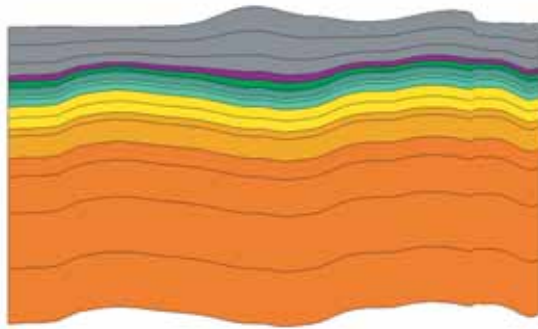


Tracer Test UK

Client **LoopMaster (Europe) Ltd.**
 Dates 2008
 Main tasks To conduct a tracer test between boreholes with the aim of understanding how heat will dissipate through the aquifer



Cross section through numerical model



Background

Understanding how heat will dissipate through the subsurface is important for assessing a geothermal scheme's sustainability and undertaking an impact assessment. A tracer test is used to obtain site specific information such as dispersivity, water velocity and aquifer transmissivity.

A tracer test involves the injection of a conservative and non-toxic dye into the groundwater system, and monitoring its concentration at the abstraction boreholes.

Consent from the Environment Agency needs to be obtained before a tracer test can be undertaken; the Agency will need to be sure that other groundwater abstractors will not be adversely affected by the test.

Zenith was asked to conduct a tracer test between two pairs of injection and abstraction boreholes at this site.

The project

The first stage of the project was to obtain consent from the Agency. Zenith identified the nearby abstractors which could be affected, and calculated the mass of tracer to inject that would both achieve the aims of the test but not affect others.

Once consent was granted, the test took place. We injected the tracer, and measured its concentration at the abstraction borehole. From this we calculated the breakthrough time, peak concentration, dilution and the total mass of tracer recovered. These were used to determine the aquifer's dispersivity and transmissivity, and the properties of the fracture connections between the boreholes.

We used the data to review the conceptual understanding of the aquifer and the numerical modelling of the geothermal scheme. Zenith advised the client on the scheme's sustainability and any potential impacts the scheme could have on the environment.

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