Appendices

A. Site description and field methods



Figure A1: Map of the Compans study site location

B. Analytical methods

Parameter	Analysis Laboratory	Method	Limit of quantification (LOQ)	Uncertainty
Suspended solids	LEESU, Créteil, France – IFSTTAR, Nantes, France – CEREMA, Trappes, France	Filter : 0.7 μm fiberglass Method: Filtration Standard : NF EN 872	2 mg/L	$\frac{\pm 10\%}{\sqrt{3}}$
Organic carbon	LEESU, Champs-sur-Marne, France	Filter : 0.7 μm fiberglass Method: Thermal combustion- Infrared detector Standard : NF EN 1484 (dissolved)	Dissolved: 0.3 mg/L Particulaire: $\frac{70}{M}$ mg/g	± 10%
Nutrients	CEREMA, Trappes, France	Filter : 0.7 μm fiberglass Extraction: Mineralization and distillation (KN), mineralization (P) Methods: Titration (KN), Colorimetry (P, NH ₄ ⁺), Ion chromatography (NO ₂ ⁻ , NO ₃ ⁻ , PO ₄ ³⁻) Standards: NP EN 25663 (KN), NF EN ISO 6878 (P), NF T 90-015 2 (NH ₄ ⁺), NF T 90-015 2 (NO ₂ ⁻ , NO ₃ ⁻ , PO ₄ ³⁻)	Dissolved and Total: 1 (KN), 0.1 (P) mg/L Dissolved: 0.04 (N-NH ₄ ⁺), 0.08 (N- NO ₂), 0.05 (N-NO ₃ ⁻), 0.16 (P-PO ₄ ³⁻) mg/L	
Trace metals	IFSTTAR, Nantes, France	Filter: 0.45 μ m cellulose acetate Methods: ICP-MS and ICP-OES Extraction: Total solubilization by HF and HClO ₄ acid digestion, evaporation and resuspension with HNO ₃ (particulate) Standards: NF X31-147 (acid digestion), NF EN ISO 17294 (ICP- MS), NF EN ISO 11885 (ICP-OES)	$\label{eq:bissolved:} \begin{array}{l} \textbf{Dissolved:} \\ 0.1 (As), 0.1 (Cd), 2 (Co), \\ 0.1 (Cr), 0.2 (Cu), 0.2 \\ (Ni), 0.1 (Pb), 0.1 (V), 0.3 \\ (Zn) \mu g/L \\ \textbf{Particulate:} 1 (As), 0.1 \\ (Cd), 0.4 (Co), 1 (Cr), 0.4 \\ (Cu), 1 (Ni), 1 (Pb), 0.4 \\ (V), 1 (Zn) mg/kg \end{array}$	Dissolved: ± 9 (As), 8 (Cd), 6 (Co), 11 (Cr), 9 (Cu), 11 (Ni), 9 (Pb), 10 (V), 14 (Zn) % Particulate: ± 11 (As), 24 (Cd), 14 (Co), 13 (Cr), 14 (Cu), 15 (Ni), 16 (Pb), 13 (V), 13 (Zn) %
Major ions	IFSTTAR, Nantes, France	Filter: 0.45 μ m cellulose acetate Extraction: Total solubilization by HF and HClO ₄ acid digestion, evaporation and resuspension with HNO ₃ (particulate) Method: ICP OES Standard: NF X31-147 (acid digestion), NF EN ISO 11885 (ICP- OES)	Dissolved: 0.1 (Al), 0.005 (Fe), 0.001 (Mn), 0.002 (Mo), 0.001 (Sr), 0.002 (Ti), 0.1 (Na), 0.1 (K), 0.01 (Mg), 0.1 (Ca), 0.005 (Ba), 0.06 (Si) mg/L Particulate: 20 (Al), 1 (Fe), 0.2 (Mn), 0.1 (Sr), 0.4 (Ti), 20 (Na), 20 (K), 2 (Mg), 20 (Ca), 1 (Ba), 200 (Si) µg/g	Dissolved: ± 7 (Al), 6 (Fe), 7 (Mn), 9 (Mo), 8 (Sr), 8 (Ti), 9 (Na), 10 (K), 6 (Mg), 8 (Ca), 9 (Ba) % Particulate: ± 10 (Al), 11 (Fe), 13 (Mn), 23 (Mo), 10 (Sr), 12 (Ti), 9 (Na), 9 (K), 10 (Mg), 9 (Ca), 10 (Ba) %
ТРН	CEREMA, Trappes, France	Filter: 0.7 μm fiberglass Extraction: Liquid-liquid (dissolved), ultrasound solid- liquid (particulate) Method: GC-FID Standard: NF EN ISO 9377-2 (dissolved), NP ISO 16703 (particulate)	Dissolved: 0.2 mg/L Particulate: $\frac{50}{M}$ mg/g	SL: 0.3 mg/L (dissolved), 75 μg/g (particulate) Absolute uncertainty between LOQ and SL: ± 0.12 mg/L (dissolved), 30 mg/kg (particulate) Relative uncertainty beyond SL: ± 40% (dissolved and particulate)
РАН	CEREMA, Trappes, France	Filter: 0.7 μm fiberglass Extraction: Liquid-liquid (dissolved), ultrasound solid- liquid (particulate) Method: GC-MS Standard: XP ISO-TS 28581 and NF ISO 28540 (dissolved), XP X33- 012 and NF EN 15527 (particulate)	Dissolved : 10 ng/L Particulate : $\frac{20}{M}$ µg/g	SL: 20 ng/L (dissolved), 0.03 μ g/g (particulate) Absolute uncertainty between LOQ and SL: \pm 6 ng/L (dissolved), 0.006 μ g/g (particulate) Relative uncertainty beyond SL: \pm 40 (dissolved), 20 (particulate) %
BPA/AP	LEESU, Créteil, France	Filter: 0.7 μm fiberglass Extraction: Solid-phase (dissolved), Microwave (particulate) Method: UPLC-MSMS	Dissolved: 11 (BPA), 79 (NP), 31 (NP1EO), 62 (NP2EO), 2 (NP1EC), 7 (OP), 17 (OP1EO), 5 (OP2EO) ng/L Particulate: 2.6 (BPA), 20 // (NP), 7.7	Dissolved : ± 28 (BPA), 37 (NP), 91 (NP1EO), 67 (NP2EO), 29 (NP1EC), 61 (OP), 25 (OP1EO), 32 (OP2EO) % Particulate: ± 25 (BPA), 44 (NP), 43 (NP1EO), 56

