Lori	Tashir	Flowing borehole	8/30/2022	11	6.032	535.52	0.37	333	15
12	Lori	Getavan	Flowing borehole	8/30/2022	9	1.010	104.71	0.04	65	15
13	Lori	Stepanavan	Flowing borehole	8/30/2022	9	1.182	116.67	0.05	73	15
14	Lori	Lori berd	spring («Lusaghbyur»)	8/31/2022	9	1.713	158.59	0.08	99	15
15	Lori	Agarak	spring	8/31/2022	10	2.385	212.02	0.12	132	15
16	Lori	Odzun	spring («Kendanarar»)	8/31/2022	8	1.543	135.14	0.12	94	15
17	Lori	Madan	spring («Vardumyanneri»)	8/31/2022	18	16.452	1341.20	1.05	986	15
18	Lori	Shamlugh (Bendik)	spring («Kakali taki»)	8/31/2022	12	7.794	643.31	0.48	413	15
19	Lori	Tumanyan	spring	8/31/2022	9	4.893	696.65	0.12	502	15
20	Lori	Tumanyan	spring	8/31/2022	11	4.751	693.48	0.10	495	15
21	Lori	Dsegh	spring	9/1/2022	13	5.435	433.42	0.40	283	20
22	Tavush	Margahovit	well	9/1/2022	22	4.905	416.48	0.33	261	15
23	Tavush	Dilijan	spring («Artsruni»)	9/1/2022	15	6.546	812.30	0.39	535	15
24	Tavush	Dilijan/Shamaghyan/	spring («Qor spring»)	9/1/2022	8	4.747	389.31	0.31	239	15
25	Tavush	Hovq	spring («Shnqar»)	9/1/2022	8	4.789	373.79	0.31	240	15

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Sam ple ID	Provie nce	Location of observation point	Type of observation point	Sampling date	Suspended particles, mg/L	Total Hardness	Total Mine- ralization, mg/L	Iron, Fe, mg/L	Dry residue, mg/L	Color, rade
26	Tavush	Gandzaqar	spring («Dudinyants»)	9/1/2022	11	6.412	512.59	0.43	335	15
27	Tavush	Lusadzor	spring («Zani»)	9/2/2022	13	8.200	622.49	0.42	396	15
28	Tavush	Lusadzor	ground well	9/2/2022	11	8.756	791.84	0.46	571	15
29	Tavush	Aygehovit	spring («Gyoli»)	9/2/2022	12	8.713	844.56	0.43	535	15
30	Tavush	Vazashen	spring («Yolomi»)	9/2/2022	16	11.858	1140.70	0.60	856	15

Sam ple ID	Provie nce	Location of observation point	Type of observation point	Sampling date	Smell	Li mg/L	Be mg/L	B mg/L	Al mg/L	P mg/L	Ti mg/L
1	Lori	Lernavan	Flowing borehole	8/29/2022	0.00000	0.00433	<0.0001	0.03887	<0.01	<0.01	0.00155
2	Lori	Mets Parni	Flowing borehole	8/29/2022	0.00000	0.00179	<0.0001	0.04599	<0.01	0.02743	0.00346
3	Lori	Katnadjur	spring («Qung»)	8/29/2022	0.00000	0.00069	<0.0001	0.02883	<0.01	<0.01	0.00200
4	Lori	Geghasar	Flowing borehole	8/29/2022	1.00000	0.00253	<0.0001	0.10063	<0.01	<0.01	0.00322
5	Lori	Nor Khachakap	spring	8/29/2022	0.00000	0.00024	<0.0001	0.03438	<0.01	<0.01	0.00172
6	Lori	Darbas	spring	8/29/2022	0.00000	0.00018	<0.0001	0.09872	<0.01	<0.01	0.00199
