

Figure S1 Discrete sampling of Cl concentration and EC from 2016 to 2017 at the pumping station

Cl is a conservative parameter and most commonly used tracer in hydrology. A good match between EC and Cl ( $R^2 = 0.71$ ,  $p$ -value  $< 0.05$ ) indicates the conservative feature of EC and validated the mixing concept in this paper.

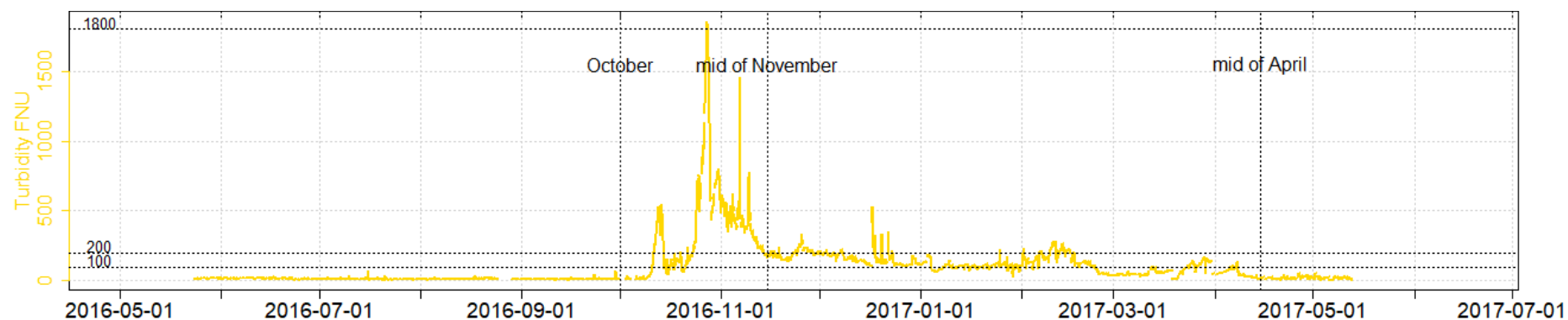


Figure S2 Hourly time series of TP and turbidity, with the horizontal dash lines indicating the 100, 200 and 1800 FNU, and vertical event lines for October, 2016, mid of November, 2016 and mid of April, 2017.

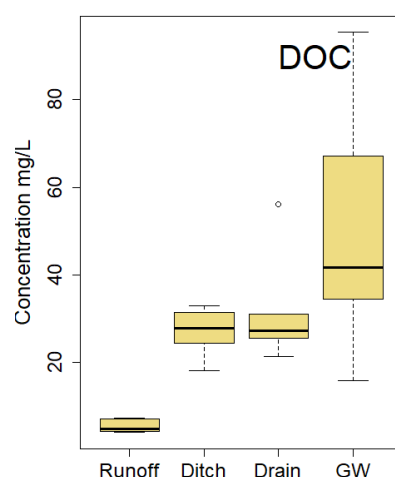


Figure S13 Dissolved organic carbon (DOC) in the runoff, ditch water, drain water and groundwater.

Samples are from a water quality survey during an event between 2017-11-28 to 2017-12-01 (Yu et al., 2019)<sup>i</sup>. The bar of “Ditch”, being referred in this paper, represents the samples from the surface water in polder Geuzenveld. They were sampled from the ditches in the east, west, and middle, and the pumping station. The DOC concentration at the pumping station during this event is 24 mg/L.