			$\frac{(\text{NP1EO}), \frac{16}{M} \text{ (NP2EO)},}{\frac{0.43}{M} \text{ (NP1EC)}, \frac{1.7}{M} \text{ (OP)},}$ $\frac{\frac{4.2}{M} \text{ (OP1EO)}, \frac{1.3}{M} \text{ (OP2EO)}}{\text{µg/g}}$	(NP2EO), 49 (NP1EC), 48 (OP), 40 (OP1EO), 19 (OP2EO) %
PAE	LEESU, Créteil, France	Filter: 0.7 μm fiberglass Extraction: Solid-phase (dissolved), Microwave (particulate) Method: GC-MS	Dissolved: 250 (DMP), 520 (DiBP), 180 (DBP), 350 (DEHP), 110 (DNP) ng/L Particulate: $\frac{63}{M}$ (DMP), $\frac{130}{M}$ (DiBP), $\frac{44}{M}$ (DBP), $\frac{88}{M}$ (DEHP), $\frac{28}{M}$ (DNP), ug/g	Dissolved : ± 55 (DMP), 63 (DiBP), 24 (DBP), 53 (DEHP), 32 (DNP) % Particulate: ± 45 (DMP), 35 (DiBP), 25 (DBP),35 (DEHP), 50 (DNP) %

