Article

The Use of Permeable Interlocking Concrete Pavement to Filter Stormwater for Non-Potable Uses in Buildings

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Supplementary data

Table S.1. Measurement methods.

Parameter	Method
pH	Potentiometric method
Colour (TCU)	Spectrophotometric
Turbidity (**NTU**)	Nephelometry
Total suspended solids (mg/L)	Gravimetric analysis
Fecal coliforms (mg/L)	Colilert-18 and Quanti-Tray
Biochemical oxygen demand (mg/L)	Manometric
Nitrate (mg/L)	Colorimetric, Brucine by Spectrophotometer
Ammonia nitrogen (mg/L)	Colorimetric Nessler
Nitrite (mg/L)	Colorimetric
Total phosphorus (mg/L)	Colorimetric vanadomolybdophosphoric acid
Odour and aspect	Sensory

Table S.2. Filtering capacity of the model systems.

Sample	Control box Water height (mm)	Model system A Water height (mm)	Model system A Filtering (%)	Model system B Water height (mm)	Model system B Filtering (%)	Retained in filter course layer (%)
1	9.0	5.0	55.6	8.0	88.9	37.5
2	7.0	5.0	71.4	6.0	85.7	16.7
3	15.5	15.0	96.8	15.0	96.8	0.0
4	23.0	20.0	87.0	21.0	91.3	4.8
5	15.5	13.5	87.1	14.0	90.3	3.6
6	15.0	13.5	90.0	13.5	90.0	0.0
7	19.0	10.0	52.6	14.0	73.7	28.6
8	28.0	25.0	89.3	25.5	91.1	2.0
9	6.0	4.0	66.7	4.5	75.0	11.1
10	6.5	4.5	69.2	5.0	76.9	10.0
11	14.0	10.0	71.4	12.0	85.7	16.7
12	13.0	11.5	88.5	12.0	92.3	4.2
13	11.0	7.0	63.6	10.5	95.5	33.3
14	13.0	10.0	76.9	12.0	92.3	16.7
15	24.0	20.0	83.3	21.5	89.6	7.0
16	52.0	51.0	98.1	51.0	98.1	0.0
17	10.0	8.0	80.0	8.5	85.0	5.9
Average			78.8	-	88.1	11.6
Standard deviation			13.2	-	6.9	11.1

Table S.3. pH test results.

Sample	pH		
	Runoff	Model system A	Model system B
1	7.9	6.2	8.2
2	7.9	7.1	8.0
3	8.0	6.7	8.1
4	8.1	6.7	8.7
Average	**8.0**	**6.7**	**8.3**
Standard deviation	**0.1**	**0.3**	**0.3**

Table S.4. Colour test results.

Sample	Colour (TCU)		
	Runoff	Model system A	Model system B
1	33	33	31
2	406	315	375
3	92	159	71
4	185	180	128
Average	**179**	**171**	**151**
Standard deviation	**142**	**100**	**134**

Table S.5. Turbidity test results.

Sample	Turbidity (NTU)		
	Runoff	Model system A	Model system B
1	6.2	6.3	3.5
2	70.1	50.9	46.2
3	18.0	23.4	8.2
4	30.3	26.9	13.7
Average	**31.2**	**26.9**	**17.9**
Standard deviation	**24.0**	**15.9**	**16.7**

Table S.6. Total suspended solids test results.

Sample	TSS (mg/L)		
	Runoff	Model system A	Model system B
1	2	8	2
2	28	2	14
3*	-	-	-
4	18	8	6
Average	16	6	7
Standard deviation	11	3	5

*Disregarded because the membranes used in the tests were damaged.

Table S.7. Fecal coliform test results.

Sample	Fecal coliform (mg/L)		
	Runoff	Model system A	Model system B
1	61.1	8.6	214.3
2	2,419.6	49.6	2,419.6
3	2,419.6	159.7	2,419.6
4	1,413.6	93.4	920.8
Average	1,716.5	77.8	1,493.6
Standard deviation	757.9	56.0	959.1

Table S.8. Biochemical oxygen demand test results.

Sample	BOD (mg/L)		
	Runoff	Model system A	Model system B
1	2.2	1.2	6.0
2	7.0	-	8.1
3	1.3	0.4	2.0
4	2.8	0.4	2.7
Average	3.3	0.7	4.7
Standard deviation	2.2	0.4	2.5

Table S.9. Nitrate test results.

Sample	Nitrate (mg/L)		
	Runoff	Model system A	Model system B
1	0.66	0.38	0.19
2	0.00	0.05	0.36
3	0.26	1.53	2.56
4	0.41	0.91	0.57
Average	0.33	0.72	0.92
Standard deviation	0.24	0.56	0.96

Table S.10. Ammonia nitrogen test results.

Sample	Ammonia nitrogen (mg/L)		
	Runoff	Model system A	Model system B
1	0.22	1.52	0.58
2	2.12	1.89	3.28
3	0.29	0.40	0.68
4	0.69	0.68	0.93
Average	0.83	1.12	1.37
Standard deviation	0.77	0.61	1.11

Table S.11. Nitrite test results.