7	Lori	Darbas	spring («Avagenc»)	8/29/2022	0.00000	0.00074	<0.0001	0.11176	<0.01	<0.01	0.00282
8	Lori	Saratovka	spring	8/30/2022	0.00000	0.00165	<0.0001	0.02934	<0.01	0.04273	0.00402
9	Lori	Saratovka	Flowing borehole	8/30/2022	0.00000	0.03638	<0.0001	0.12006	<0.01	0.00828	0.00589
10	Lori	Saratovka	spring («Kharlanov»)	8/30/2022	0.00000	0.00234	<0.0001	0.02373	<0.01	0.02812	0.00405
11	Lori	Tashir	Flowing borehole	8/30/2022	0.00000	0.00456	<0.0001	0.06110	<0.01	0.02380	0.00488
12	Lori	Getavan	Flowing borehole	8/30/2022	0.00000	0.00448	<0.0001	0.05248	<0.01	0.04165	0.00377
13	Lori	Stepanavan	Flowing borehole	8/30/2022	0.00000	0.00442	<0.0001	0.05630	<0.01	0.03765	0.00358
14	Lori	Lori berd	spring («Lusaghbyur»)	8/31/2022	0.00000	0.00484	<0.0001	0.06121	0.01116	0.04094	0.00370
15	Lori	Agarak	spring	8/31/2022	1.00000	0.00499	<0.0001	0.06590	<0.01	0.03804	0.00410

Sam ple ID	Provie nce	Location of observation point	Type of observation point	Sampling date	Smell	Li mg/L	Be mg/L	B mg/L	Al mg/L	P mg/L	Ti mg/L
16	Lori	Odzun	spring («Kendanarar»)	8/31/2022	0.00000	0.00149	<0.0001	0.01144	0.02344	<0.01	0.00249
17	Lori	Madan	spring («Vardumyanneri»)	8/31/2022	0.00000	0.00184	<0.0001	0.10831	0.01078	0.02062	0.00221
18	Lori	Shamlugh (Bendik)	spring («Kakali taki»)	8/31/2022	1.00000	0.00257	<0.0001	0.03860	0.01664	0.01069	0.00290
19	Lori	Tumanyan	spring	8/31/2022	1.00000	0.00600	<0.0001	0.35254	0.01005	0.03855	0.00304
20	Lori	Tumanyan	spring	8/31/2022	0.00000	0.00647	<0.0001	0.34995	0.01323	0.02085	0.00287
21	Lori	Dsegh	spring	9/1/2022	0.00000	0.00090	<0.0001	0.02113	0.05124	0.03576	0.00591
22	Tavush	Margahovit	well	9/1/2022	0.00000	0.00176	<0.0001	0.03168	0.03087	0.05452	0.00345
23	Tavush	Dilijan	spring («Artsruni»)	9/1/2022	0.00000	0.01147	<0.0001	0.14234	<0.01	0.01412	0.00355
24	Tavush	Dilijan/Shamaghyan/	spring («Qor spring»)	9/1/2022	0.00000	0.01028	<0.0001	0.02837	<0.01	0.00590	0.00211
25	Tavush	Hovq	spring («Shnqar»)	9/1/2022	0.00000	0.00012	<0.0001	0.06315	<0.01	0.01465	0.00184
26	Tavush	Gandzaqar	spring («Dudinyants»)	9/1/2022	1.00000	0.00107	<0.0001	0.06984	<0.01	0.03269	0.00295
27	Tavush	Lusadzor	spring («Zani»)	9/2/2022	0.00000	0.00604	<0.0001	0.07625	<0.01	0.01656	0.00174
28	Tavush	Lusadzor	ground well	9/2/2022	0.00000	0.00351	<0.0001	0.22182	<0.01	0.04073	0.00264
29	Tavush	Aygehovit	spring («Gyoli»)	9/2/2022	0.00000	0.00219	<0.0001	0.24669	<0.01	0.02601	0.00342
30	Tavush	Vazashen	spring («Yolomi»)	9/2/2022	0.00000	0.00875	<0.0001	0.22058	<0.01	0.03383	0.00343