Table B1: Summary of employed analytical methods. M is the mass of TSS extracted in mg, which varied according to the concentration of TSS in the water sample and the filtered volume. Abbreviations: ICP-OES (inductively coupled plasma optical emission spectroscopy), ICP-MS (inductively coupled plasma mass spectrometry), GC-MS (gas chromatography coupled with mass spectrometry), UPLC-MSMS (ultra performance liquid chromatography with tandem mass spectrometry); GC-FID (gas chromatography – flame ionization detector)

C. Methods for preparation of figures

Comparison of dissolved concentrations predicted at equilibrium with soil to experimental values

In order to compare experimental dissolved concentrations with those expected from the pollutant properties, dissolved concentrations were estimated assuming equilibrium with soil for both the VFS and BFS using partition coefficients. The work was carried out only for events outside of the period of degraded filtration performance.

Experimental dissolved concentrations were presented as median concentrations with error bars representing the minimum and maximum values measured. When a pollutant was below the limit of quantification for some events (as was the case for Pyr, Fluo and Phen), concentration was set equal to the LOQ for these events.

Dissolved concentrations in equilibrium with soil were estimated according to the equation C1.

$$C_{D=\frac{S}{K_D}}$$
(Eq.C1)

Where C_D is the dissolved concentration in mg/L, S is the soil concentration in mg/kg and K_D is the partition coefficient in L/kg.

Soil samples used to estimate possible ranges of dissolved concentrations included a sample of filter media before installation in the BFS, filter media from the lowest segment (15-50 cm depth) of 8 composite core samples collected in the BFS toward the end of the sampling period, after 13 months of operation and filter media from the lowest segment (5-15 cm depth) of four composite cores collected in the VFS. Samples from lower segments were used in order to avoid a bias due to the surface contamination from particulate pollutants. The minimal and maximal values of all of these samples from each device (BFS and VFS) were used to calculate the range. Soil concentrations below the LOQ were set equal to the LOQ for calculating the range.

These soil concentrations were then multiplied by partition coefficients to find the expected dissolved concentration in water in equilibrium with the soil. For Zn, Cu, NP, OP and BPA, the soil concentrations described above were multiplied by partition coefficients measured in the laboratory, according to Table 3.

For organic pollutants, K_D was also evaluated using K_{OC} values from the literature according to the equation C2.

$$K_D = K_{OC} f_{OC}$$
(Eq. C2)

Where K_D is the partition coefficient in L/kg, K_{oc} is the organic carbon partition coefficient in L/kg of organic carbon and f_{oc} is the fraction of organic carbon in the filter media or particles.

A number of K_{oc} values (12-91, depending on the availability of data) were collected in the scientific literature for each pollutant. To estimate the range of possible dissolved concentrations, the 20th percentile (Q_{20}) K_{oc} was multiplied by the lowest observed f_{oc} in the soil, while 80th percentile (Q_{80}) K_{oc} was multiplied by the highest observed f_{oc} to identify the range of K_D values. The highest soil concentration was divided by the lowest K_D to establish the upper limit of the dissolved concentration interval, while the lowest soil concentration was divided by the highest observed sources of data are presented in the Table C1 below.

