

Supporting Information

Hydrologic flow controls on biologic iron(III) reduction in natural sediments

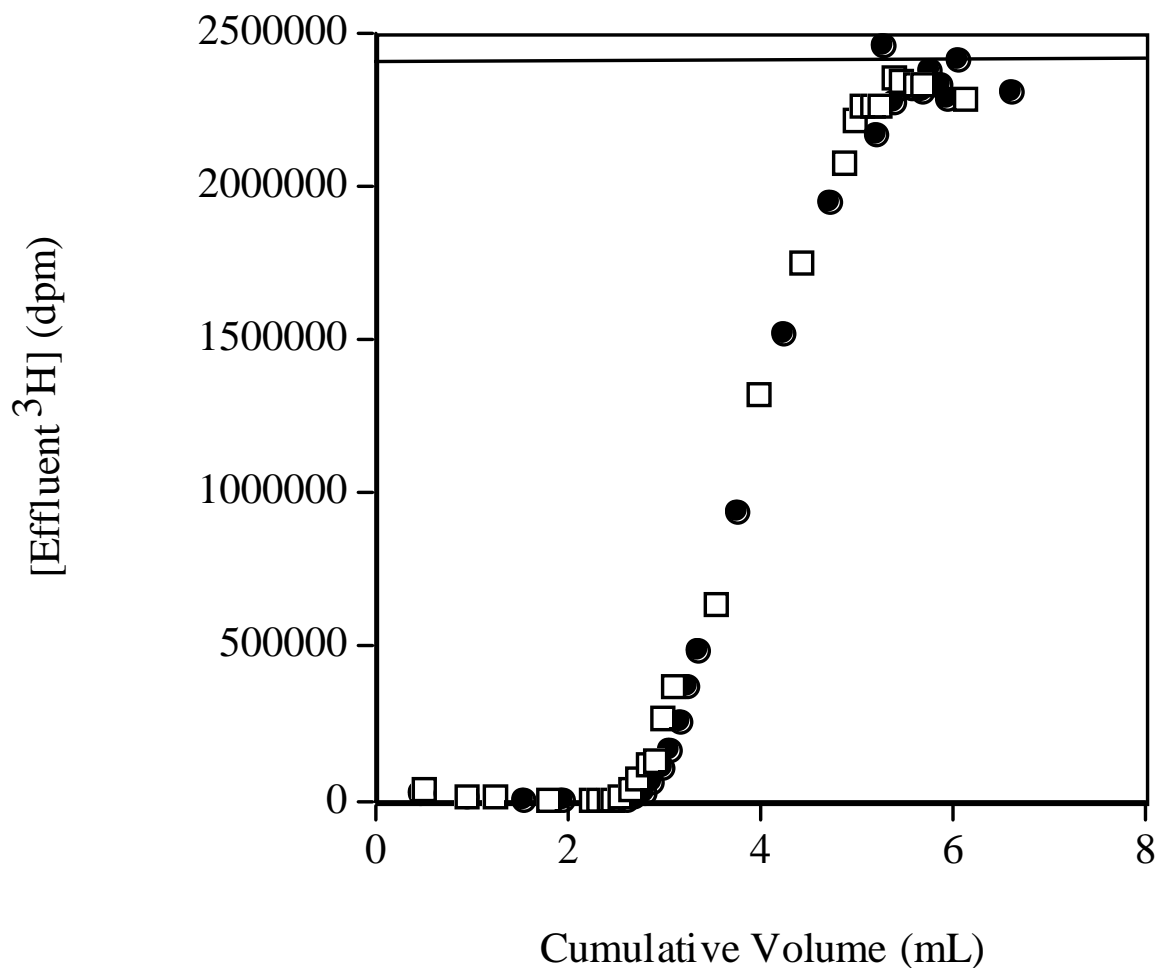
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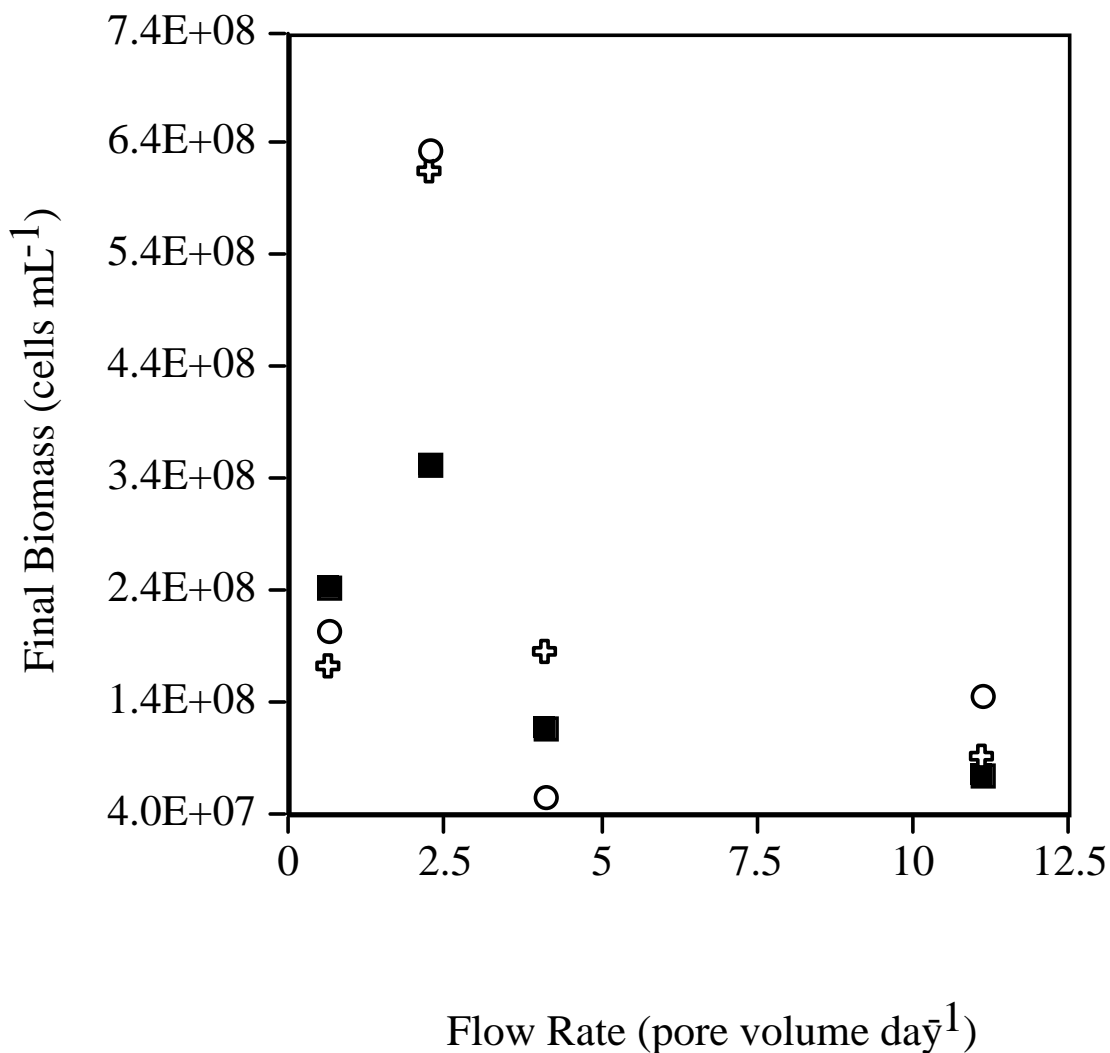
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S2 – Supp. Info. Figure S1. ³H breakthrough curves from two of the columns operated at 11.1 pore volumes (PV) d⁻¹. Open squares and closed circles represent the two replicate data sets, and solid line represents the influent ³H concentration (disintegrations per minute). ³H breakthrough curves were used to define the PV as the volume displaced between the time when ³H was statistically greater than the background concentration to the time when ³H was statistically inseparable from preceding and proceeding values. The ³H breakthrough curves were analyzed to calculate a pore volume of 2.60±0.13 mL (equivalent to a porosity of 0.44 v/v) and a dispersivity of 0.01 cm.

