Reflections of a retired hydrogeologist on the use and management of the Permo-Triassic sandstones of north west England.

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Abstract

Keith has enjoyed a 35 year career as a regulator managing and protecting groundwater resources in the north west of England, initially with the former Water Authority and latterly with the Environment Agency.

As in the Midlands, the Permo-Triassic sandstone aquifer in north west England has been an important source of both public and industrial water supply, especially in the urban conurbations of the Mersey basin between Liverpool and Manchester.

After setting the geological and hydrogeological scene, Keith will summarise the long history of abstraction from aquifer in the context of wider water resources in the North West and how over-abstraction resulted in falling groundwater levels and associated saline intrusion from the Mersey estuary and upflow of connate groundwater from depth. He will explain how the situation started to change with the 1963 Water Resources Act, which set in place regulatory control of abstraction by licensing and importantly, water resource monitoring, assessment and management. This coincided with the formation of regional water authorities that saw a move towards in more integrated water supply zones and less dependence on groundwater.

Keith will share his insights and understanding of the complex behaviour of the Permo-Triassic sandstone aquifers of the north west gained from site scale testing of abstraction boreholes, expanding the regional groundwater level monitoring network and culminating in a programme of regional scale groundwater resource investigations involving conceptual and numerical modelling. He will illustrate how BGS geophysical data have provided valuable 'pieces in the jigsaw puzzle' in recognising the importance of structural controls on groundwater flow and aquifer compartmentalisation; this is important when defining appropriate groundwater management units. Similarly, BGS drift domain mapping has helped model calibration in terms of the very significant constraint low permeability glacial till cover has on recharge to the bedrock aquifer, and hence sustainability.

As interesting and rewarding as this work is for we geoscientists, especially hydrogeologists, Keith will conclude by emphasising the 'why do we bother' – the need for robust, scientifically justified, management of water resources that allow optimum, sustainable use of (ground)water resources whilst protecting the needs of the environment.