	log(K _{oc})
DEHP	4, 5, 4.756, 9.301, 4.31, 5.27, 4.9, 4.98, 4.24, 5.06, 5.1, 5, 4.94, 5.22, 2.6, 7.13, 4.34, 6 ¹
DBP	2.2, 3.81, 2.17, 1.6, 1.3, 0.301, 0.602, 1.556, 5.23, 4.17, 4.54, 3.14, 4.37, 3.14, 3.09, 5.2,
	3.14, 3.76, 2.46, 2.86, 3.09, 3.12, 3.11 ¹
NP	3.7, 2.4 ²
	3.6, 3.3, 2.9 ³
	5.39, 5.22, 4.7, 5.6 ⁴
	4.7 ⁵
	3.73 ⁶
	4.0 ⁷
OP	4.30, 4.27 ⁶
	4.12, 5.18 ⁸
	3.44, 3.14 ⁹
	4.03, 4.00, 4.03, 4.01, 3.83, 4.27, 3.54, 3.60 ¹⁰
BPA	2.3 ²
	2.50, 3.1811
	2.06, 2.80, 2.97, 3.24, 3.59, 2.40, 3.18, 2.53, 2.85 ¹²
	2.74 ¹³
	2.47, 3.18 ¹⁴
Pyr	4.92, 4.81, 4.92, 4.8, 4.78, 4.8, 4.83, 3.11, 3.46, 5.23, 5.08, 4.46, 4.81, 4.94, 5.51, 4.73,
	5.02, 5.13, 4.88, 4.65, 6.51, 4.83, 4.82, 4.77, 6.5, 5.05, 5, 4.88, 4.71, 5.2, 5.18, 4.99,
	5.23, 4.78, 4.78, 4.78, 5.5, 6.61, 6.06, 5.51, 5.34, 5.31, 7.43, 4.64, 4.8, 4.81, 4.72, 4.81,
	4.22, 4.62, 4, 4.42, 2.56, 4.99, 4.98, 4.96, 4.97, 5.14, 5.22, 5.23, 5.12, 5.04, 5.24, 5.45,
	3.47, 4.6, 3.53, 4.78, 4.61, 4.66, 4.78, 4.88, 4.9, 5.47, 6.68, 4.6, 6.8, 5.9, 5.89, 5.6, 5.56,
	4.96, 4.7, 4.46, 5.74, 4.37, 3.89, 5.52, 4.66, 5.35, 6.33 ⁺
Fluo	6.38, 4.74, 4.62, 6.3, 4.816, 4.81, 4.82, 4.51, 5.05, 4.16, 6.56, 6.66, 6.08, 4.62, 5.25, 5.4,
	4.81, 4.65, 4.8, 4.82, 4.8, 4.73, 5.32, 4.89, 4.62, 4.03, 3.4, 4.49, 3.55, 4.53, 4.56, 5.32,
	6.59, 4.6, 6.7, 5.83, 6.79, 5.53, 5.52, 4.91, 4.65, 4.62, 5.21, 6.6 ¹
Phen	4.36, 4.308, 4.6, 4.28, 4, 6.12, 4.22, 4.28, 4.42, 4.07, 4.64, 4.42, 4.3, 4.17, 4.18, 4.17,
	4.5, 4.37, 6.07, 7.03, 6.39, 4.12, 5.77, 4.28, 4.12, 4.23, 4.09, 4.32, 4.18, 4.13, 4.65, 4.81,
	2.42, 2.56, 4.27, 4.27, 4.12, 4.27, 4.1, 4.38, 4.45, 4.53, 4.33, 4.42, 4.62, 4.64, 4.48, 4.22,
	3.67, 3.29, 4.04, 3.27, 4.37, 4.21, 4.31, 6.02, 5.34, 5.23, 4.82, 4.98, 4.39, 4.66, 3.33,
	4.72, 4.5, 4.18, 4.37, 4.56, 4.64, 4.88, 4.28, 4.03, 4.08, 4.34, 4.7, 4.66, 4.9, 5.29, 5.92,
	5.98, 4.3, 5.3, 5.2, 5.5, 4.8, 4.8, 4.5, 4.84 ¹

Table C1: Organic carbon partition coefficients from the scientific literature

Comparison of partitioning of between inlet and outlet waters

Partitioning of pollutants between the dissolved phase and particles was calculated for untreated road runoff, as well as in water drained from the BFS and the VFS. For organic pollutants, partition coefficients were normalized with the fraction of organic carbon f_{oc} to evaluate K_{oc} values, which are compared to the range (Q_{20} - Q_{80}) of values from the literature established from the data in Table C1. Again, this analysis is limited to events outside the degraded period of performance with respect to particulate pollutants. For metals, partition coefficients are compared to the minimal and maximal values from a data set of previously reported partition coefficients for road runoff (see Table C2). All values were presented as logarithms of partition coefficients.

