

Figure S1 – Photos of the sampling sites: a) channelized sampling site 2; b) channel adjacent to the two stage ditch, site 4; c) natural floodplains in sampling site 6; d) meandering, incised channel in sampling site 7.



Figure S2 – Soluble reactive Phosphorous ($\mu\text{g P g}_{\text{DW}}^{-1}$) grouped by sampling sites and hydrological event. The results of the ANOVA test comparing the effect of the hydrological event for each sampling site is displayed on top of each facet. The letters above the boxplot represent the Tukey's HSD post-hoc test results.

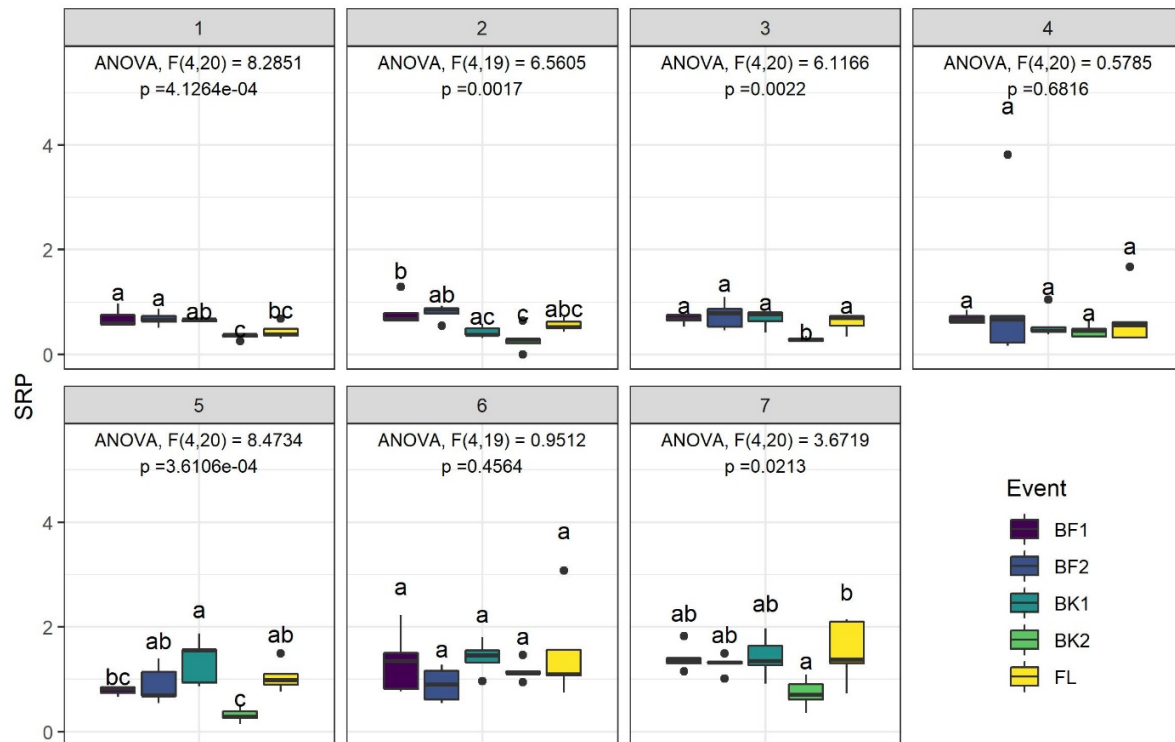


Figure S3 - Respiration rate ($\text{mg O}_2 \text{ g}_{\text{DW}}^{-1} \text{ h}^{-1}$) grouped by sampling sites and hydrological event. The results of the ANOVA test comparing the effect of the hydrological event for each sampling site is displayed on top of each facet. The letters above the boxplot represent the Tukey's HSD post-hoc test results.

