Emerging Presenter Slot

Do you know where your water comes from?   Elizabeth Richardson, Hydraulic Modeller, HydroCo

In a world of increasing drought and water shortages, knowing how critical the water sources are to supplying your customers has become increasingly important. How can we use models to aid in assessing the resilience of each source, asset and trunk main?

What is route tracing? The process of recording all modelled routes the water takes from source to DMA meter, over a 24-hour period, developed using a bespoke set of Ruby Scripts and SQLs which identifies all routes from source to meter, as well as the desired assets along the way (reservoirs, boosters etc.)

- The number of properties each of these assets and sources supply at both HDZ and strategic level.
- The percentage split between each source supplying each asset, meter and trunk main in the area.

How do we do it?

- Run a water quality model over an extended period.
- Ensure that the model is dynamic with no reservoirs overfilling/emptying.
- Use the relevant SQLs and Ruby Scripts to output key data into text files which can be imported into spreadsheets for presentation.

Asset management is one of the most import and complex parts of the water industry, to help simplify this for a water company for their PR24 submission. HydroCo has developed a series of processes to aid with this, tested against water networks which supplies over 3.8 million customers.

Source Tracing – what source supplied each asset and meter and by how much? A bespoke SQL is used to calculate the percentage makeup of source water at any given meter or asset in the system, using a water quality model run. The Source Tracing results could result in 100% from one source or smaller percentages from multiple sources depending on how the system is supplied.

Route Tracing - A complex ruby script is used to calculate the route of the water from source to asset to meter. This details every single route of water over 24 hours for each selected meter. Meters may only have one route, whereas in more complex systems meters may have multiple routes. Knowing how many times assets and trunk mains are used within the routes can signal the criticality of the asset. However this gives limited indication of the volume of water through each asset or the number of customers it supplies, we linked the source percentage to each route to calculate the utilisation of each route.

Customer Counts - To manage this a second ruby script is used to tally the number of customers downstream of each source, asset or meter over a 24-hour period. This gives the minimum, maximum, and average number of customers supplied, which is used to quantify the reliance of customers on each asset or source.