Sample ref.no	Provie nce	Location of observation point	Type of observation point	Sampling date	V mg/L	Cr mg/L	Mn mg/L	Co mg/L	Ni mg/L	Cu mg/L	Zn mg/L
1	Lori	Lernavan	Flowing borehole	8/29/2022	0.00059	0.00112	<0.0001	0.00020	0.00214	0.00019	0.000345
2	Lori	Mets Parni	Flowing borehole	8/29/2022	0.01102	0.00217	<0.0001	0.00010	0.00095	<0.0001	<0.0001
3	Lori	Katnadjur	spring («Qung»)	8/29/2022	0.00731	0.00036	<0.0001	<0.0001	0.00080	0.00016	<0.0001
4	Lori	Geghasar	Flowing borehole	8/29/2022	0.01211	0.00242	0.00038	0.00010	0.00093	0.00034	0.004179
5	Lori	Nor Khachakap	spring	8/29/2022	0.00756	0.00041	0.00011	<0.0001	0.00068	0.00026	0.002156
6	Lori	Darbas	spring	8/29/2022	0.00641	0.00089	0.00051	0.00013	0.00122	0.00038	0.001578
7	Lori	Darbas	spring («Avagenc»)	8/29/2022	0.00586	0.00095	0.00010	0.00019	0.00160	0.00099	0.000919
8	Lori	Saratovka	spring	8/30/2022	0.00565	0.00095	0.00080	0.00015	0.00149	0.00043	<0.0001
9	Lori	Saratovka	Flowing borehole	8/30/2022	0.00097	0.00225	0.11195	0.00065	0.00468	0.00091	0.000855
10	Lori	Saratovka	spring («Kharlanov»)	8/30/2022	0.00850	0.00105	0.00043	<0.0001	0.00052	0.00013	0.000347
11	Lori	Tashir	Flowing borehole	8/30/2022	0.01047	0.00196	0.00014	0.00018	0.00206	0.00037	0.000449
12	Lori	Getavan	Flowing borehole	8/30/2022	0.01277	0.00087	0.00010	<0.0001	0.00031	<0.0001	<0.0001
13	Lori	Stepanavan	Flowing borehole	8/30/2022	0.01454	0.00100	0.00010	<0.0001	0.00029	<0.0001	<0.0001
14	Lori	Lori berd	spring («Lusaghbyur»)	8/31/2022	0.01217	0.00099	0.00017	<0.0001	0.00052	<0.0001	<0.0001
15	Lori	Agarak	spring	8/31/2022	0.01104	0.00121	0.00014	<0.0001	0.00068	<0.0001	0.000227
16	Lori	Odzun	spring («Kendanarar»)	8/31/2022	0.00057	0.00021	0.00083	<0.0001	0.00049	0.00073	0.000279
17	Lori	Madan	spring («Vardumyanneri»)	8/31/2022	0.00050	0.00145	0.00031	0.00052	0.00472	0.00867	0.004167
18	Lori	Shamlugh (Bendik)	spring («Kakali taki»)	8/31/2022	0.00074	0.00090	0.00024	0.00022	0.00210	0.00093	0.003260
19	Lori	Tumanyan	spring	8/31/2022	0.02011	0.00833	0.00013	<0.0001	0.00056	0.00155	0.003452
20	Lori	Tumanyan	spring	8/31/2022	0.01997	0.00832	0.00021	<0.0001	0.00058	0.00191	0.004498
21	Lori	Dsegh	spring	9/1/2022	0.00882	0.00036	0.04106	0.00026	0.00191	0.00070	0.000277
22	Tavush	Margahovit	well	9/1/2022	0.00182	0.00082	0.00366	0.00019	0.00150	0.00068	0.000751
23	Tavush	Dilijan	spring («Artsruni»)	9/1/2022	0.00787	0.00158	0.00052	0.00021	0.00155	0.00050	0.000336