S3 – Supp. Info. Figure S2. Final biomass concentrations and distributions measured at the conclusion of the column experiments. Phosphate-extractable cells were determined by combining ~1/9 of the column contents with 5 mL of 20 mM Na₂HPO₄ (pH 7.0). The phosphate-sand suspension was vortex mixed for one minute, allowed to settle overnight, and cells in the overlying water were enumerated by acridine orange direct counts (AODC) using a Zeiss Axiophot microscope (Jena, Germany) based upon the average from 5 field counts (each field being 2.64 x 10⁻⁴ cm²) for each slide (three slides per column region). Symbols represent mean values from influent (closed squares), middle (open squares), and effluent (open crosses) regions of the column.



Supporting Information Figure S1. ^3H breakthrough curves from two of the columns operated at 11.1 pore volumes (PV) d^{-1} . Open squares and closed circles represent the two replicate data sets, and solid line represents the influent ^3H concentration (disintegrations per minute). ^3H breakthrough curves were used to define the PV as the volume displaced between the time when ^3H was statistically greater than the background concentration to the time when ^3H was statistically inseparable from preceding and proceeding values. The ^3H breakthrough curves were analyzed to calculate a pore volume of 2.60 ± 0.13 mL (equivalent to a porosity of 0.44 v/v) and a dispersivity of 0.01 cm.



Supporting Information Figure S2. Final biomass concentrations and distributions measured at the conclusion of the column experiments. Phosphate-extractable cells were determined by combining ~1/9 of the column contents with 5 mL of 20 mM Na₂HPO₄ (pH 7.0). The phosphate-sand suspension was vortex mixed for one minute, allowed to settle overnight, and cells in the overlying water were enumerated by acridine orange direct counts (AODC) using a Zeiss Axiophot microscope (Jena, Germany) based upon the average from 5 field counts (each field being 2.64 x 10⁻⁴ cm²) for each slide (three slides per column region). Symbols represent mean values from influent (closed squares), middle (open squares), and effluent (open crosses) regions of the column.