

Supplementary material

Table S1. The statistical description of alpha diversity among reaches

Alpha	mean(R1)	SD(R1)	mean(R2)	SD(R2)	mean(R3)	SD(R3)	mean(R4)	SD(R4)	mean(R5)	SD(R5)	mean(R6)	SD(R6)	mean(R7)	SD(R7)	p-value
OTUs	2236.0	548.8	2834.6	689.6	2622.3	780.6	2358.5	548.5	3287.7	394.9	3210.9	1092.1	3611.7	194.5	0.135
chao	3210.0	528.3	4204.3	793.4	3554.6	1170.3	3325.0	581.6	4223.6	995.3	3995.5	1365.2	4929.9	306.2	0.309
ace	3446.3	398.4	4781.6	755.9	3670.6	1222.1	3621.4	436.9	4426.7	1173.0	4048.9	1430.2	5061.7	371.2	0.298
shannon	5.182	0.808	5.615	0.648	5.771	0.559	5.430	0.503	6.166	0.554	6.503	0.452	6.457	0.080	0.009
simpson	0.033	0.016	0.019	0.011	0.015	0.007	0.021	0.007	0.014	0.011	0.005	0.003	0.006	0.001	0.003
coverage	0.980	0.003	0.975	0.005	0.978	0.009	0.982	0.003	0.980	0.013	0.981	0.009	0.971	0.005	0.552