24	Tavush	Dilijan/Shamaghyan/	spring («Qor spring»)	9/1/2022	0.00409	0.00044	0.00027	0.00015	0.00126	0.00031	0.000215
25	Tavush	Ноvq	spring («Shnqar»)	9/1/2022	0.00192	0.00042	0.00015	0.00014	0.00137	0.00122	0.000359

Sample ref.no	Provie nce	Location of observation point	Type of observation point	Sampling date	V mg/L	Cr mg/L	Mn mg/L	Co mg/L	Ni mg/L	Cu mg/L	Zn mg/L
26	Tavush	Gandzaqar	spring («Dudinyants»)	9/1/2022	0.00284	0.00077	0.00030	0.00021	0.00188	0.00278	0.001384
27	Tavush	Lusadzor	spring («Zani»)	9/2/2022	0.00297	0.00072	0.00015	0.00019	0.00204	0.00110	0.000321
28	Tavush	Lusadzor	ground well	9/2/2022	0.00345	0.00106	0.00013	0.00023	0.00216	0.00246	0.002276
29	Tavush	Aygehovit	spring («Gyoli»)	9/2/2022	0.00839	0.00151	0.00019	0.00026	0.00211	0.00081	0.001621
30	Tavush	Vazashen	spring («Yolomi»)	9/2/2022	0.00310	0.00056	0.00058	0.00029	0.00291	0.00200	0.006417

Sam ple ID	Provie nce	Location of observation point	Type of observation point	Sampling date	As mg/L	Se mg/L	Sr mg/L	Mo mg/L	Cd mg/L	Sn mg/L	Sb mg/L	Ba mg/L	Pb mg/L
1	Lori	Lernavan	Flowing borehole	8/29/2022	0.0005521	0.0007919	0.50758	0.00137	<0.0001	<0.001	<0.0001	0.11475	<0.0001
2	Lori	Mets Parni	Flowing borehole	8/29/2022	0.0015082	0.000718	0.10640	0.00121	<0.0001	<0.001	<0.0001	<0.01	<0.0001
3	Lori	Katnadjur	spring («Qung»)	8/29/2022	0.000895	0.000735	0.08608	0.00096	<0.0001	<0.001	<0.0001	<0.01	<0.0001
4	Lori	Geghasar	Flowing borehole	8/29/2022	0.0017036	0.0007463	0.15126	0.00151	<0.0001	<0.001	<0.0001	<0.01	<0.0001
5	Lori	Nor Khachakap	spring	8/29/2022	0.0002112	0.0005364	0.24776	0.00066	<0.0001	<0.001	<0.0001	<0.01	<0.0001
6	Lori	Darbas	spring	8/29/2022	0.0003233	0.0013579	0.46453	0.00120	<0.0001	<0.001	<0.0001	0.01950	<0.0001
7	Lori	Darbas	spring («Avagenc»)	8/29/2022	0.0006996	0.0008746	0.63276	0.00177	<0.0001	<0.001	<0.0001	0.03493	<0.0001
8	Lori	Saratovka	spring	8/30/2022	0.0008592	0.0002836	0.41489	0.00120	<0.0001	<0.001	<0.0001	0.03110	<0.0001
9	Lori	Saratovka	Flowing borehole	8/30/2022	0.0019212	0.002351	0.78471	0.00153	<0.0001	<0.001	<0.0001	0.04059	<0.0001
10	Lori	Saratovka	spring («Kharlanov»)	8/30/2022	0.001039	0.0002161	0.14175	0.00075	<0.0001	<0.001	<0.0001	<0.01	<0.0001
11	Lori	Tashir	Flowing borehole	8/30/2022	0.0020827	0.0008148	0.64357	0.00109	<0.0001	<0.001	<0.0001	0.04301	<0.0001
12	Lori	Getavan	Flowing borehole	8/30/2022	0.0032387	0.0001596	0.06665	0.00068	<0.0001	<0.001	<0.0001	<0.01	<0.0001