	$log(K_D)$ from literature
Al	6.43, 6.04 ¹⁵
	6.56, 5.99, 3.88, 5.20, 4.76 ¹⁶
Fe	6.20, 5.43 ¹⁵
	5.80, 5.32, 4.38, 5.26, 5.67 ¹⁶
	5.00 ¹⁷
Pb	4.67, 4.18 ¹⁵
	4.48, 4.15, 3.97, 4.45, 4.51 ¹⁶
	3.84 ¹⁷
Cr	4.41, 3.89 ¹⁵
	3.43 ¹⁷
Ni	3.48, 3.20 ¹⁵
Zn	3.94 <i>,</i> 3.49 ¹⁵
	3.97, 3.18, 2.20, 3.04, 3.70 ¹⁶
	3.90 ¹⁷
Cu	4.15 <i>,</i> 3.64 ¹⁵
	4.26, 3.84, 3.15, 3.57, 4.20 ¹⁶
	3.51 ¹⁷

Table C2: Major element and trace metal partition coefficients in road runoff

Sources :

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- (17) Maniquiz-Redillas, M.; Kim, L.-H. Fractionation of Heavy Metals in Runoff and Discharge of a Stormwater Management System and Its Implications for Treatment. J. Environ. Sci. **2014**, 26 (6), 1214–1222.

D. Initial and equilibrium concentrations used in batch sorption tests

Cu (r	ng/L)	Zn (n	ng/L)	BPA (mg/L)	OP (r	ng/L)	NP (r	ng/L)
Initial	Equil.								
0.05	0.0035	0.1	0.003	0.2	0.11	1	0.16	1	0.07
0.1	0.0049	0.2	0.006	0.4	0.26	2	0.35	2	0.11
0.3	0.0097	0.6	0.029	0.8	0.53	3	0.59	3	0.11
0.6	0.015	1.2	0.101	1.5	1.01	5	2.56	4	0.14
1	0.022	2	0.146	3	2.31	10	5.60	5	0.26
1.5	0.035	3	0.440	5	3.57	20	16.47	10	0.60
3	0.056	6	1.087	10	7.82	40	38.01	-	-
-	-	-	-	20	16.47	-	-	-	-
-	-	-	-	40	38.01	-	-	-	-

Table D1: Initial and equilibrium concentrations used in batch sorption experiments. Concentrations in bold were in the linear range of the isotherm and thus used in the K_D calculation.

E. Conditions and results of trace metal leaching tests

	Sedir	ment	Soil		
	Cu	Zn	Cu	Zn	
S _{initial} (mg/kg)	302	766	235	806	
C _{D,eq} (mg/L)	0.0124	0.0134	0.0071	0.0102	
K _D (L/kg)	24190	56940	32958	78823	

 Table E1: Conditions and results of trace metal desorption tests. S_{initial} is the initial solid concentration, C_{D,eq} is the dissolved concentration at equilibrium and K_D is the partition coefficient.

F. Particle concentrations relative to those in RR



Figure F1: Ratios of outlet particle concentrations to those in road runoff (RR) for (a) the biofiltration swale (BFS) during normal performance, (b) the vegetative filter strip (VFS) during normal performance, (c) the BFS during degraded performance during winter 2017. Bars represent the median ratio for each period, while error bars represent the Q20 and Q80 ratios during normal performance and the minimal and maximal values during degraded performance. Pink stars represent the Q20 and Q80 ratios of soil concentrations in each device to the median RR aluminum-normalized particle concentrations for each period.