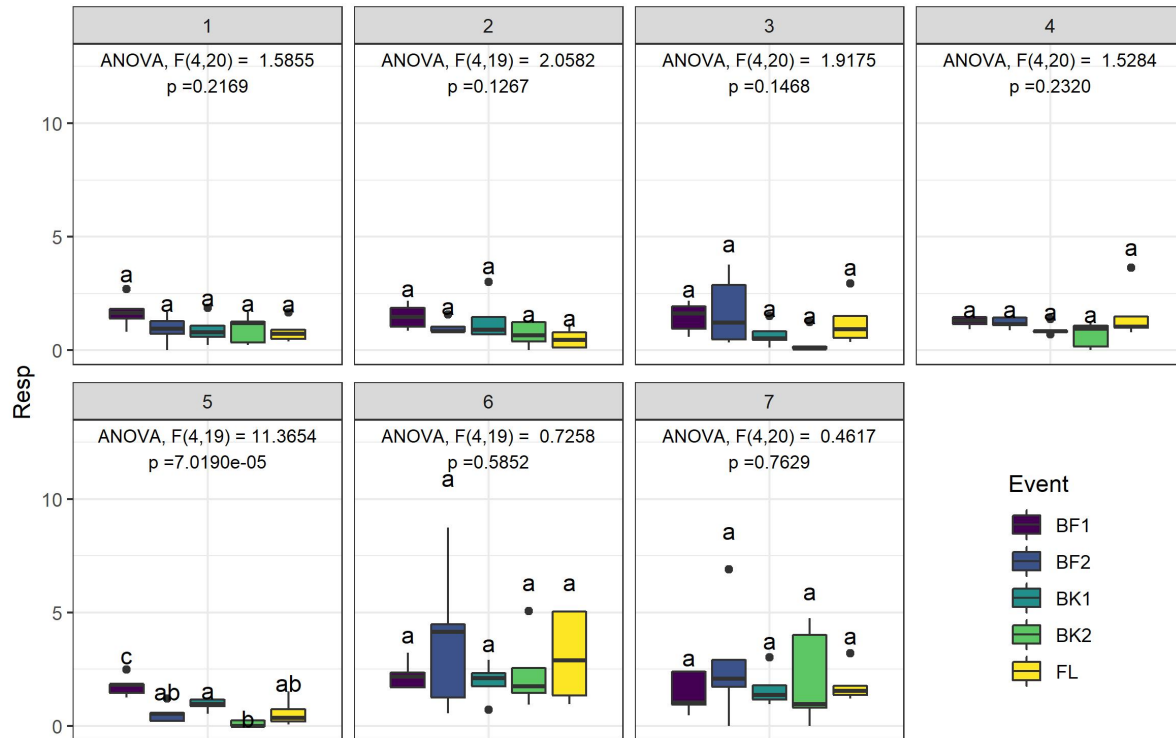


Table S1 - Results of the ANOVA investigating the effect of the hydrological event for each sampling site. Significant p-values are highlighted in bold ($p < 0.05$) and in bold and italics ($p < 0.01$).