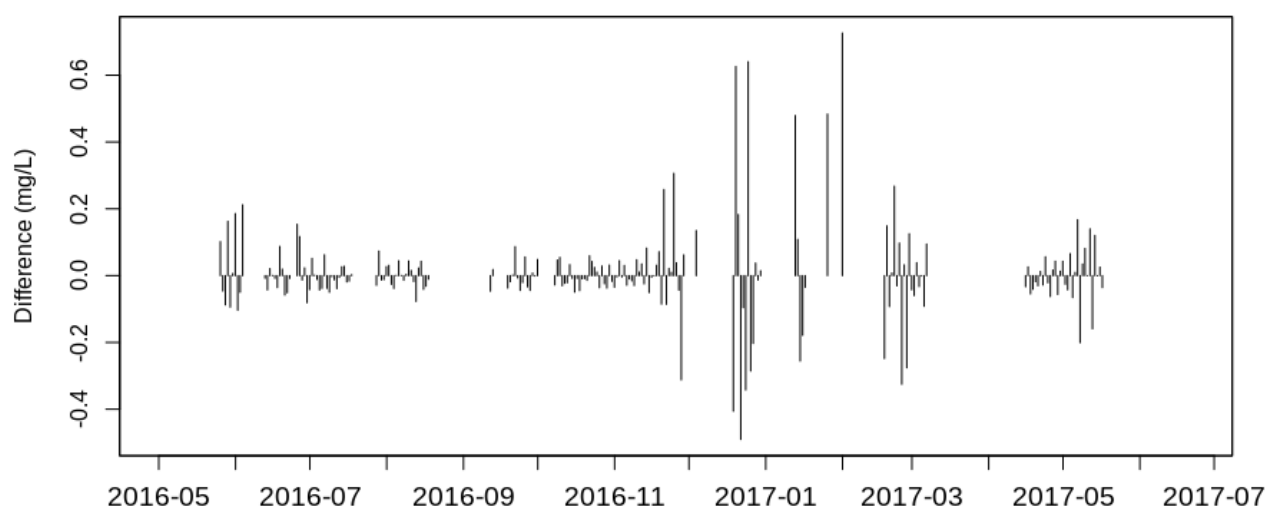
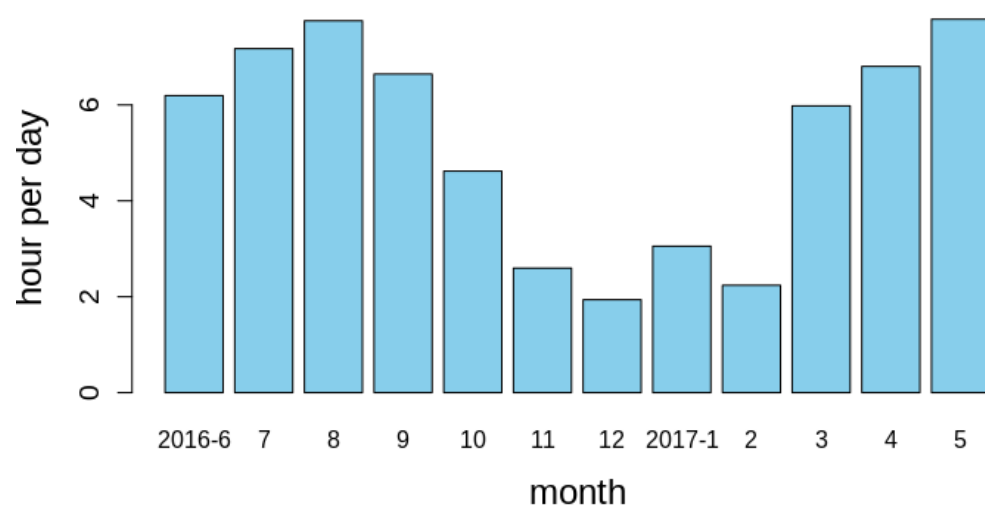


Figure S4 Difference between daily monitoring values (an average of the hourly data) in the time series of TP



**Figure S5 Sunshine duration (hours per day in each month)**

## Correlation tables

**Table 1 Correlation tables for the parameters in Figure 2 (complete year)**

[illegible]

**Table 2 Correlation tables for the parameters in Figure 2 (wet: 01-10-2016 ~ 08-02-2017)**

[illegible]

**Table 3 Correlation tables for the parameters in Figure 2 (dry: ~ 30-09-2016 and 01-03-2017 ~)**

[illegible]

[illegible][illegible][illegible]