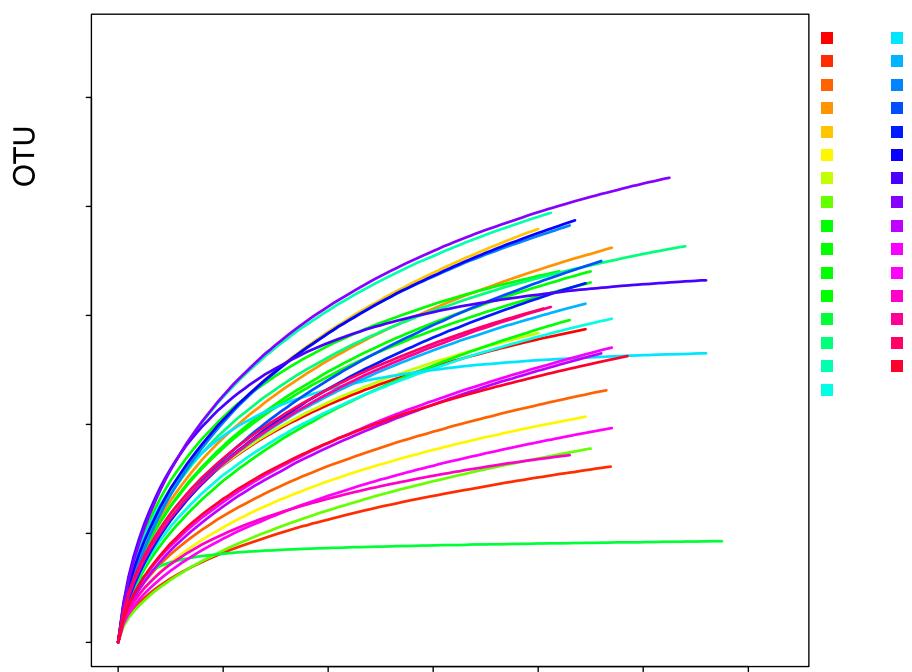


Figure S1. Rarefaction curves for 31 samples

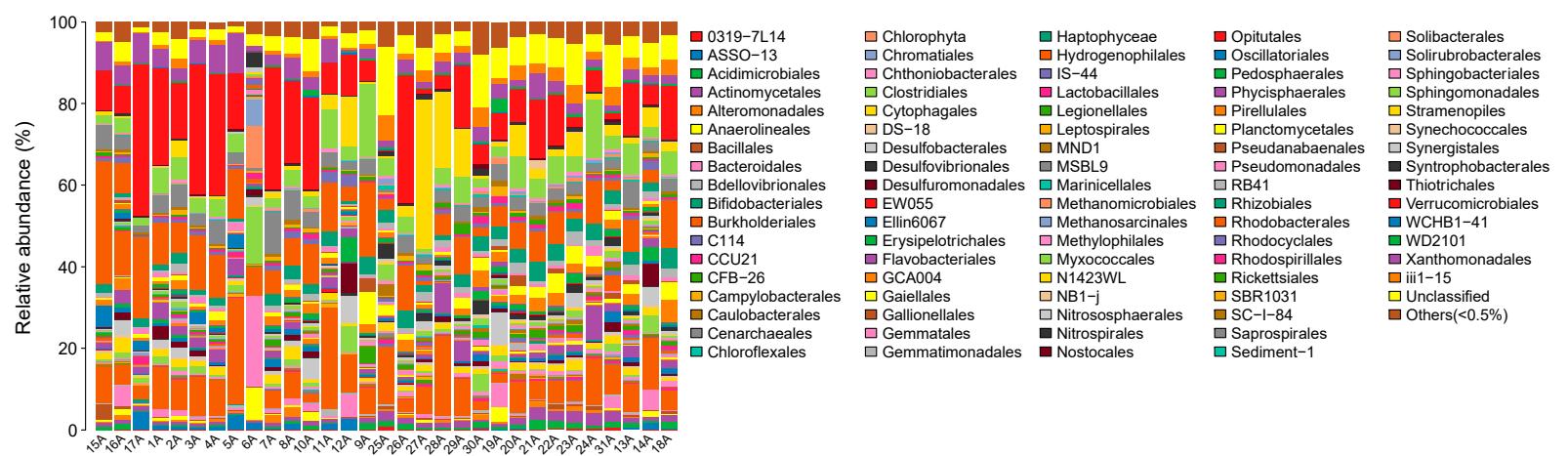
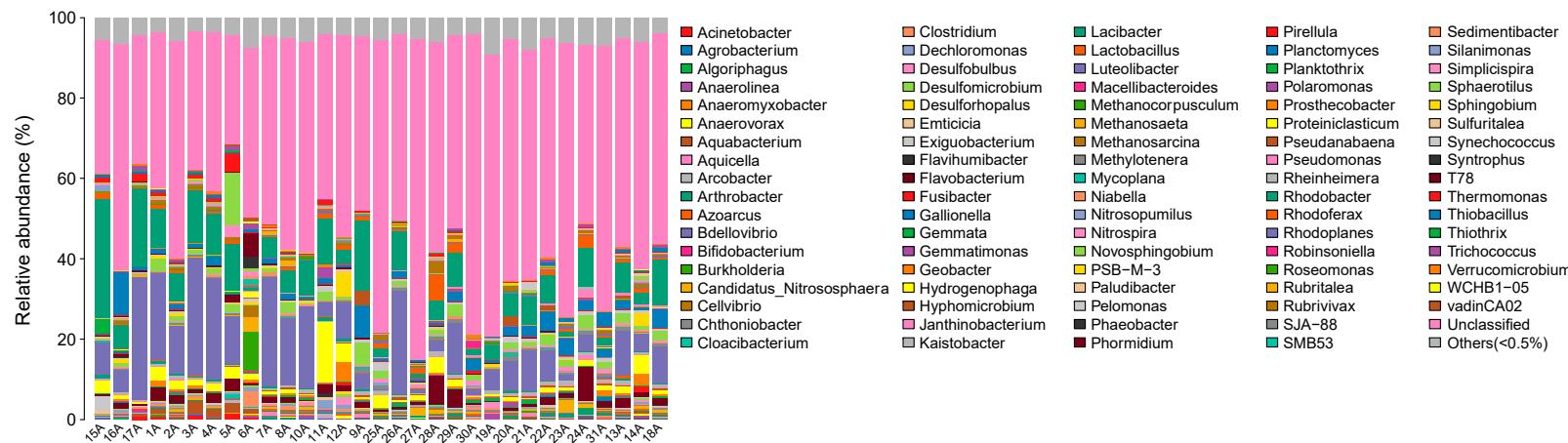


Figure S2 Taxonomic composition distribution of each sample at the genus and order level

