

Flow-Regime Estimation in UK Ungauged Basins

Science

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(UK)

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Wallingford HydroSolutions
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Software

Michael Allchin

Mapmatics
(Clearwater, BC)



'Typical' European operational system



UK Flow-Regime Prediction

Michael Allchin

‘Typical’ European operational system
BUT also flexible for research use



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Research – practitioner collaboration



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‘Typical’ European operational system
BUT also flexible for research use
Research – practitioner collaboration
Highlights anthropogenic uncertainty



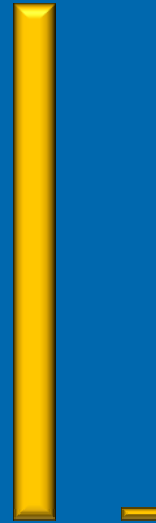
Comparisons

Canada

9,984,670 km²

UK

243,610 km²



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Comparisons

Canada

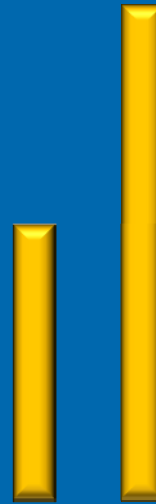
9,984,670 km²

34,589,000 (2011 est.)

UK

243,610 km²

62,262,000 (mid 2010)



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Comparisons

Canada

9,984,670 km²

34,589,000 (2011 est.)