**Table 7 Correlation tables for the parameters in Figure 4 (Event 1)**

	EC	TP	NH4	Turbidity	rain hourly	Pump hourly volume	swlevel	watertemp
EC			0.86	0.84		-0.75		
TP								-0.56
NH4				0.84				
Turbidity						-0.6		
rain hourly						0.66	0.66	-0.57
Pump hourly volume								
swlevel								
watertemp								

**Table 8**

**Correlation tables for the parameters in Figure 4 (Event 2)**

	EC	TP	NH4	Turbidity	rain hourly	Pump hourly volume	swlevel	watertemp
EC			0.83					
TP								
NH4					-0.72			
Turbidity					0.76			-0.56
rain hourly						0.73		
Pump hourly volume								
swlevel								
watertemp								

**Table 9**

**Correlation tables for the parameters in Figure 4 (Event 3)**

	EC	TP	NH4	Turbidity	rain hourly	Pump hourly volume	swlevel	watertemp
EC		0.66	0.75		-0.56	-0.69		-0.59
TP				-0.56	-0.79	-0.59		
NH4								
Turbidity					0.63			
rain hourly						0.62		
Pump hourly volume								0.72
swlevel								
watertemp								

**Table 10 Correlation tables for the parameters in Figure 4 (Event 4)**

	EC	TP	NH4	Turbidity	rain hourly	Pump hourly volume	swlevel	watertemp
EC		0.81		0.88		-0.61		0.64
TP			0.76	0.8				
NH4				0.99				
Turbidity							-0.64	-0.61
rain hourly						0.84	0.58	-0.59
Pump hourly volume							0.68	-0.71
swlevel								
watertemp								

**Table 11 Correlation tables for the parameters in Figure 5 (Event 1)**

	EC	TP	NH4	Turbidity	rain hourly	Pump hourly volume	swlevel	watertemp
EC								0.72
TP						-0.67		
NH4							-0.78	
Turbidity								
rain hourly								
Pump hourly volume								
swlevel								
watertemp								

**Table 12 Correlation tables for the parameters in Figure 5 (Event 2)**

	EC	TP	NH4	Turbidity	rain hourly	Pump hourly volume	swlevel	watertemp
EC			-0.78					
TP								
NH4								
Turbidity								-0.66
rain hourly								
Pump hourly volume								
swlevel								
watertemp								

**Table 13 Correlation tables for the parameters in Figure 5 (Event 3)**

	EC	TP	NH4	Turbidity	rain hourly	Pump hourly volume	swlevel	watertemp
EC		0.75	0.88					
TP			0.81					
NH4								0.55
Turbidity						0.77		
rain hourly								
Pump hourly volume								
swlevel								
watertemp								

**Table 14 Correlation tables for the parameters in Figure 5 (Event 4)**

	EC	TP	NH4	Turbidity	rain hourly	Pump hourly volume	swlevel	watertemp
EC		0.71	-0.57			0.58	-0.69	
TP			-0.74	-0.58		0.6		
NH4				0.59				
Turbidity							0.65	
rain hourly								
Pump hourly volume								
swlevel								
watertemp								

**Table 15 Correlation tables for the parameters in Figure 6 (complete)**

[illegible]

\*chlor: chlorophyll-a, trans: transparency, ss: suspended solids, orgN: organic N

**Table 16 Correlation tables for the parameters in Figure 6 (spring)**

[illegible]

**Table 17 Correlation tables for the parameters in Figure 6 (summer)**

[illegible]



**Table 18 Correlation tables for the parameters in Figure 6 (autumn)**

[illegible]

**Table 19 Correlation tables for the parameters in Figure 6 (winter)**

[illegible]

<sup>i</sup> Yu L., Rozemeijer J.C., van der Velde Y., van Breukelen B.M., Ouboter M., and Broers H.P.. Urban hydrogeology: Transport routes and mixing of water and solutes in a groundwater influenced urban lowland catchment. *Science of the Total Environment*, 678: 288-300, 2019.