



Imposed Water Quality Conditions with Drought Permits

Real-time Water Quality Monitors Protect Rivers

Under the conditions of a Drought Permit, water quality monitoring and telemetry systems from YSI have been deployed by Atkins to ensure the protection of rivers during recent drought conditions.

As a result of the drought in the South East of England during 2005 and 2006, the Environment Agency has allowed increased water abstraction from certain rivers in order to protect reservoir levels. However, reduced flow can cause deterioration in a river's water quality. In order that acceptable levels are maintained; the Environment Agency imposes water quality conditions within Drought Permits.



A YSI water quality sonde is suspended in the River Eden to monitor water levels as some water is removed to replenish Bough Beech Reservoir.

Sutton and East Surrey Water has been granted a Drought Permit this Autumn, allowing it to begin abstracting water earlier than they would normally be permitted in order to replenish Bough Beech Reservoir.

Bough Beech Reservoir lies to the North of the village of Bough Beech near Edenbridge. Built in 1968, it was designed to meet the water storage needs of the then East Surrey Water Company. The reservoir only has a small catchment with five small inflows. Most of the water is normally pumped in during Winter months from the River Eden near Chiddingstone.

Flow measurement is carried out at a gauging station on the Eden to ensure that abstraction does not cause the river to drop below acceptable levels.

Under the terms of the Drought Permit, water quality has been monitored by Atkins Water and Environment at a site downstream of the Eden abstraction. The monitor is a YSI multiparameter sonde fitted with sensors for pH, dissolved oxygen, temperature, and conductivity. The sonde is suspended in the water by a chain connected to a stake on the river bank.

The monitor is fitted with a new YSI telemetry system (EcoNet) that collects data to an internal datalogger and transmits via GPRS to a web based server in the US, so that authorized users can access data from anywhere with Internet access. This technology

offers the facility to configure the unit to issue email alarms and to increase the frequency of sampling during alarm conditions.

Close Monitoring Aids Abstraction

Atkins Water and Environment has been contracted to provide the monitoring service during the additional early abstraction period (September and October). Under the Drought Permit, dissolved oxygen levels downstream of the abstraction should not fall below 50% saturation.

According to Tom Wood at Atkins, who is responsible for the instrumentation, the YSI Econet monitoring system has allowed Atkins to closely monitor the water quality over the web server from its office in Epsom. During early September, it was not possible to commence abstraction because the river levels were below the minimum required by the Environment Agency. These low flows resulted in low oxygen levels, which would also preclude the water company from starting abstraction. Rainfall during the second week in September increased flows such that water quality was within the requirements of the Drought Permit.

The YSI Econet telemetry system has enabled Atkins to advise Sutton and East Surrey Water exactly when water quality is acceptable so that they can begin abstracting as soon as river levels are sufficient.

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Atkins deploys YSI water quality monitoring sondes routinely in a number of different applications. For example, they were used to provide data during the River Medway scheme Winter 2006 Drought Permit. Atkins also employs the sondes under a framework agreement with Southern Water to provide long-term water quality monitoring for the development of water resource management strategies in the area.

Reviewing the river Eden application, Tom Wood says, “We use YSI multiparameter sondes because they are able to provide reliable long-term data. The facility to view and collect data over the Internet is an exciting development – it means that we can now access the latest data any time from anywhere.”

Atkins, the UK’s largest engineering consultancy, uses YSI EcoNet remote monitoring system to view real-time water quality data from specific sites over the web.

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