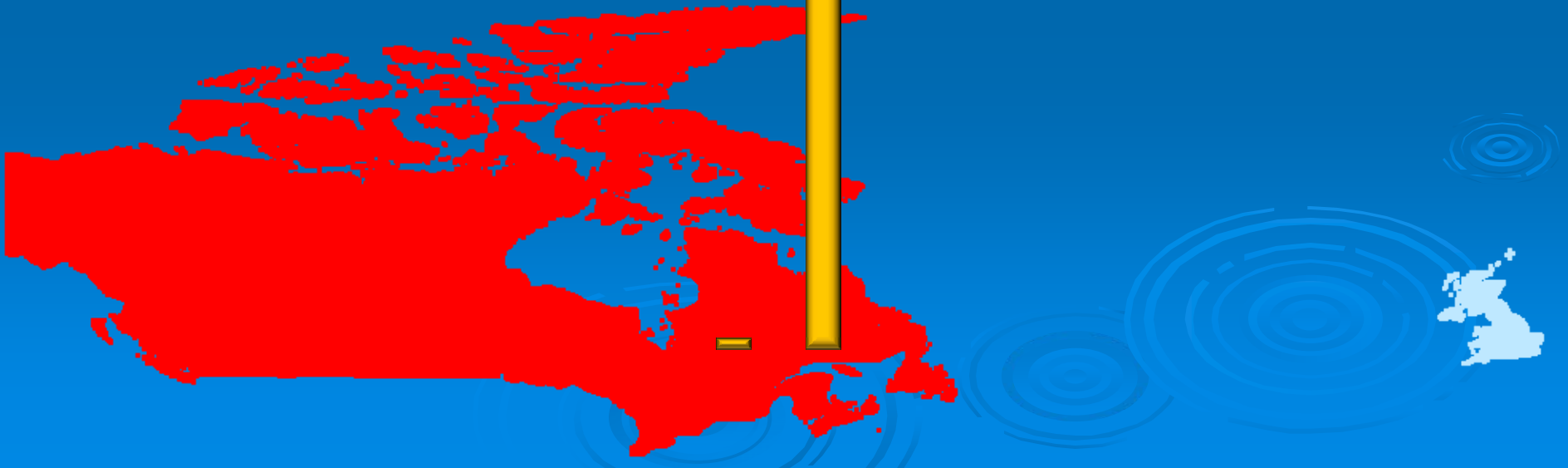
3.41 / km²

UK

243,610 km²

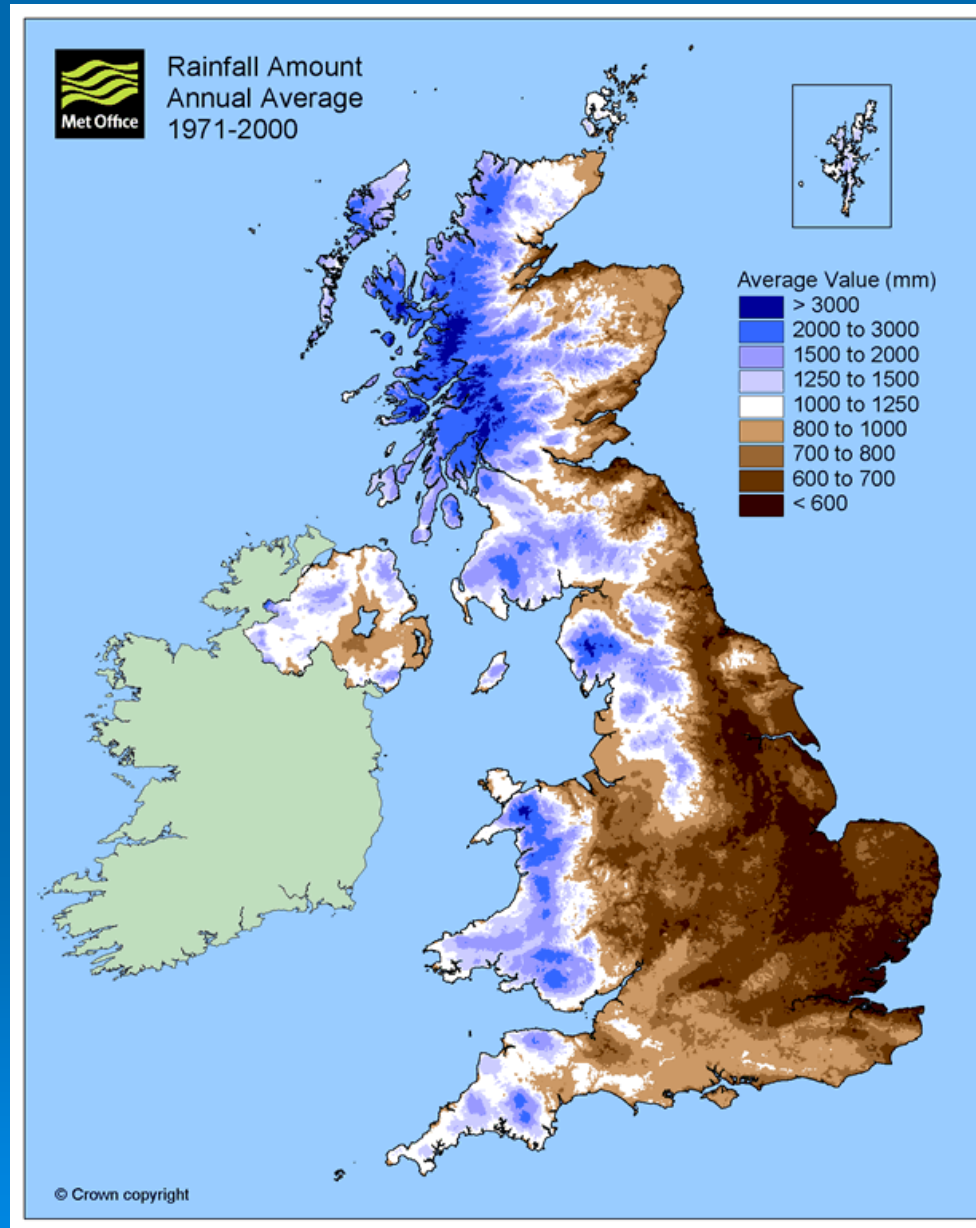
62,262,000 (mid 2010)