13	Lori	Stepanavan	Flowing borehole	8/30/2022	0.0035137	0.0001581	0.07337	0.00079	<0.0001	<0.001	<0.0001	<0.01	<0.0001

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Sam ple ID	Provie nce	Location of observation point	Type of observation point	Sampling date	As mg/L	Se mg/L	Sr mg/L	Mo mg/L	Cd mg/L	Sn mg/L	Sb mg/L	Ba mg/L	Pb mg/L
14	Lori	Lori berd	spring («Lusaghbyur»)	8/31/2022	0.0028493	0.00024	0.12920	0.00080	<0.0001	<0.001	<0.0001	<0.01	<0.0001
15	Lori	Agarak	spring	8/31/2022	0.0025566	0.0005259	0.20133	0.00088	<0.0001	<0.001	<0.0001	<0.01	<0.0001
16	Lori	Odzun	spring («Kendanarar»)	8/31/2022	0.0008014	0.0004159	0.15185	0.00050	<0.0001	<0.001	<0.0001	0.01208	<0.0001
17	Lori	Madan	spring («Vardumyanneri»)	8/31/2022	0.0016527	0.0024849	0.77638	0.00070	<0.0001	<0.001	0.00024	0.04860	<0.0001
18	Lori	Shamlugh (Bendik)	spring («Kakali taki»)	8/31/2022	0.0003634	0.0008408	0.79825	0.00128	0.00011	<0.001	<0.0001	0.02712	0.00078
19	Lori	Tumanyan	spring	8/31/2022	0.0020826	0.0021498	0.39092	0.00713	<0.0001	<0.001	<0.0001	<0.01	<0.0001
20	Lori	Tumanyan	spring	8/31/2022	0.0019144	0.0021178	0.36738	0.00672	<0.0001	<0.001	<0.0001	<0.01	0.00019
21	Lori	Dsegh	spring	9/1/2022	0.001358	0.0003478	0.47233	0.00069	<0.0001	<0.001	<0.0001	0.03079	<0.0001
22	Tavush	Margahovit	well	9/1/2022	0.0004648	0.0009538	0.33249	0.00103	<0.0001	<0.001	<0.0001	0.02327	<0.0001
23	Tavush	Dilijan	spring («Artsruni»)	9/1/2022	0.0012454	0.0014517	0.99533	0.00474	<0.0001	<0.001	<0.0001	0.03277	<0.0001
24	Tavush	Dilijan/Shamaghyan/	spring («Qor spring»)	9/1/2022	0.000367	0.0006172	0.54693	0.00183	<0.0001	<0.001	<0.0001	<0.01	<0.0001
25	Tavush	Hovq	spring («Shnqar»)	9/1/2022	0.0002109	0.0010267	0.22827	0.00040	<0.0001	<0.001	<0.0001	0.01326	<0.0001
26	Tavush	Gandzaqar	spring («Dudinyants»)	9/1/2022	0.0008474	0.0007794	0.67731	0.00153	<0.0001	<0.001	0.00015	0.04931	<0.0001
27	Tavush	Lusadzor	spring («Zani»)	9/2/2022	0.0012103	0.0016635	0.39356	0.00132	<0.0001	<0.001	<0.0001	0.02570	<0.0001
28	Tavush	Lusadzor	ground well	9/2/2022	0.0009104	0.002454	0.70619	0.00245	<0.0001	<0.001	<0.0001	0.05453	<0.0001
29	Tavush	Aygehovit	spring («Gyoli»)	9/2/2022	0.0006296	0.0018136	0.96936	0.00543	<0.0001	<0.001	<0.0001	0.01483	<0.0001
30	Tavush	Vazashen	spring («Yolomi»)	9/2/2022	0.0009282	0.0032931	1.24326	0.00387	<0.0001	<0.001	<0.0001	0.05137	<0.0001





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