



Water Resource Associates

A network of consultants in hydraulics, hydrology, groundwater & environmental issues

Project title: Deployable Output assessment of Lasham groundwater source, South East Water Ltd.

Summary: Re-assessment of the multiple well source at Lasham, near Alton, in Hampshire, using new pumping test data, and advanced step test analysis.

Client: South East Water Engineering Services	Financed by: South East Water
Period of assignment: Nov-Dec 2004	Location: Hampshire [United Kingdom]
Project Value: £4,000	WRA services: £4,000
<p>The graph plots Water Level (m AOD) on the y-axis (20 to 100) against Total Output (Ml/d) on the x-axis (0 to 30). It shows data for wells No 1, No 2, No 3, and No 4, along with various pumping conditions like 'peak license & WTW assumed capacity 27.3' and '7 day drawdowns well 4 constant q's'. A red dotted line indicates an 'Approximate drought curve'.</p>	<h3>Background & Source Description</h3> <p>The Lasham source comprises three separate well configurations: one with two interconnected wells, and two distant individual wells, 300m and 560m away from the main site. On the main site, wells are 1800mm in diameter, drilled to a depth of 90 mbgl, and connected by a 91m-long adit at 27.7mbgl. The other two boreholes are 762 and 914mm in diameter drilled to a depth of 91 to 97m.</p> <p>Step-Drawdown tests were carried out at all three sites. WRA software was used to analyse the results. PTFIT is particularly valuable for analysing pumping tests at multi-well sites. It can cope with multi-well pumping, complex pumping regimes and automatically determines the well-loss factor which determines well step drawdown behaviour. Having determined aquifer and well performance characteristics, PTSIM was used to predict the deployable output for the required multi-well pumping regime assumed, following UKWIR methodology.</p>
<p>The Summary Diagram of the DO method demonstrates the complexity of this particular source.</p>	
	<h3>Results</h3> <p>Well performance was shown to have deteriorated since prior testing in 1988, and the well-loss factor had increased. Acidisation was recommended along with a new pump delivery system. Subsequently, Stow plc was contracted to carry out this work and retesting resulted in performance being restored to pre-1988 levels.</p> <p>The drought curve of the summary diagram and the calculated DO assumes wells 1 or 2 are the first choice for delivery, and this leads to a DO of 12.5ml/d. If well 3 & well 4 are pumped continuously at half the rate of wells 1 & 2, the DO would exceed 30ml/d.</p>
	<h3>Recommendations</h3> <p>Wells 1 or 2 are the first choice for delivery. Wells 3&4 should be serviced & rehabilitated if necessary. Wells 3&4 should have lower yielding pumps installed.</p>

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