255.6 / km²



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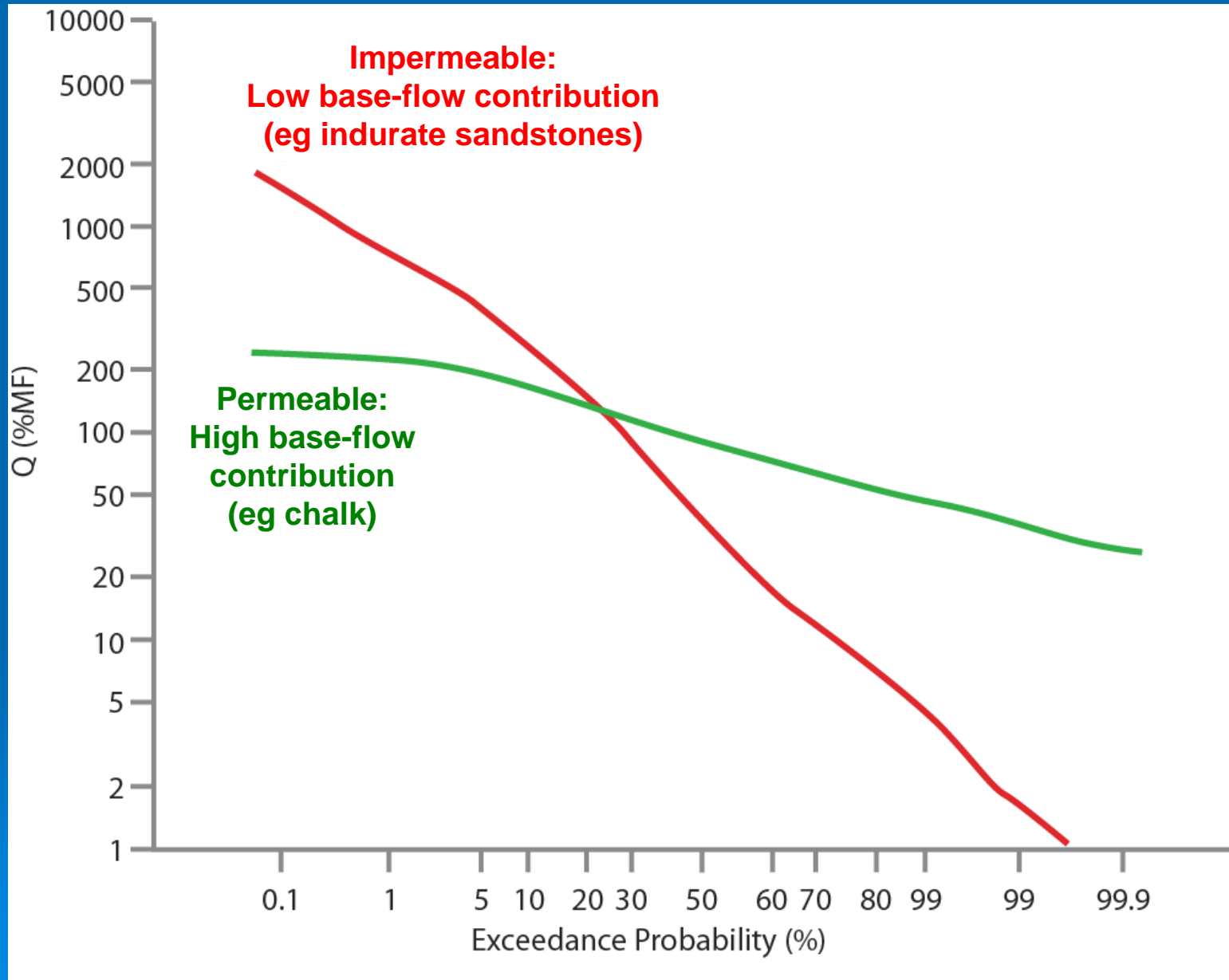
Problem:

How to provide a benchmark quantification of the resource, to support management / regulation of its use (abstractions, discharges, impoundments) whilst maintaining 'healthy' river flows?



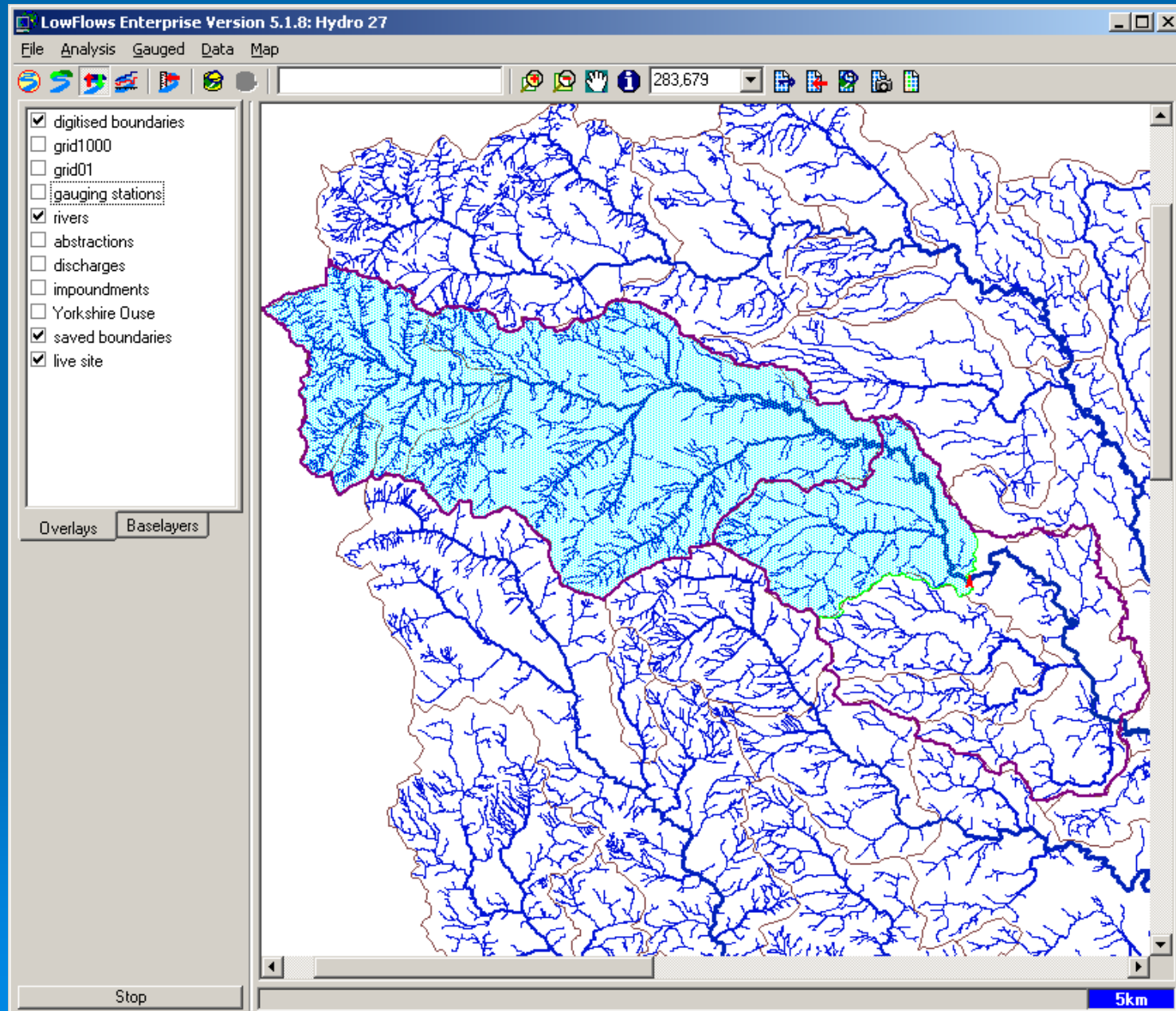
