

*Journal of Geophysical Research: Earth Surface*

Supporting Information for

**Discontinuity in Equilibrium Wave–Current Ripple Size and Shape and Deep cleaning associated with Cohesive Sand–Clay Beds**

X.Wu1, R. Fernández1, J. H. Baas2, J. Malarkey1,2, and D. R. Parsons1

1Energy and Environment Institute, University of Hull, Hull, UK.

2School of Ocean Sciences, Bangor University, Menai Bridge, LL59 5AB, Wales, U.K.

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Text S1

**Introduction**

Text S1 describes the method of Packman et al. (2000) to calculate pore water velocity, which is used in Section 4.2 for estimating hyporheic pumping under different flow conditions.

Text S1.

Pore water velocity calculation

The pore water velocity, *up*, which scales the hyporheic processes in the bed, can be calculated by the method of Packman et al. (2000)

|  |  |
| --- | --- |
| *up* = *kKhm* | (S1) |

where *k* = 2π/λ, *K* = 600*D*102 is the hydraulic conductivity in mm/min, *D*10 is the 10-percentile of the grain-size distribution in mm, *hm* = 0.14(*U* 2/*g*)(*η*/0.34*h*)3/8 is the half-amplitude dynamic head, and *U* is the root-mean square flow velocity (Precht and Huettel, 2003). For the present experiments, *U* = 0.28 m/s, *D*10 = 0.3 mm and *up* = 1.3 mm/min, for Baas et al. (2013), *U* = 0.4 m/s, *D*10 = 0.072 mm and *up* = 0.2 mm/min and for Wu et al. (2018), *U* = 0.19 m/s, *D*10 = 0.34 mm and *up* = 0.7 mm/min.