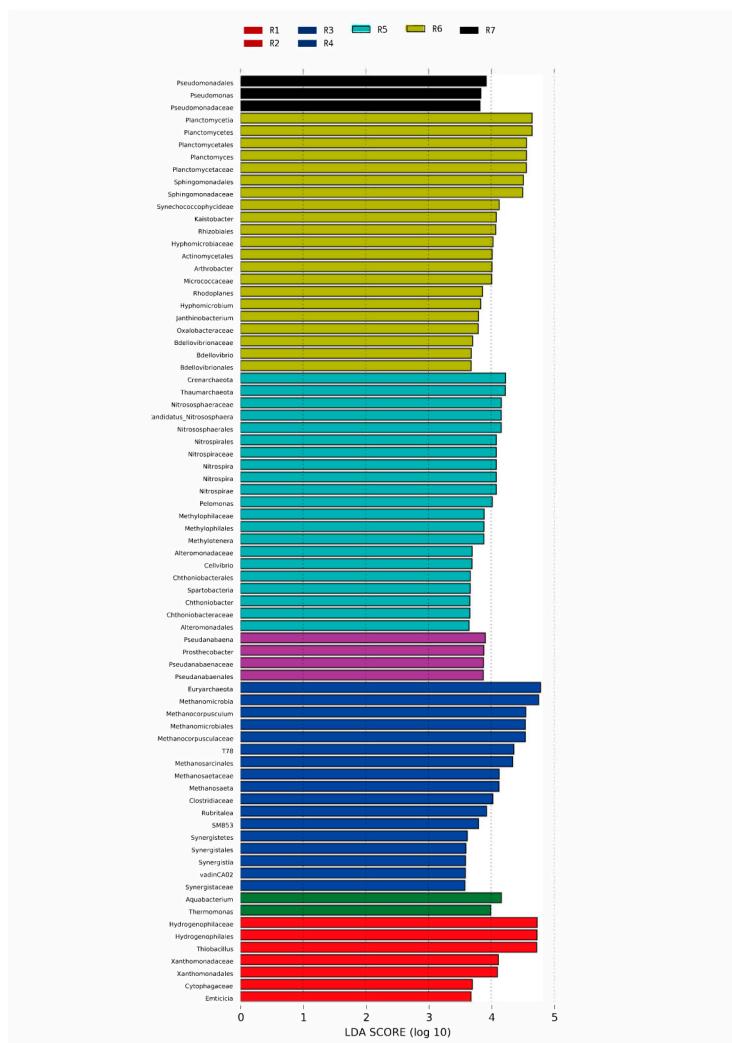


Figure S3. LDA scores were calculated by LEfSe of taxa differentially abundant among different river reaches