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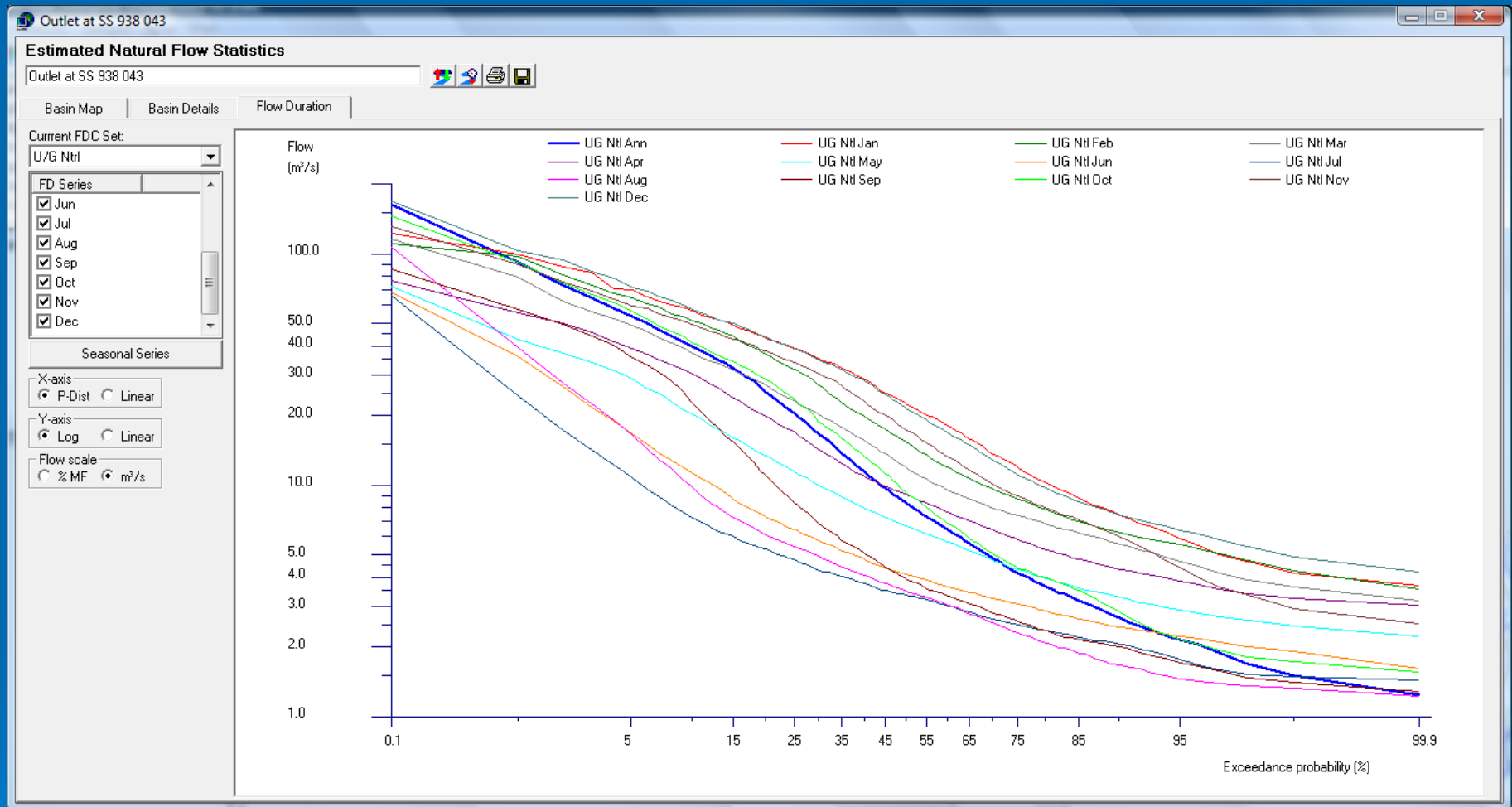
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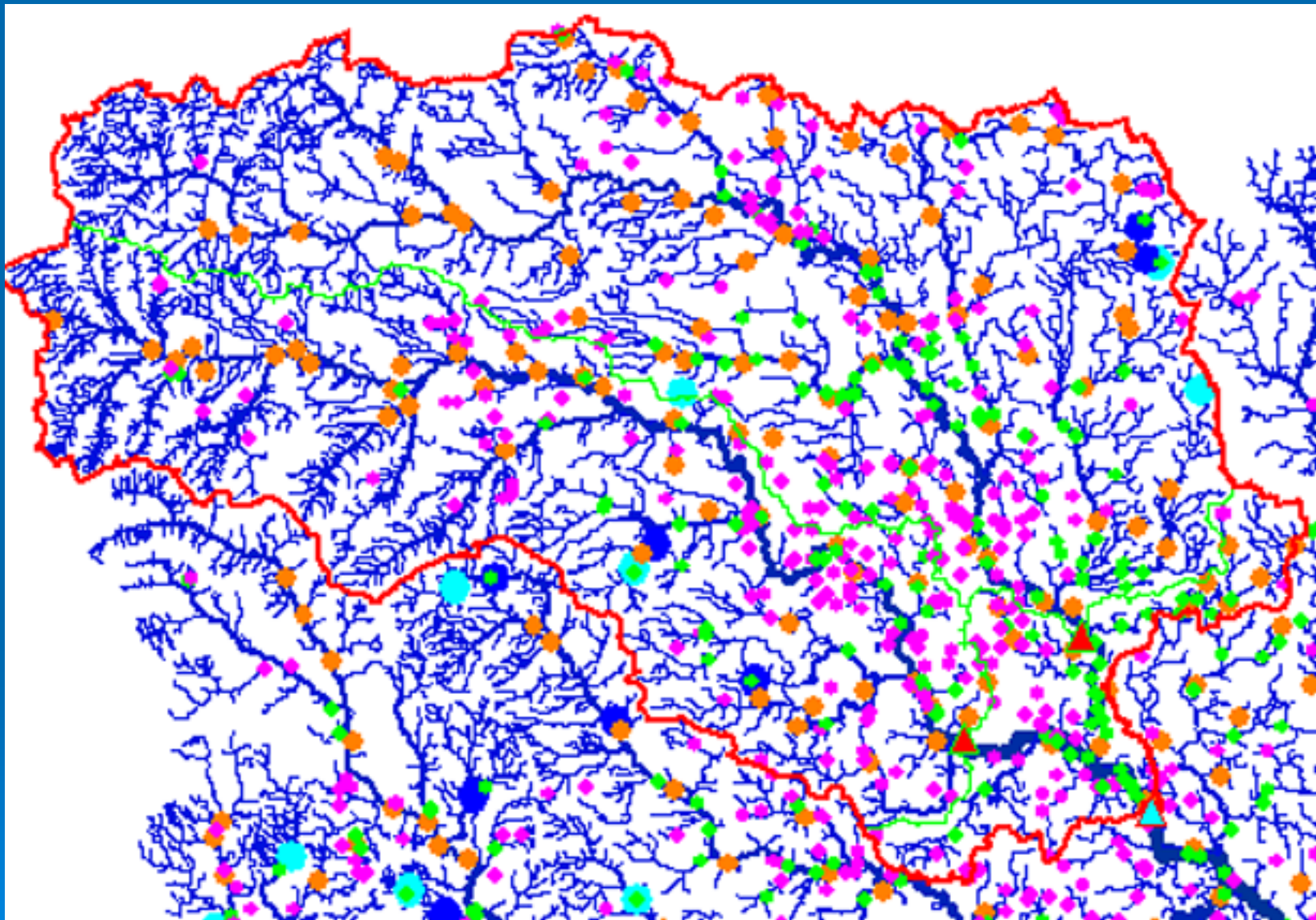
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UK Flow-Regime Prediction