Parameter	Sampling site	ANOVA result	Parameter	Sampling site	ANOVA result
d_{14}	1	$F(4,20) = 0.9448$ $p = 0.4587$	OM_f	1	$F(4,20) = 1.8630$ $p = 0.1565$
	2	$F(4,20) = 1.6230$ $p = 0.2075$		2	$F(4,20) = 2.4234$ $p = 0.0820$
	3	$F(4,20) = 1.9734$ $p = 0.1375$		3	$F(4,20) = 3.6579$ $p = 0.0216$
	4	$F(4,20) = 1.3281$ $p = 0.2939$		4	$F(4,20) = 0.8359$ $p = 0.5183$
	5	$F(4,20) = 1.8899$ $p = 0.1516$		5	$F(4,20) = 3.5018$ $p = 0.0253$
	6	$F(4,19) = 0.4058$ $p = 0.8021$		6	$F(4,17) = 0.5452$ $p = 0.7049$
	7	$F(4,20) = 1.2371$ $p = 0.3270$		7	$F(4,20) = 1.1075$ $p = 0.3804$
d_{50}	1	$F(4,20) = 1.1176$ $p = 0.3760$	OM_c	1	$F(4,20) = 0.7471$ $p = 0.5714$
	2	$F(4,20) = 3.4082$ $p = 0.0279$		2	$F(4,20) = 1.0919$ $p = 0.3874$
	3	$F(4,20) = 2.4466$ $p = 0.0798$		3	$F(4,20) = 1.0073$ $p = 0.4271$
	4	$F(4,20) = 1.6163$ $p = 0.2092$		4	$F(4,20) = 0.9790$ $p = 0.4412$
	5	$F(4,20) = 3.8145$ $p = 0.0184$		5	$F(4,20) = 0.8913$ $p = 0.4873$
	6	$F(4,19) = 0.2273$ $p = 0.9197$		6	$F(4,19) = 1.3266$ $p = 0.2962$
	7	$F(4,20) = 2.0255$ $p = 0.1294$		7	$F(4,20) = 1.7661$ $p = 0.1753$
d_{84}	1	$F(4,20) = 1.4822$ $p = 0.2450$	OM	1	$F(4,20) = 2.1286$ $p = 0.1149$
	2	$F(4,20) = 2.8824$ $p = 0.0491$		2	$F(4,20) = 1.2496$ $p = 0.3223$
	3	$F(4,20) = 7.2028$ $p = 9.2073e-04$		3	$F(4,20) = 5.7046$ $p = 0.0031$
	4	$F(4,17) = 4.0372$ $p = 0.0176$		4	$F(4,20) = 1.6467$ $p = 0.2018$
	5	$F(4,20) = 4.9668$ $p = 0.0060$		5	$F(4,20) = 2.0980$ $p = 0.1190$
	6	$F(4,19) = 0.1223$ $p = 0.9728$		6	$F(4,19) = 0.9295$ $p = 0.4677$
	7	$F(4,20) = 3.2123$ $p = 0.0344$		7	$F(4,20) = 2.1193$ $p = 0.1161$
SRP	1	$F(4,20) = 8.2851$ $p = 4.1264e-04$	S_s	1	$F(4,20) = 1.4152$ $p = 0.2652$
	2	$F(4,19) = 6.5605$ $p = 0.0017$		2	$F(4,20) = 2.9556$ $p = 0.0453$
	3	$F(4,20) = 6.1166$ $p = 0.0022$		3	$F(4,20) = 2.0392$ $p = 0.1274$
	4	$F(4,20) = 0.5785$ $p = 0.6816$		4	$F(4,20) = 0.7892$ $p = 0.5458$
	5	$F(4,20) = 8.4734$ $p = 3.6106e-04$		5	$F(4,20) = 1.6151$ $p = 0.2094$
	6	$F(4,19) = 0.9512$ $p = 0.4564$		6	$F(4,19) = 0.3283$ $p = 0.8555$
	7	$F(4,20) = 3.6719$ $p = 0.0213$		7	$F(4,20) = 1.9772$ $p = 0.1369$
P_{inorg}	1	$F(3,16) = 0.892787$ $p = 0.4662$	Resp	1	$F(4,20) = 1.5855$ $p = 0.2169$
	2	$F(3,15) = 0.686114$ $p = 0.5743$		2	$F(4,19) = 2.0582$ $p = 0.1267$
	3	$F(3,16) = 2.068750$ $p = 0.1448$		3	$F(4,20) = 1.9175$ $p = 0.1468$
	4	$F(3,16) = 0.001749$ $p = 0.9999$		4	$F(4,20) = 1.5284$ $p = 0.2320$
	5	$F(3,16) = 0.536251$ $p = 0.6641$		5	$F(4,19) = 11.3654$ $p = 7.01e-05$
	6	$F(3,15) = 0.907849$ $p = 0.4605$		6	$F(4,19) = 0.7258$ $p = 0.5852$
	7	$F(3,16) = 1.357934$ $p = 0.2912$		7	$F(4,20) = 0.4617$ $p = 0.7629$
P_{tot}	1	$F(3,16) = 1.2683$ $p = 0.3188$	EPCO	1	$F(4,18) = 18.641$ $p = 3.28e-06$
	2	$F(3,15) = 1.6997$ $p = 0.2098$		2	$F(4,17) = 4.999$ $p = 0.0075$
	3	$F(3,16) = 0.7766$ $p = 0.5240$		3	$F(4,18) = 1.234$ $p = 0.3316$
	4	$F(3,16) = 1.2683$ $p = 0.3188$		4	$F(4,18) = 2.869$ $p = 0.0532$
	5	$F(3,15) = 1.6997$ $p = 0.2098$		5	$F(4,18) = 5.279$ $p = 0.0054$
	6	$F(3,16) = 0.7766$ $p = 0.5240$		6	$F(4,18) = 1.275$ $p = 0.3164$
	7	$F(3,16) = 0.7360$ $p = 0.5457$		7	$F(4,18) = 4.204$ $p = 0.0141$