

Supplementary

Table S1. Simultaneous water sampling to compare culture methods and real-time PCR methods.

Sampling Point ^c	Culture methods (CFU/100 mL) ^a				Real-Time PCR (DNA copies/100 mL) ^b	
	<i>E. coli.</i>	Coliforms 35 °C	<i>Enterococcus</i>	<i>Clostridium Perfringens</i>	0.45 µm	0.22 µm
17 August 2015						
Boreholes (1a)	<1	<1	<1	<1	0	0
Intake (1b)	<1	<1	1	<1	0	0
Wastewater (2a)	NA ^d	NA	NA	NA	0	0
Björkaån (2b)	<1	<1	20	8	977	0
Torpsbäcken (3)	<1	<1	4	30	123	122
Borstbäcken (4)	<1	1250	64	96	13	51
Natural groundwater (6)	<1	1900	<1	22	0	0
26 October 2015						
Boreholes (1a)	<1	<1	<1	<1	0	0
Intake (1b)	18	18	4	1	0	0
Wastewater (2a)	>100	>100	100	17	95.0	535.7
Björkaån (2b)	15	22	18	4	0	0
Torpsbäcken (3)	3	3	41	4	0	19
Borstbäcken (4)	10	10	51	9	0	0
Natural groundwater (6)	<1	<1	<1	7	0	0
30 November 2015						
Boreholes (1a)	<1	<1	<1	<1	0	0
Intake (1b)	34	51	9	14	0	0
Wastewater (2a)	124	124	35	26	0	0
Björkaån (2b)	>100	>100	>100	27	0	0
Torpsbäcken (3)	204	204	77	22	0	0
Borstbäcken (4)	198	198	83	18	0	0
Natural groundwater (6)	<1	<1	3	5	0	0

^a Culture methods were analyzed at a commercial laboratory applying standard SS028167-2. Values are reported as colony forming units (CFU)/100 mL.

^b Real-time PCR analyses report the number of *ssrA* DNA copies/100mL for filters with 0.45 and 0.22 µm pore size.

^c The water intake in Lake Vomb (sampling point 1b), infiltrated groundwater from boreholes (sampling point 1a), wastewater from on-site sewers (sampling point 2a); the tributaries Björkaån (sampling point 2b), Torpsbäcken (sampling point 3) and Borstbäcken (sampling point 4); and natural groundwater source (sampling point 6).

^d No data available.