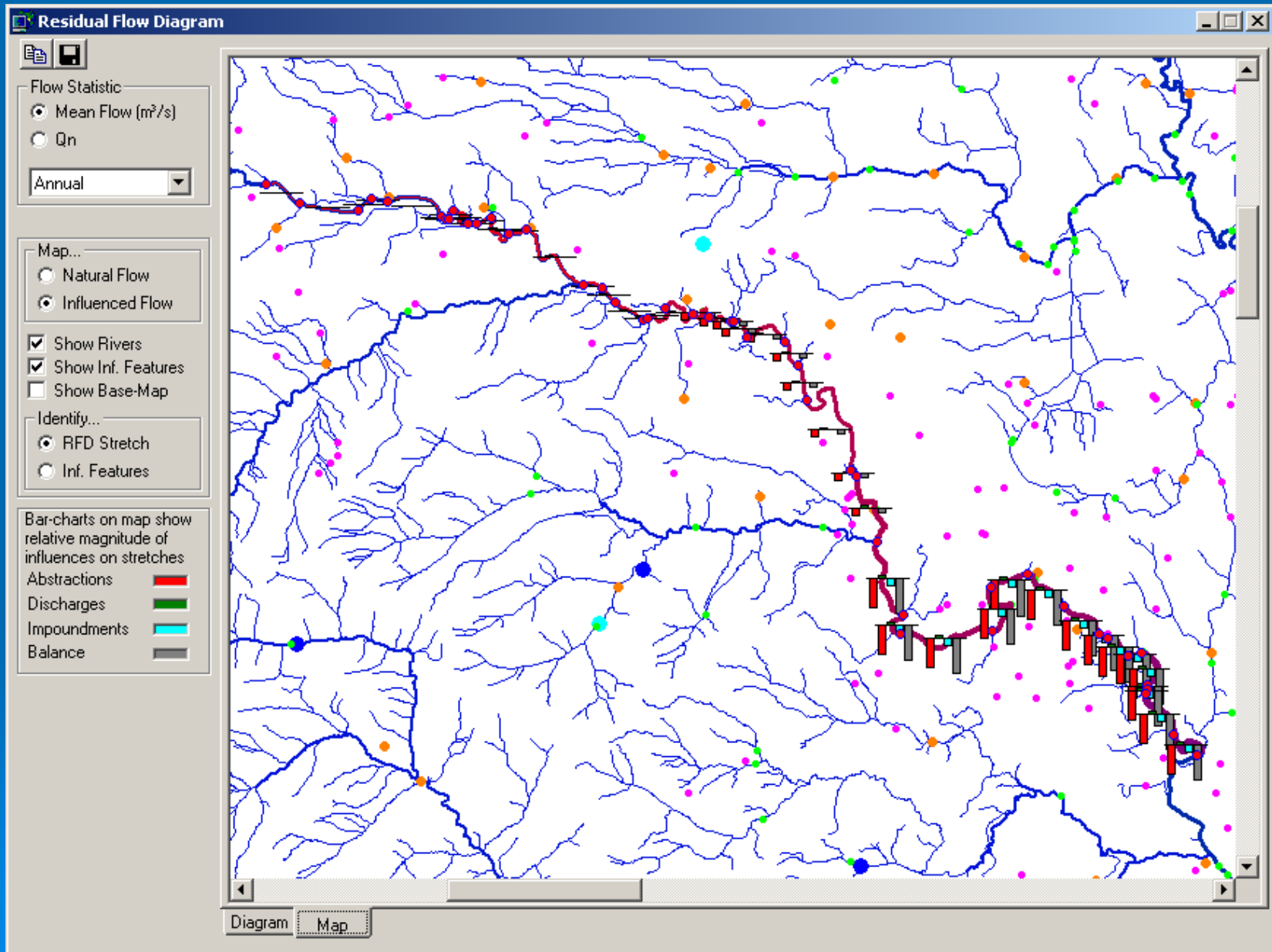
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~10km

