

# Iraqi Ministry of Water Resources & USGS Hydrological Monitoring Network

*In 2007, Sutron, in conjunction with the Boise, Idaho US Geological Survey (USGS), assisted the Iraqi Ministry of Water Resources (IMoWR) in setting up a country-wide Hydrological Monitoring Network of over 100 remote gauging stations with METEOSAT communications and a data collection Central Receive Site, installed at IMoWR headquarters in Baghdad.*

## Application & Project Details

<b>OWNER</b>	Iraqi Ministry of Water Resources (IMoWR)	
<b>PROJECT</b>	Supply, integrate, install 100 Hydrological Monitoring Stations & Receive Site to accurately measure & collect water quality & quantity data. Operation & Maintenance Training for Ministry Engineers. Data is transmitted via EUMETSAT & received by a Ministry receive site. Sutron supplied both Earth Receiving Ground Station & all Central Receiving software.	
<b>DATES</b>	2010 - 2011	
<b>CONTACT(S)</b>	<b>USGS Contact:</b> Mr. Steve Lipscomb Assistant District Chief Water Resources Division Idaho District Email: lipscomb@usgs.gov	<b>IMoWR Contact:</b> Mr. Hatem Hameed Hussein email: hatem_altamimy@yahoo.com
<b>STATION DESCRIPTION</b>	100 Automatic Remote Hydrological Monitoring Stations: Automatic Bubbler Stations Automatic Radar Gauge Stations Automatic Snow Measuring Stations Central Receive Site for data collection & low resolution imagery	
<b>TELEMETRY, RECEIVE SITES</b>	1 EUMETSAT DRGS Ground Station, Sutron's ILEX Receive Site Software	
<b>OTHER</b>	Multiple O&M Training Classes: in Iraq, in Italy & in the USA	



Ministry of Water Resources Training in Sulaymaniah, Iraq. 2007



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To build the Ministry's personnel capacity, Sutron Corporation first traveled to Italy to train a group of Iraqi engineers from the Ministry on the installation and operation of the central receive site. Sutron then traveled to the USGS Boise office to conduct a 1 week training class on Sutron's equipment where a total of 15 engineers from the ministry were in attendance; this included training on the operation, maintenance and troubleshooting of the system as a whole and each component, this training was conducted in Arabic. To further strengthen the ministry's capacity, Sutron then traveled to Iraq in 2008 to conduct a 3 day in-class and in the field training as a follow up where 30 engineers from all over Iraq were in attendance, this again was conducted in Arabic.



## System Features

- ▶ Current meters (ADCP) using Sutron's XLite 9210 logger for data collection
- ▶ Velocity meters (ADVM)
- ▶ Central Receive Site for data collection and low resolution imagery
- ▶ Automatic Bubbler Gauging Stations
- ▶ Automatic Radar Gauging Stations
- ▶ Automatic Snow Monitoring Stations



*Sutron's Bubbler Station at Darbandikhan Dam, Iraq*

## Automatic Bubbler Gauging Stations

- ▶ Automatic Bubbler Gauging Stations
- ▶ Sutron's Certified Eumetsat Satellite Transmitter / Logger
- ▶ Sutron's Bubbler Water Level Sensor
- ▶ Multi-Parameter Water Quality Sensor measuring temperature, conductivity, turbidity, PH and dissolved oxygen
- ▶ System is fully automatic and solar powered



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## Automatic Radar Gauging Stations

- ▶ Sutron's no contact Radar Level Sensor
- ▶ Multi-Parameter Water Quality Sensor measuring temperature, conductivity, turbidity, PH and dissolved oxygen
- ▶ System is fully automatic and solar powered

## Automatic Snow Monitoring Stations

- ▶ Automatic Snow Monitoring Stations
- ▶ Sutron's Certified Eumetsat Satellite Transmitter / Logger
- ▶ SNOTEL standard snow stations with snow pillow and 10 foot stand pipe
- ▶ Air Temperature Sensor
- ▶ System is fully automatic and solar powered



*Sutron's Radar Gauging Station, Iraq*

*Sutron's Snow Monitoring Station, Mountains of Northern Iraq*



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