

American Water Works Association – Pipeline Article

Re: Water Resources Training in Jordan

Background

Jordan faces a serious water scarcity and current and projected future demands far exceed the available supply of surface water and renewable groundwater resources. Approximately 63% of the demand is for agriculture and 37% is for municipal and industrial use. Groundwater represents 62% of all water use in the country and current withdrawals from aquifer systems in many basins in the country are in excess of natural recharge. The aquifer systems are comprised of a variety of bedrock aquifer systems (limestone, basalt and sandstone) and in the Jordan Valley there is a prolific unconsolidated alluvial aquifer that is pumped extensively for high value crop irrigation.

Jordan is surrounded by other water scarce countries (Syria, Israel, Palestinian Authority, Saudi Arabia and Iraq) and as such there are competing uses for both groundwater and surface water resources in the region.

The Water Authority of Jordan (WAJ) is currently implementing an integrated approach for sustainable groundwater management to try to alleviate some of its water problems with the assistance of the United States Agency for International Development (USAID). The firm of Associates in Rural Development (ARD), under contract to USAID, is involved with supporting WAJ in expanding its regulatory enforcement of groundwater use. A principal area of focus by WAJ and USAID has been an initiative to implement the metering of groundwater pumpage from the several thousand irrigation wells in the country. To this end, USAID as well as several other donor countries have assisted Jordan WAJ with technical assistance in water meter procurement, installation, and maintenance for high capacity wells.

Project and Training

Uhl, Baron, Rana & Associates, Inc (UBR) a professional groundwater consulting firm based in Lambertville, New Jersey was retained by ARD to provide technical assistance/training in the area of meter applications, installation, and maintenance. UBR implemented this training program with the assistance of Mr. James Horvath of the East Orange Water Commission.

The initial step in the program consisted of developing training manuals that provided Standard Operating Procedures (SOPs) for water meter installation, testing and maintenance. The “*SOPs for Water Meter Installation and for Water Meter Maintenance and Testing*” were translated into Arabic and adopted by the country of Jordan as their new official standard.

The second step was comprised of conducting training sessions in the installation, repair and maintenance of water meters for large capacity irrigation wells for about 50 persons from the technical staff of WAJ’s eight Regional Offices in the country. In April of 2006, Mr. Horvath and Mr. Uhl traveled to Jordan to design/formulate the training programs and conduct the training workshops in the capital city of Amman.

The training sessions involved:

- Classroom presentations introducing the SOPs.
- Hands-on applications with meter assembly and disassembly.
- The display and explanation by training staff and operation by trainees of the workshop tools, ultrasonic meter, conductivity meter and M-scope.
- A review of geologic, well construction methods, well operational problems, and meter installations to date by the eight regional offices.

During the training program, an overview was developed of the country's regional geologic conditions, well construction methods, well operational problems, and meter installation appropriateness in different geologic settings and for a variety of well construction/completions. In addition, Messrs. Uhl and Horvath paid a field visit into the heavily irrigated Jordan River Valley where problems had been identified with water meter operations on many irrigation wells. They assessed meter installation procedures and assisted in trouble shooting.

There was great interest, participation, and enthusiasm on the part of the trainees from the eight regional Water Authority of Jordan offices with respect to meter management and overall applications of technology with respect to managing groundwater in their country.

Mr. Horvath credits the City of East Orange and the Board of Water Commissioners for operating a well run pre-eminent water supply system, giving him the knowledge and experience to be invited to participate in this beneficial technology transfer program for the country of Jordan. The success of the training program indicates that the management and technical experience of the New Jersey groundwater and surface water utilities is exactly the type of practical knowledge that is needed and sought by their counterparts in far flung corners of the globe.

James Horvath is Superintendent of Intake and Supply for the East Orange Water Commission, NJ and holds several certifications in water, wastewater and water treatment. Vincent Uhl is a Principal Hydrogeologist with the professional groundwater consulting firm of Uhl, Baron, Rana & Associates, Inc., based in Lambertville, NJ, and has extensive regional and international experience in hydrogeology and in exploring for, developing and managing sources of water supply.



Figure 1: James Horvath conducts a classroom training session in Amman, Jordan



Figure 2: Well discharge in the Jordan Valley with significant sediment presenting a metering challenge.