

Supplementary Information

Effects of a reservoir flushing on trace metal partitioning, speciation and benthic invertebrates in the floodplain

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The supplementary information contains 4 Tables and 2 Figures

Table S1. Expected changes in relative frequencies of individuals with selected traits linked to the two stressors: suspended/deposited sediment and contaminants.

	Sediment	Contaminants
Tegument	(+) ¹	
Gill	no change ²	(-) ²
Gatherer/Collector	(+) ^{1,3}	
Filtrer	(+) ⁴ (-) ^{1,3}	(+) ⁵
Scraper	(-) ^{2,4} , no change ^{1,2}	(-) ⁵
Shredder		(-) ⁵
Burrowing	(+) ^{2,4}	
Climbing	(+) ²	
Clinger	(-) ²	
Crawler	(-) ^{1,4}	(-) ⁵
Large body	(-) ^{1,2}	(+) ^{2,5}

1. C. Buendia, C. N. Gibbins, D. Vericat, R. J. Batalla, and A. Douglas, *Ecol. Indic.*, 2013, 25, 184–196.
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3. C. F. Rabení, K. E. Doisy, and L. D. Zweig, *Aquat. Sci.*, 2005, 67, 395–402.
4. C. P. Mondy and P. Usseglio-Polatera, *Sci. Total Environ.*, 2013, 461-462, 750–60.
5. V. Archaimbault, P. Usseglio-Polatera, J. Garric, J.-G. Wasson, and M. Babut, *Freshw. Biol.*, 2009, 55, 1430–1446.

Table S1. Logarithm of the suspended particulate matter /water partitioning coefficients ($\log K_D$) calculated for different sampling sites.

Metal	Al	Cr	Co	Ni	Cu	Pb
P before	2.229	1.443	1.777	1.086	1.483	2.568
During	1.555	1.067	1.586	1.039	1.524	2.463
End	1.724	0.996	1.064	0.482	1.723	2.515
S before	2.458	1.239	1.644	0.935	1.354	2.494
During	1.305	1.301	1.278	0.787	1.535	2.182
End	1.756	1.176	1.327	0.53	1.695	3.161
B before	2.68	1.461	1.883	1.154	1.319	2.521
During	1.419	0.817	1.122	0.374	0.906	1.595
End	1.202	1.042	1.314	0.468	1.377	2.966
C before	2.5	1.491	1.77	1.199	1.233	2.089
During	1.359	1.323	1.163	0.562	1.476	2.055
End	1.954	1.414	1.483	0.597	1.665	3.55

Table S3. Determination level of the groups of invertebrate taxa found in the secondary channel.

Amphipoda	species
Bivalvia	genus
Coleoptera	genus
Diptera	famille
Ephemeroptera	species
Gasteropoda	famille
Heteroptera	genus
Hirudinea	species
Hydrachnidia	phylum
Hymenoptera	species
Isopoda	species
Lepidoptera	species
Lepidoptera	species
Megaloptera	species
Odonata	species
Plecoptera	genus
Trichoptera	genus
Tubellaria	genus

Table S4: Simplified traits of the four invertebrate taxa (modified from Mondy³⁵)

Taxon	Respiration		Locomotion and substrate relations					Food						Feeding habits							
	tegument	gills	swimmer, full water	crawler	burrower	interstitial	temporarily attached	detritus (< 1mm)	dead plant (>= 1mm)	living microphytes	living macrophytes	dead animal (>= 1mm)	living microinvertebrates	living macroinvertebrates	vertebrates	shredder	scraper	filter-feeder	piercer	predator	parasite
<i>Corbicula</i>	X	X	X	X	X			X		X			X					X			
<i>Dikerogammarus</i>		X	X	X		X		X	X	X	X	X	X		X	X					
<i>Gammarus</i>		X	X	X		X		X	X	X	X	X	X		X	X					
<i>Glossiphoniidae</i>	X			X	X		X							X	X				X		X

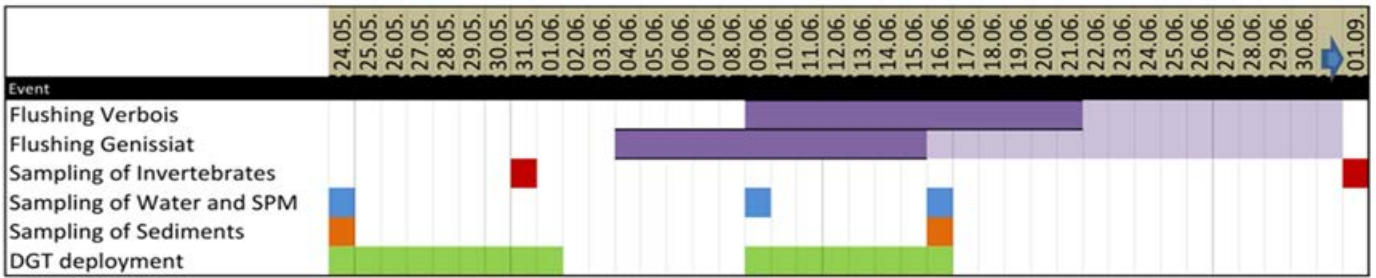


Figure S1. Timeline of the flushing and sampling dates. Planned flushing windows are in deep purple. The deep purple shade indicates that suspended solid concentrations remained high after the end of the actual operations.