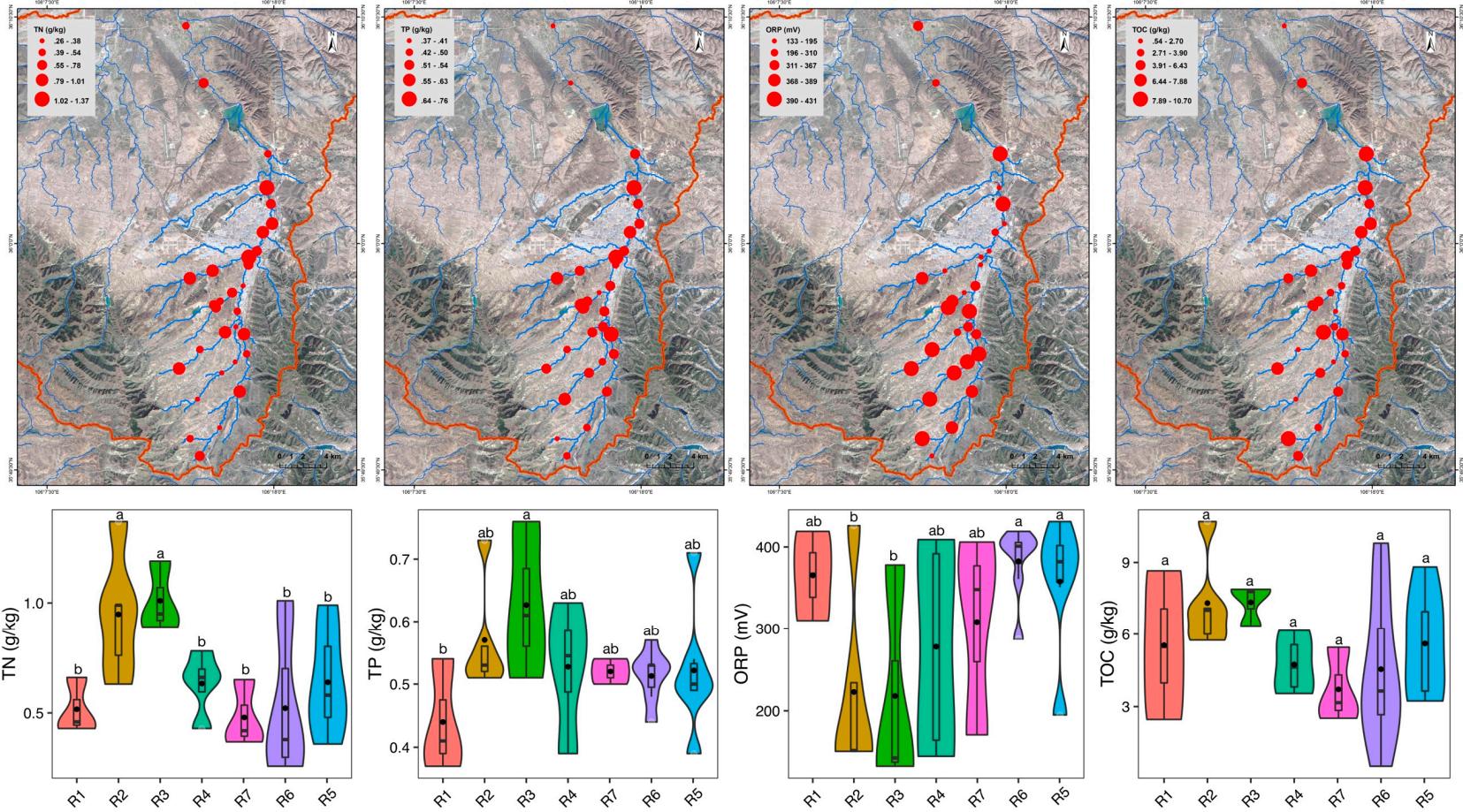


Figure S4. Physicochemical Characteristics and statistical comparison of key environmental variables in sediment of Qingshui river. Statistical significances are indicated by letters above the boxes. Boxes with the same letters (like a and a, a and ab) represent no significant difference ($p > 0.05$), while with different letters (like a and b) differ significantly ($p < 0.05$) between paired reaches.

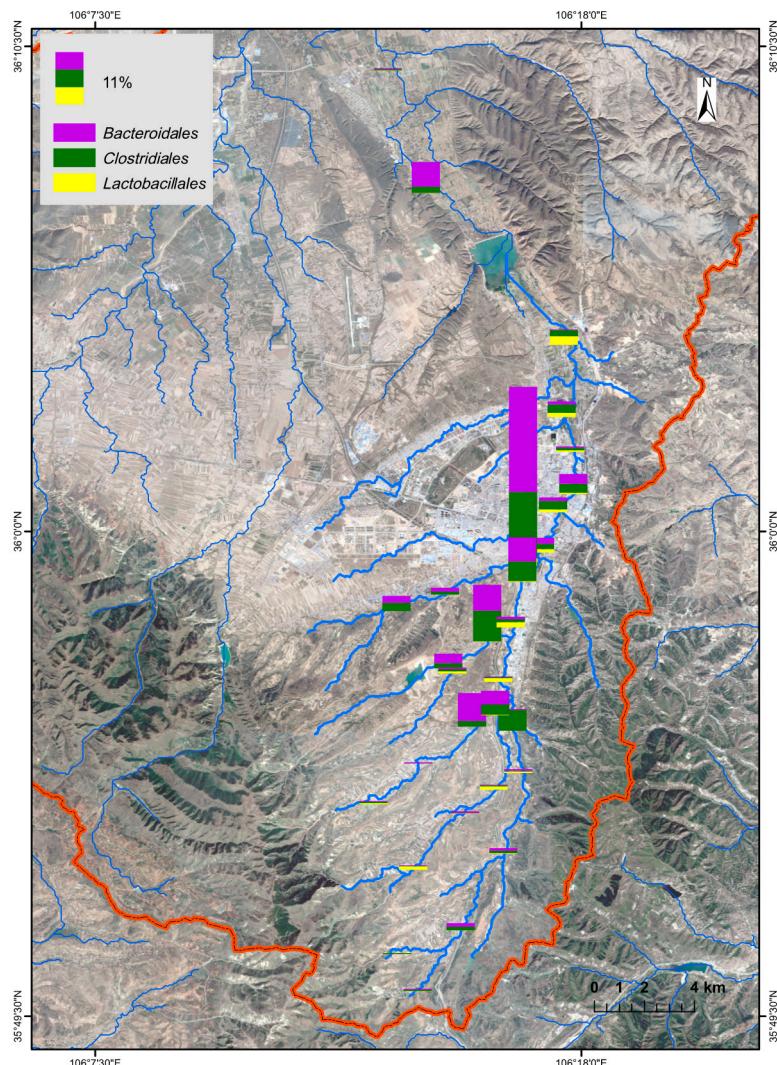


Figure S5. Distribution and relative abundance of three dominant orders in fecal-associated bacteria