G. Photograph of cracks in the filter media



Figure G1: Cracks in the BFS filter media during the first period of operation

	Response tir	ne (minutes)	Initial filter media water		
Date			conte	nt (%)	
	VFS	BFS	VFS	BFS	
February 7, 2016	66	_1	22	_3	
February 8-9, 2016	91	_1	23	_3	
March 9, 2016	96	_1	22	_3	
May 9, 2016	202	204	11	_3	
May 10, 2016	57	104	16	_3	
May 18, 2016	80	151	15	_3	
May 30, 2016	_2	148	23	_3	
June 14, 2016	_2	286	19	_3	
October 24, 2016	_2	123	17	_3	
November 9, 2016	_2	280	20	19	
January 9, 2017	708	11	23	22	
February 27, 2017	117	115	19	19	
March 1, 2017	<i>95</i>	61	21	20	
April 30, 2017	41	43	9	18	
June 6, 2017	71	87	9	15	
June 27, 2017	6	<6	8	13	
June 28, 2017	41	83	18	21	
July 24, 2017	132	148	12	20	
July 25, 2017	30	31	16	22	

Table H1: Response times for the vegetative filter strip (VFS) and the biofiltration swale (BFS) for all sampled events. ¹System was not yet constructed, ²No available flow data due to technical problem, ³Water content sensors not yet in place. Events with degraded performance are noted in bold italics.

I. Particle size distributions



Figure I1: Total suspended solid particle size distribution in mg/L TSS, assuming (a) road runoff, (b) water drained from the biofiltration swale and (c) water drained from the biofiltration swale.

	Particle diameter<10 µm		Particle diameter>10 µm		
Date	VFS	BFS	VFS	BFS	
January 9, 2017	77	-5	93	47	
March 1, 2017	79	61	94	94	
April 30, 2017	95	72	93	87	

Table I1: TSS concentration reduction (%) by particle size and event in the vegetative filter strip (VFS) and biofiltration swale (BFS)

	RR			VFS		BFS			
	SAR	EC (dS/m)	Colloid dispersion risk ¹	SAR	EC (dS/m)	Colloid dispersion risk ¹	SAR	EC (dS/m)	Colloid dispersion risk ¹
February 7, 2016	-	-	-	7.9	0.96	Slight to moderate	-	-	-
February 8-9, 2016	2.9	0.29	Slight to moderate	5.6	0.67	Slight to moderate	-	-	-
March 9, 2016	18.5	1.84	Slight to moderate	11.8	2.62	No problem	-	-	-
May 9, 2016	1.3	0.20	Slight to moderate	-	-	-	-	-	-
May 10, 2016	-	-	-	1.6	0.46	Slight to moderate	1.1	0.47	Slight to moderate
May 18, 2016	0.9	0.15	Severe	1.2	0.34	Slight to moderate	0.8	0.37	Slight to moderate
May 30, 2016	-	-	-	0.3	0.24	Slight to moderate	0.4	0.25	Slight to moderate
June 14, 2016	1.0	0.16	Severe	-	-	-	0.6	0.37	-
October 24, 2016	-	-	-	0.5	0.30	Slight to moderate	0.4	0.37	Slight to moderate
November 9, 2016	-	-	-	0.5	0.33	Slight to moderate	0.4	0.36	Slight to moderate
January 9, 2017	22.5	1.95	Slight to moderate	30.1	6.59	No problem	16.7	5.37	No problem
February 27, 2017	-	-	-	16.8	2.50	Slight to moderate	10.5	2.63	Slight to moderate
March 1, 2017	5.3	0.53	Slight to moderate	12.9	1.37	Slight to moderate	7.7	1.25	Slight to moderate
April 30, 2017	2.3	0.30	Slight to moderate	3.8	0.61	Slight to moderate	3.8	0.67	Slight to moderate
June 6, 2017	2.3	0.20	Slight to moderate	2.2	0.40	Slight to moderate	2.5	0.50	Slight to moderate
June 27, 2017	0.5	0.09	Severe	1.1	0.19	Severe	1.9	0.30	Slight to moderate
June 28, 2017	-	-	-	-	-	-	-	-	-
July 24, 2017	-	-	-	-	-	-	-	-	-
July 25, 2017	1.7	0.27	Slight to moderate	0.8	0.44	Slight to moderate	1.6	0.61	Slight to moderate

Table J1: Risk of colloid dispersion in road runoff (RR), water drained from the vegetative filter strip (VFS) and water drained from the biofiltration swale (BFS) according to guidelines for irrigation water quality (Shainberg and Letey, 1984). Events from the period of degraded filtration are listed in bold.

