

Interactive comment on “Dying to find the source – the quantitative use of rhodamine WT as a proxy for soluble point source pollutants in closed pipe surface drainage networks” by C. H. Mines et al.

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Revision Report Manuscript: HESSD, Vol. 6, No. 3, pp. 4535 - 4562 Title: Dying to find the source – the use of rhodamine WT as a proxy for soluble point source pollutants in closed pipe surface drainage networks Authors: Conor H. Mines, Anas Ghadouani and Gregory N. Ivey

Dear Editor and Referees,

The authors wish to thank the two referees for their constructive, considered responses. In addition to addressing each specific comment in the table below we would like to also

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acknowledge their general concerns. We recognise the limitations of this study, particularly with respect to quantifying possible interactions between multiple environmental conditions and in relation to the lack of flow measurements in the field. Whilst examining the potential for interactions between environmental conditions on fluorometric response is indeed important, this study aimed to quantify the fluorometric responses to each examined factor independently of one another. By adopting this approach we can clearly note the effect of altering the temperature on fluorometric response, for instance, and state with confidence that this response is due only to changing temperature. This does not mean that it may not be necessary to quantify confounding effects of multiple environmental factors, particularly when a study site exhibits highly variable water conditions, but such examination was outside of the scope of this particular study. We thank Referee #1 for again bringing this to our attention, and have added a relevant recommendation for future researchers to the conclusions of the manuscript.

We recognise the importance of flow gauging information when conducting precise quantitative dye tracer studies. The collection of flow measurements during this study would have removed the need to make a number of assumptions within the longitudinal dispersion theory analysis, and as Referee #2 correctly states this would have greatly contributed to the quantitative aspect of the study. However, despite the lack of flow gauging and subsequent need to apply assumptions within the analysis, this study demonstrates an appropriate and useful methodology for quantitative RWT release studies that future researchers may build upon through the addition of flow gauging. Similarly, future work may also build upon this methodology through the use of another truly conservative tracer, such as Br as suggested by Referee #2, to tease apart the effects due to RWT behaviour and due to the system under study.

We are providing detailed point-by-point revision report in the table below and would welcome any additional comments or suggestions that the referees and the editor may wish to provide.

Thank you very much for your constructive and helpful comments which have con-

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tributed to the improvement of our submission.

Best regards,

Anas Ghadouani

PS. Detailed revision report: see attached table.

Please also note the Supplement to this comment.

Interactive comment on Hydrol. Earth Syst. Sci. Discuss., 6, 4535, 2009.