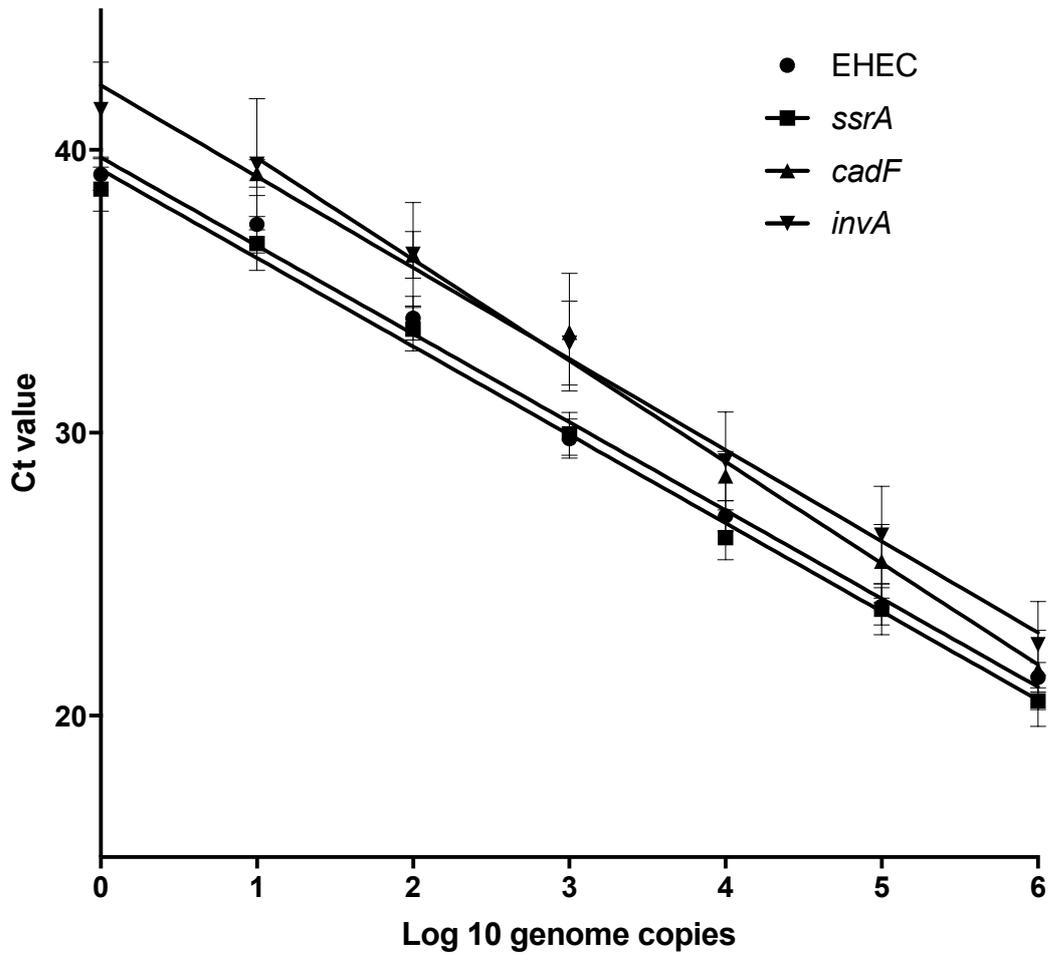
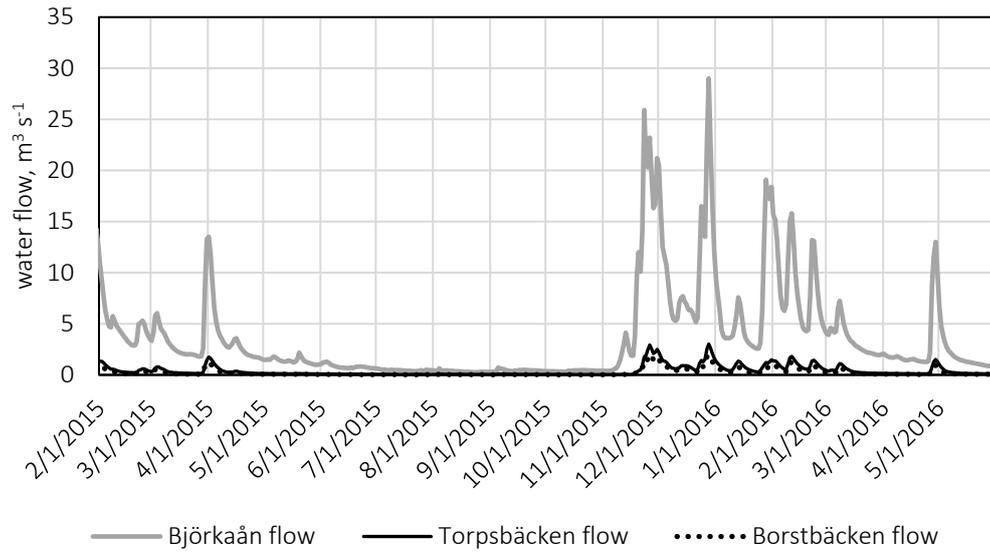
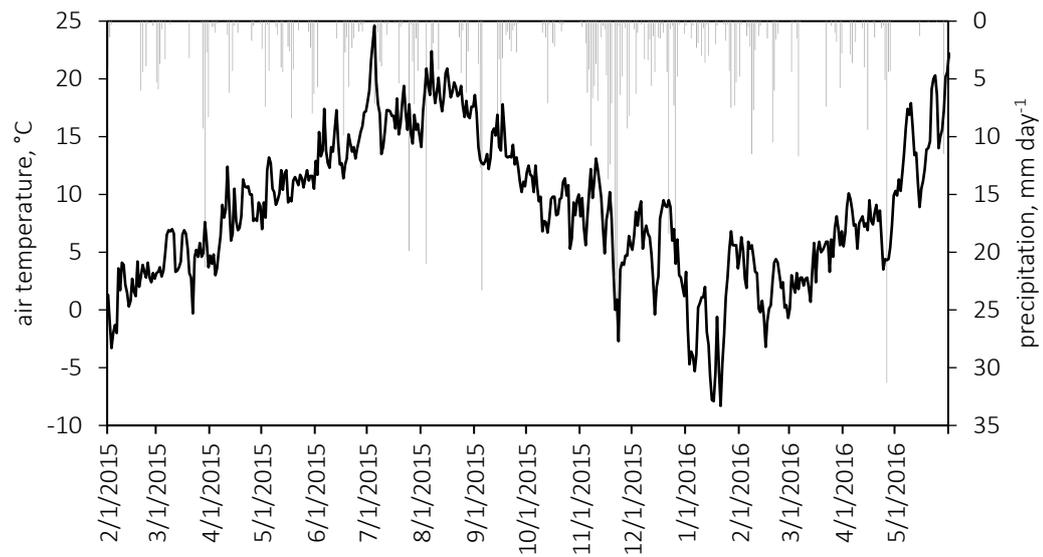