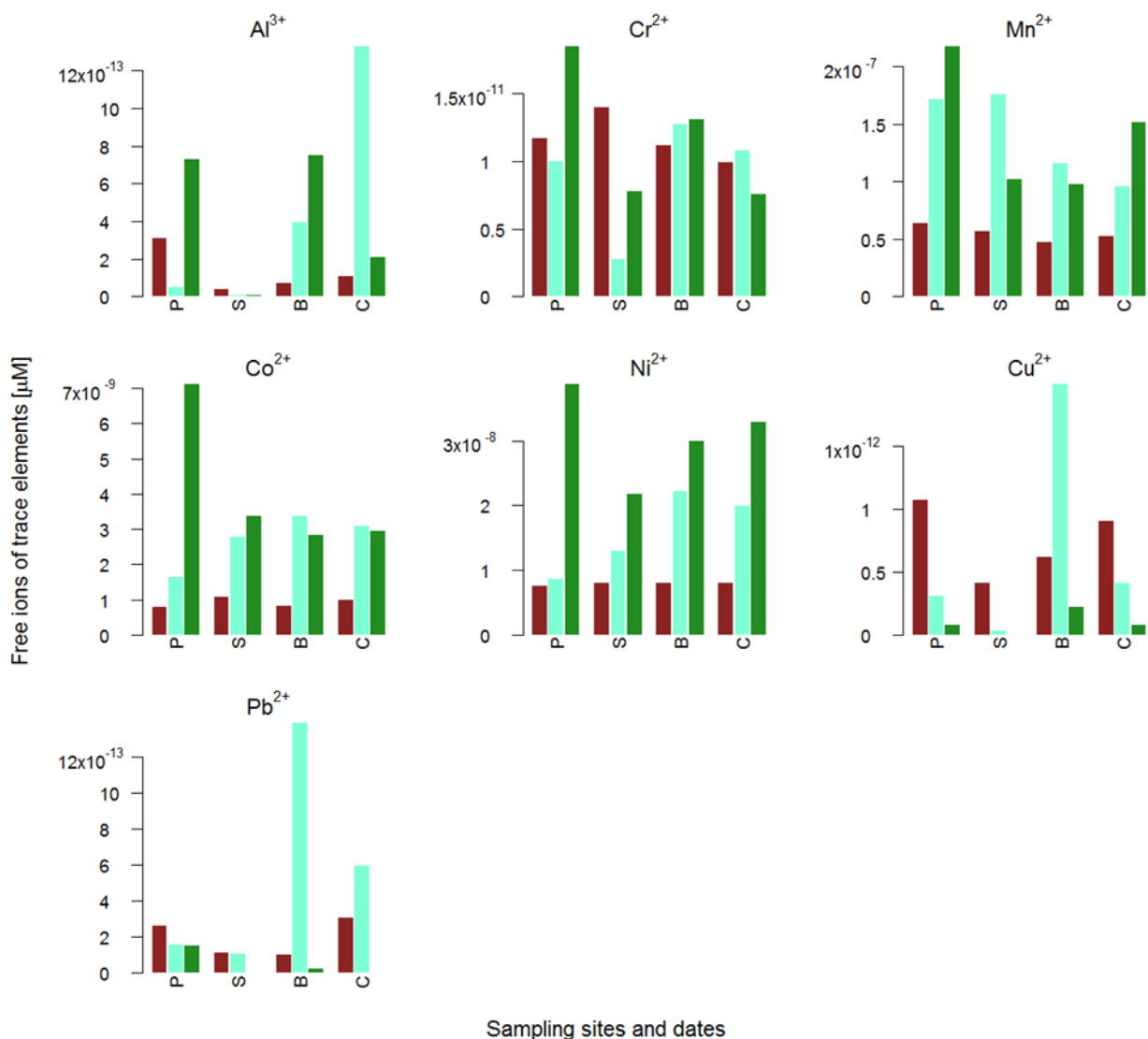


Figure S2. Concentrations of the free ion, calculated with Visual Minteq. P, S, B, and C are the sampling sites. The three colours correspond to the three sampling dates, red for the control date before the flushing, blue and green for the two sampling dates during the flushing.