
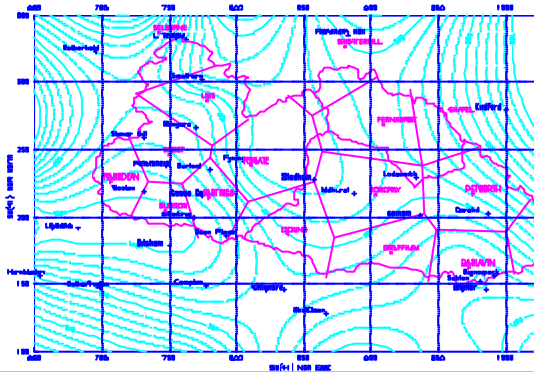
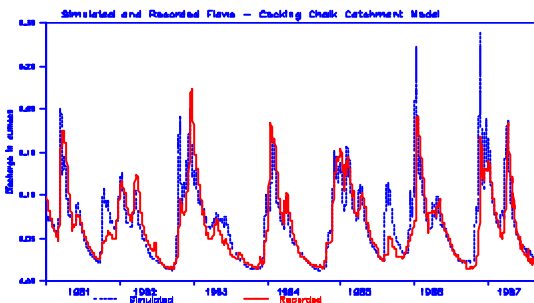


Water Resource Associates

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

Project title: Flow record for the Western Rother [West Sussex]

Summary: HYSIM was used to prepare catchment models at four gauged sites of Iping Mill, Halfway Bridge, Cocking, and Hardham, reviewing methods of flow naturalisation.

Client: Environment Agency Southern Region	Financed by: Environment Agency Southern Region
Period of assignment: Apr-Oct 1999	Location: West Sussex, United Kingdom
Project Value: £9,740	WRA services: £ 9,740
<p>Western Rother at Fittleworth Bridge</p> 	<p>Background</p> <p>At Hardham, the Western Rother drains a 206 km² area at the western end of the Wealden anticline. Southern Water abstract at Hardham, South East Water abstract from the Lower Greensand aquifers in the headwaters, and there is significant spray irrigation for farming along the valley. The need to assess yield of the system, which supports abstraction in excess of 100 Mld, prompted a complete review of flow records in the Western Rother, with the aim of producing a definitive set of data for 1920-98.</p>
<p>Rainfall isohyets and Thiessen Polygons</p> 	<p>Scope of WRA assignment</p> <p>Work focused on developing an integrated catchment model, ranging from data processing and validation to developing models to portray artificial influences, which have an impact on the stream hydrology. This included impact of groundwater abstraction on flows in the river. Time series were developed for rainfall, PET, abstraction, and effluent discharge. The whole area was divided into independent sub-catchments and one residual catchment between Iping and Hardham, using the Costers Brook model to represent ungauged chalk areas. Thematic mapping was used to process, interpret and display spatial data, including the distribution of rainfall, abstraction, wastewater returns, catchment geology and land-use.</p>
<p>Chalk groundwater model at Cocking</p> 	<p>Results</p> <p>Stage-discharge ratings for Hardham Weir were reviewed, & flows re-calculated. Each gauging station record was reviewed & anomalies corrected. The UK national approach to flow naturalisation was reviewed, & work progressed using HYSIM for this purpose. Three statistical models were developed for agricultural use of water, and the likely trend in water demand and sewage returns was based on population growth in the catchment for the period. The discharge of wastewater from sewage works was also simulated using seasonal variations evident in the available daily records.</p>

Project Number 000040

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