Figure S1. Standard curves of 10-fold serial dilutions of PCR products. Gene copy numbers were calculated using the molecular weight of each PCR product and Avogadro's number. Concentrations ranged from 1 to 10^6 copies per μL . The limit of detection (LOD) in the assay was 1 copy for *invA*, and 10 copies for *ssrA*, EHEC and *cadF*. The slope, Y intercept, and R^2 for each primer were: for *ssrA* (-3.125, 39.31, and 0.995), for *invA* (-3.223, 42.28, 0.9937), for *cadF* (-3.579, 43.29, 0.9928), and for EHEC (3.119, 39.74, 0.9934), respectively.



(a)



(b)

Figure S2. (a) Water flow in the tributaries to Lake Vombsjön: Björkaån, Torpsbäcken, Borstbäcken (data source: Swedish Hydrological and Meteorological Institute (SMHI), Vattenwebb). (b) Air temperature and precipitation measured in the vicinity of Lake Vombsjön (data source: SMHI).

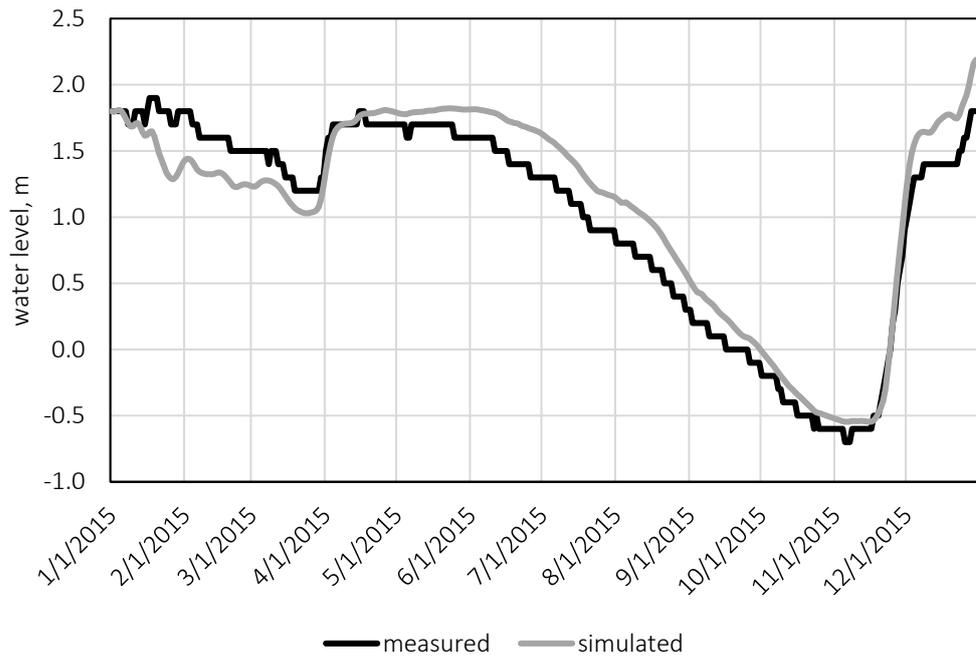


Figure S3. Measured and simulated water level in Lake Vombsjön during the year 2015. The model performance was high, as illustrated by the Nash-Sutcliffe efficiency coefficient (NSE) of 0.92 (NSE can range from $-\infty$ to 1, with 1 representing a perfect match between measured and simulated data). The NSE was calculated using the data with temporal resolution of 1 day.

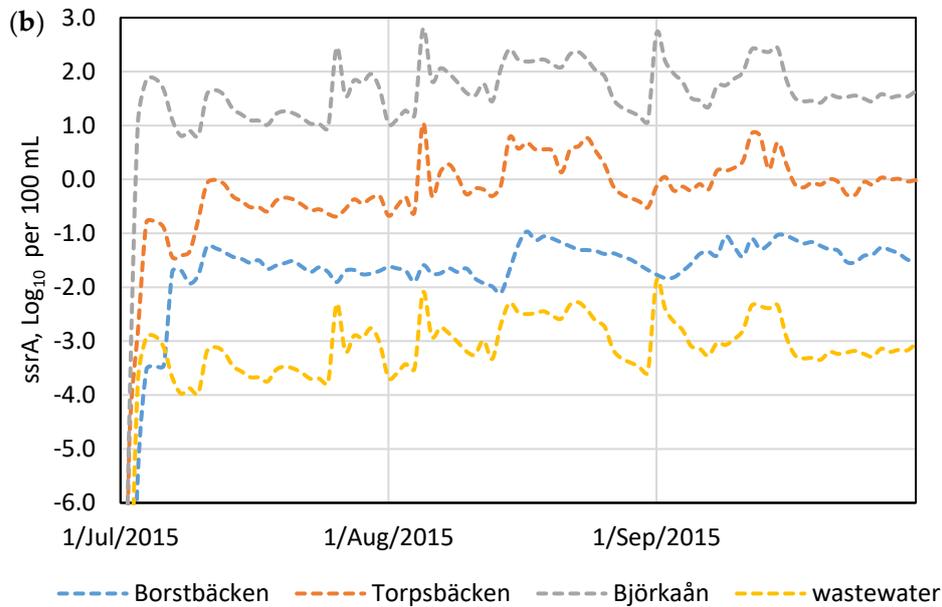
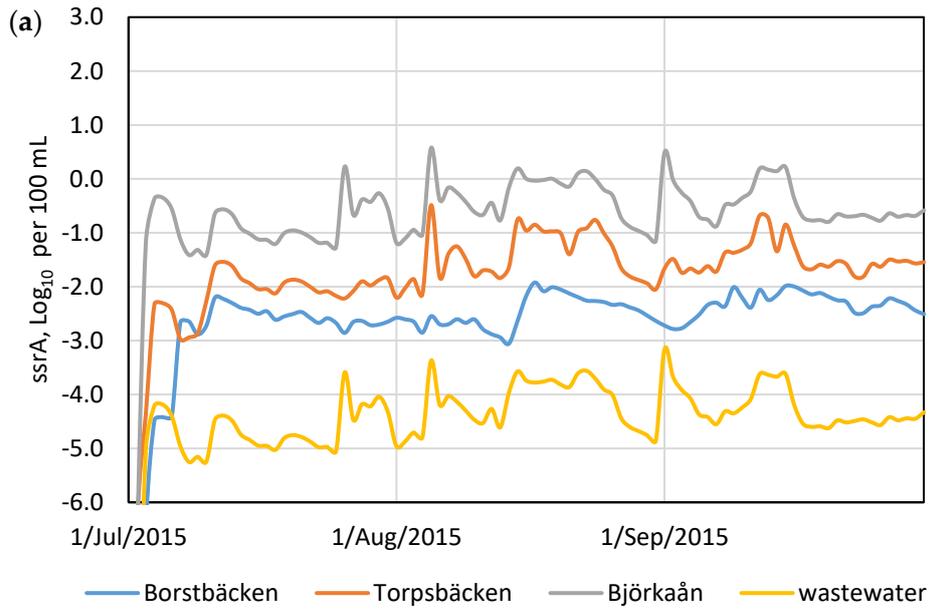