Sample	Nitrite (mg/L)		
	Runoff	Model system A	Model system B
1	0.01	0.08	0.02
2	0.09	0.05	0.29
3	0.04	0.05	0.07
4	0.06	0.07	0.08
Average	0.05	0.06	0.12
Standard deviation	0.03	0.01	0.10

Table S.12. Total phosphorus test results.

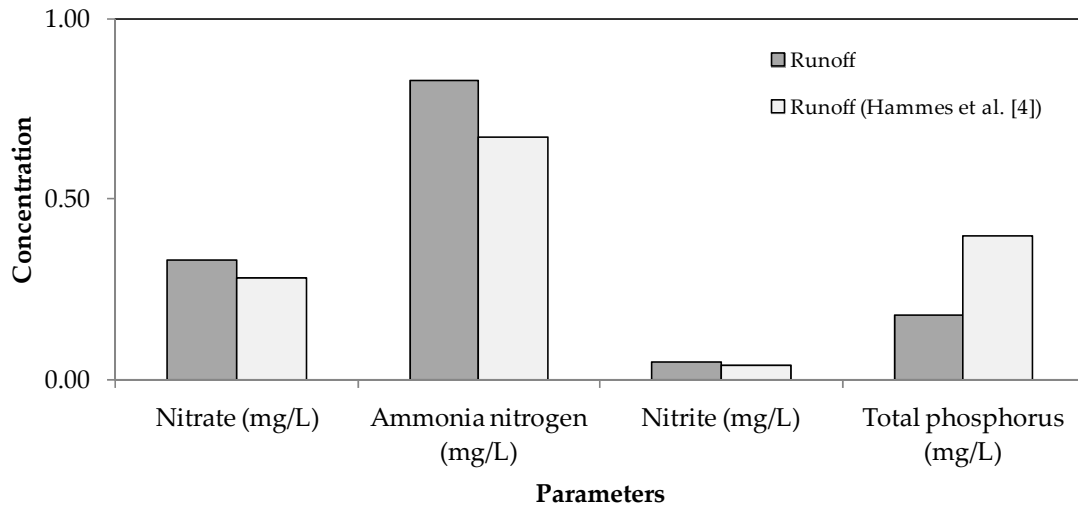| Sample	Total phosphorus (mg/L)		
	Runoff	Model system A	Model system B
1	0.12	0.04	0.12
2	0.39	0.03	0.36
3	0.12	0.06	0.41
4	0.10	0.19	0.13
Average	0.18	0.08	0.26
Standard deviation	0.12	0.06	0.13

Figure S.1. Runoff concentrations for parameters nitrate, ammonia nitrogen, nitrite and total phosphorus from the studies.
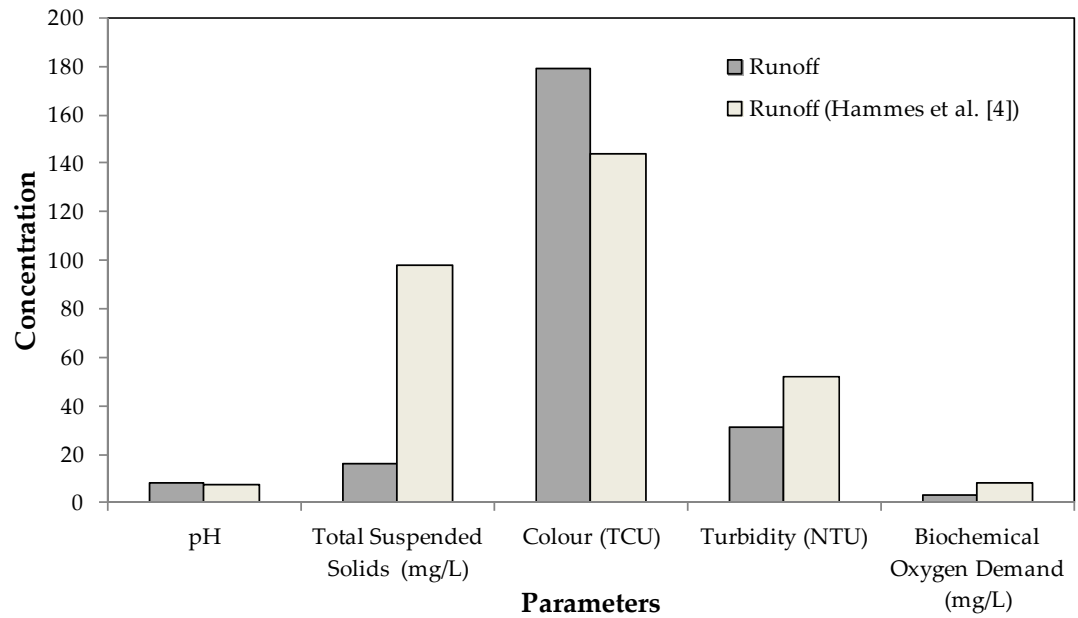

Figure S.2. Runoff concentrations for parameters pH, Total Suspended Solids (TSS), colour, turbidity and Biochemical Oxygen Demand (BOD) from the studies.