**ARZAKAN SPRINGS PROTECTION AND DEVELOPMENT**

**Country.** Republic of Armeia  
**Marz, city.** Kotayk marz, Arzakan town  
**Client.** World Bank, MDPMU  
**Duration.** August – November 1998

**Terms of Reference:**

1. Engineering-geological and hydro-geological investigations of Arzakan springs and head structures.
2. Submission of a report on investigation results and future general design solutions.
3. Development of working design.

**Brief description of project and services provided**

- Hydro-geological investigation of the free underground water springs existing in the area of Arzakan operating water receiving structures and obtaining a special water use permission;
- Reconstruction of 9 operating spring intakes of Arzakan underground springs (total capacity about 600l/sec) and construction of 7 new spring intakes (total capacity about 400l/sec),
- Engineering-geological investigations of the areas of operating and designed spring intakes, water pipelines and other auxiliary structures;
- Geodetic survey of the areas of operating and designed spring intakes, water pipelines and other auxiliary structures through TC-1100 electronic tachometric equipment and development of results with the help of LeastCAD software;
- 300-1200mm L=6.5 km long transmission main water collecting pipeline and main outlet pipeline construction;
- new chlorination station, mixer and water metering node construction;
- Study of Hrazdan river hydrological regime;
- design of sanitary protection zone with L=6km long metallic fence,
- Construction of embankment (total length 3.3 km) in order to protect spring intakes against flood water from Hrazdan river,
- Investigation of operating bridge and development of a design for its rehabilitation;
- design of administrative buildings reconstruction;
- design of 3.5 km long inter-area road rehabilitation,
- Design of sanitary protection zone illumination rehabilitation.

**Project objective**

The project implementation will allow increasing gravity water supply to Yerevan from spring intakes, thus protecting drinking water from pollution, as well as improvement of conditions of operating complex.