Figure S4. Simulated concentrations of ssrA (number per 100 mL) at the water intake in Lake Vomb resulting from the impact of the tributaries and discharges of wastewater from on-site sewers located in Vressel. It was assumed that the concentrations in the tributaries and wastewater from on-site sewers were (a) the median concentrations calculated using the Log_{10} -transformed measured data for Jul-Sep 2015, and (b) the maximum concentrations measured in the tributaries and wastewater.

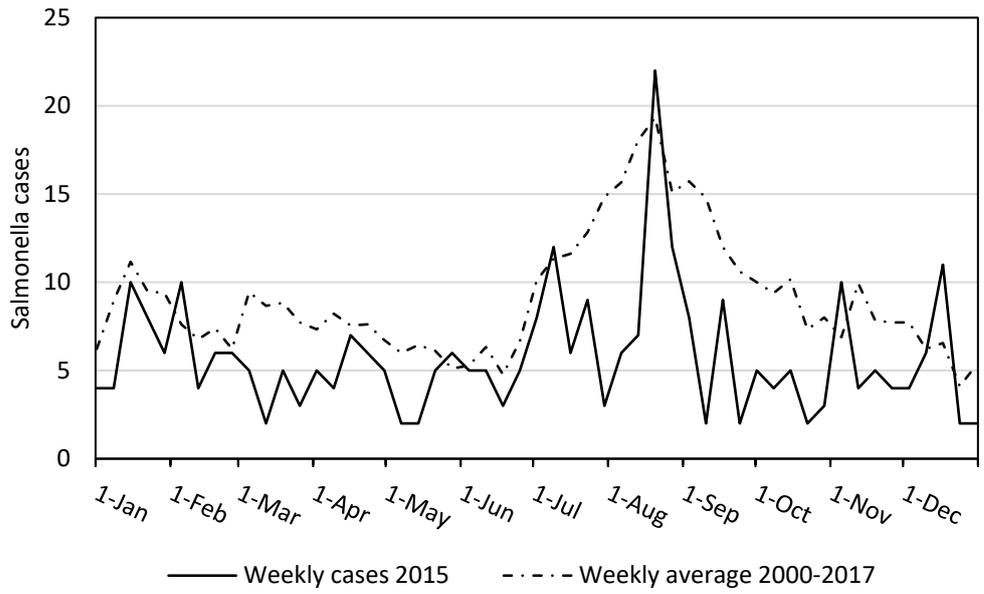


Figure S5. Reported weekly incidence in Skåne County for the period 2000–2017 and the year 2015 separately. Two extreme values (w. 16 and w. 17, year 2002) were exchanged to the weekly average.