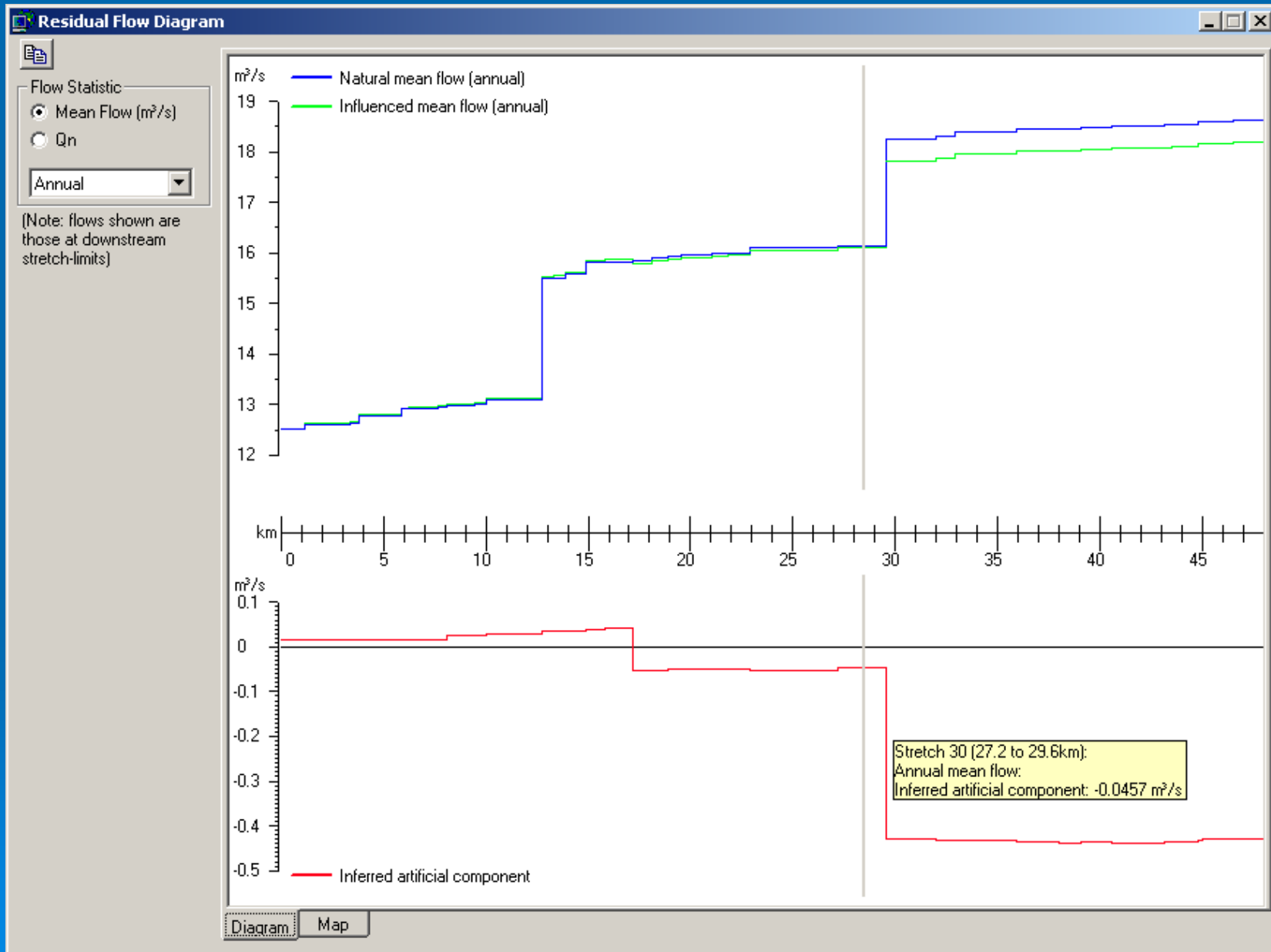
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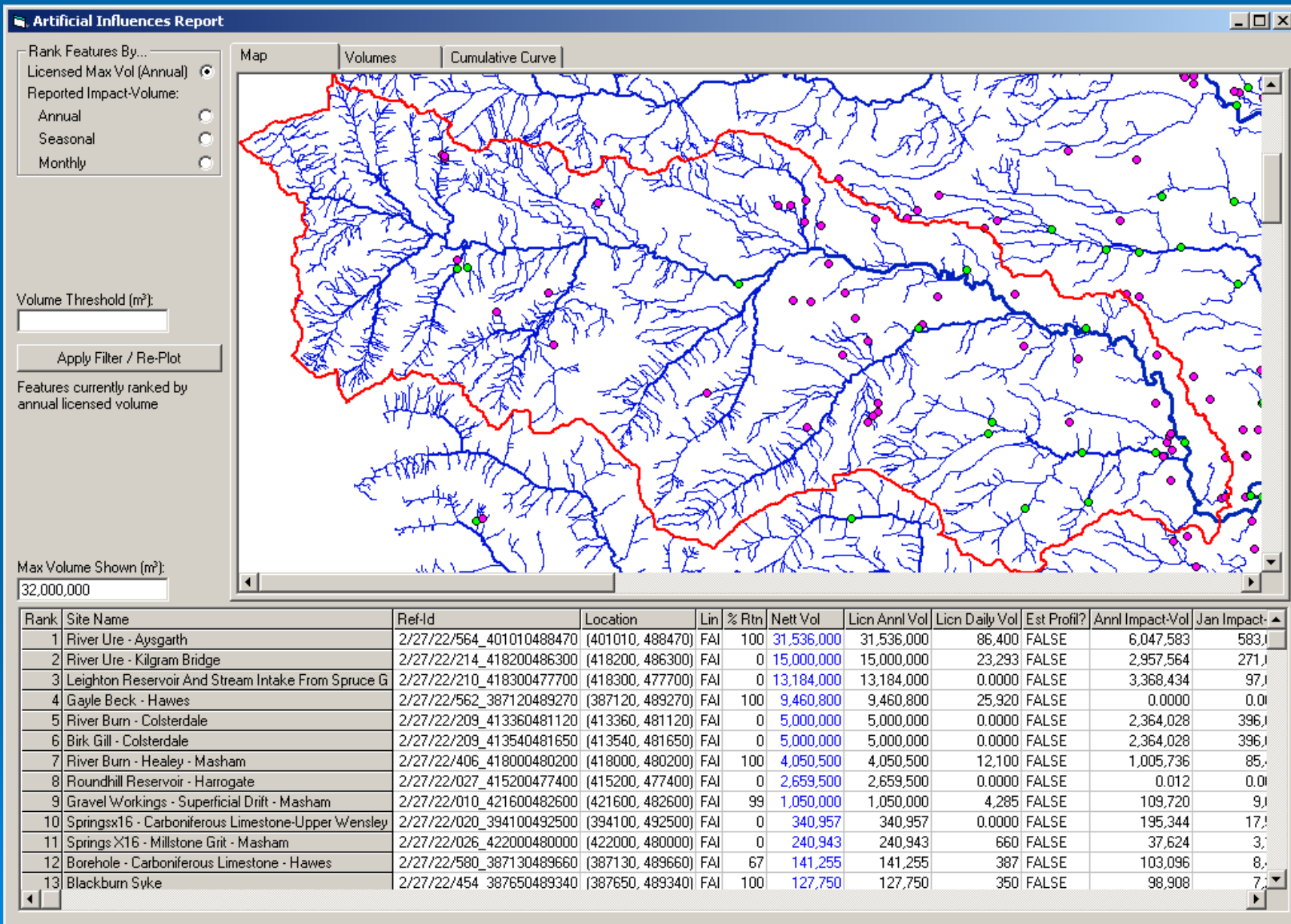
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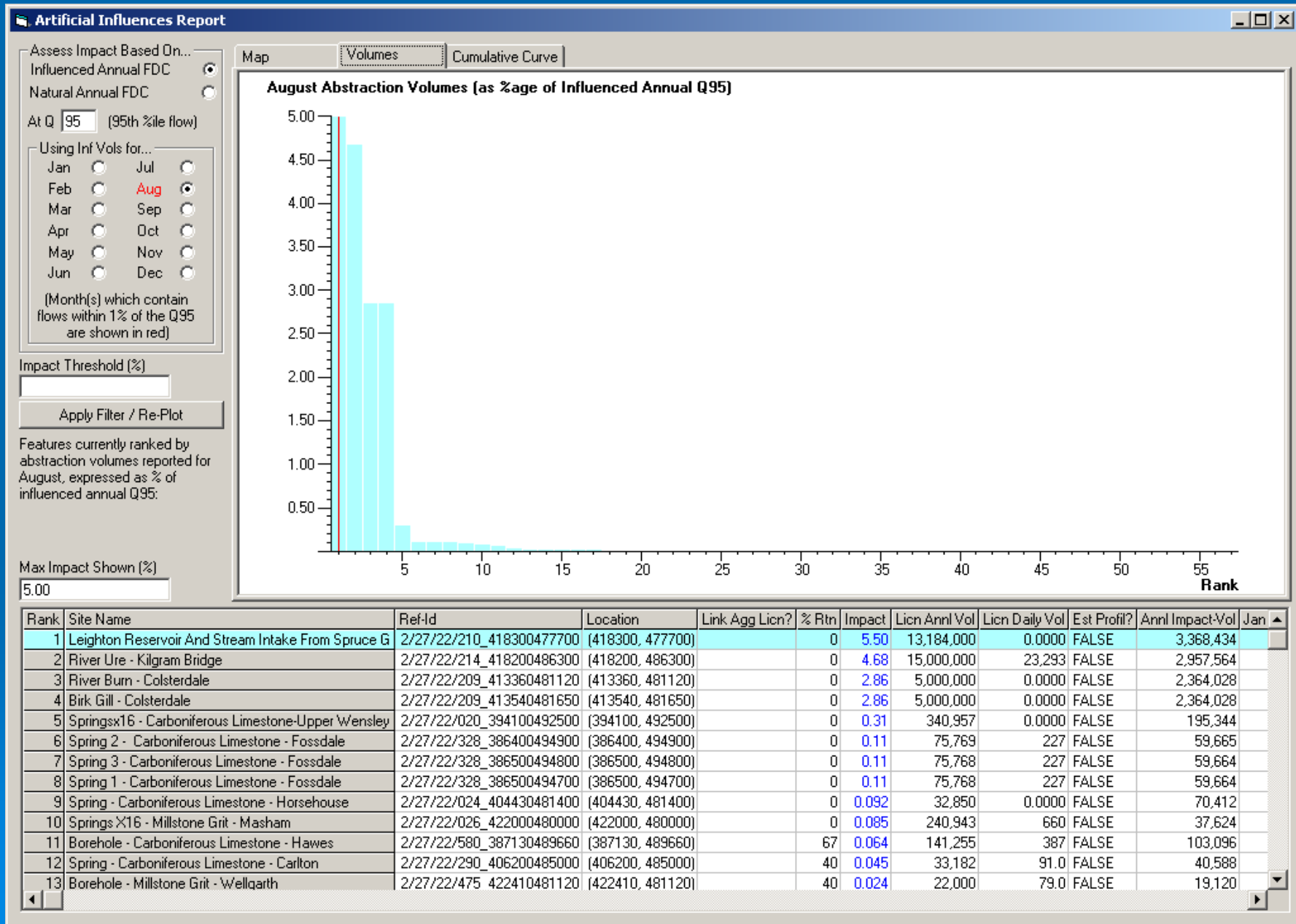
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Other Applications

Water-quality modelling



Other Applications

Water-quality modelling

Gauge naturalisation



Other Applications

Water-quality modelling

Gauge naturalisation

Spot-gauging percentile assignment



Other Applications

Water-quality modelling

Gauge naturalisation

Spot-gauging percentile assignment

Hydropower potential



Other Applications

Water-quality modelling

Gauge naturalisation

Spot-gauging percentile assignment

Hydropower potential

...?



In Summary -

Undoubtedly wrong(ish?),
but demonstrably useful!



Connecting Communities
International Association of
Hydrological Sciences
Predictions in Ungauged Basins
(PUB) Movement

www.usask.ca/hydrology/pub2011