K. Particle concentrations in road runoff during normal and degraded performance



Figure K1: Particle concentrations in RR during normal performance (outside winter 2017) and during degraded performance in winter 2017. Points represent the median particle concentrations, while error bars represent the Q20 and Q80 ratios during normal performance and the minimal and maximal values for degraded performance.

	S _{initial} (mg/kg)	S _{min,end} (mg/kg)	S _{max,end} (mg/kg)
Cu	12.6	12.1	15.9
Zn	31.4	34.4	42
DEHP	0.559	<0.352	14.5
DBP	0.598	<0.177	4.13
NP	0.159	0.107	0.491
OP	<0.0067	<0.0067	0.087
BPA	<0.0106	0.0123	0.107
Pyr	0.146	0.032	0.12
Fluo	0.062	0.035	0.131
Phen	0.072	0.025	0.09

L. Initial and range of final soil concentrations observed in the biofiltration swale

 Table L1: Soil concentrations in the biofiltration swale (BFS) corresponding to the initial soil sample (S_{initial}), the minmum (S_{min,end}) and maximum (S_{max,end}) among the lowest segment (15-50 cm depth) of 8 composite cores.

M. Residence times in the biofiltration swale

Residence times of water were calculated according to the equation SEq. 1, which assumes the active volume of the biofilter to be equal to its gravitational pore space. Residence times for all events in the BFS are listed in Table S8.

Residence time =
$$\frac{V_{filter media}(\theta_{sat} - \theta_{fc})}{Q_{mean,event}}$$
 (Eq. J1)

Where the residence time is in hours, $V_{\text{filter media}}$ is the total volume of the filter media in the VFS, θ_{sat} is the filter media's water content at saturation, θ_{fc} is its water content at field capacity and $Q_{\text{mean,event}}$ is the mean flow rate for the sampled event.

Date	BFS Residence Time (h)
February 7, 2016	-
February 8-9, 2016	-
March 9, 2016	-
May 9, 2016	42.4
May 10, 2016	41.6
May 18, 2016	37.2
May 30, 2016	36.2
June 14, 2016	49.5
October 24, 2016	36.1
November 9, 2016	39.2
January 9, 2017	20.4
February 27, 2017	57.5
March 1, 2017	19.4
April 30, 2017	11.6
June 6, 2017	15.1
June 27, 2017	1.9
June 28, 2017	23.5
July 24, 2017	22.1
July 25, 2017	72.4

Table M1: Biofiltration swale (BFS) residence times (RT) for each sampled event

N. Dissolved organic carbon time series



Figure N1: Time series of dissolved organic carbon in runoff and system outlets

	Asphalt	Geomembrane	Drain	Drain filter fabric
DEHP	12250 (3.6)	0 (0)	0 (0)	147 (0.043)
DBP	30080 (37)	0 (0)	0 (0)	2057 (2.5)
NP	67 (0.17)	2228 (5.77)	151 (0.39)	3609 (9.35)
OP	<7 (<0.056)	15 (0.12)	<7 (<0.056)	41 (0.32)
BPA	17 (0.061)	40 (0.14)	536 (1.9)	670 (2.4)
Pyr	<5.3 (<0.24)	<4.9 (<0.24)	-	-
Fluo	<5.3 (<0.36)	<4.9 (<0.33)	-	-
Phen	<5.3 (<0.23)	8 (0.36)	-	-

O. Emissions of organic micropollutants from construction materials

 Table O1: Emissions of organic micropollutants from materials used in the construction of biofiltration swale.

 Concentration in ng/L, in parentheses: ratio compared to median dissolved concentration in RR.