Response to Reviewer 4 Comments

**Point 1:** Authors should avoid abbreviations in the title and the abstract.

**Response 1:** Thanks for the kind reminder. Full names of BAC, UF, and PPCPs are used in the title and the abstract to show the results briefly. As for NH4+-N, NO2−-N, and NO3—N, the full names have been used instead of abbreviations in the abstract.

**Point 2:** Authors may revise the title to include river water instead of surface water.

**Response 2:** Thank you very much for your kind reminder. The title has been revised to river water.

**Point 3:** References should be according to the journal format.

**Response 3:** Thank you very much for your kind reminder. The references format has been corrected.

**Point 4:** Line 44-45: Ultrafiltration (UF) as emerging technology, has been widely used to remove pollutants such as particles, colloids, bacteria and viruses, reducing the risk of water-borne diseases and …UF membranes cannot effectively rejected these soluble substances”. Please clarify, why ultrafiltration cannot remove the PPCPs since it can remove bacteria and viruses.

**Response 4:** We are very sorry for the confusion caused to the reviewers, the sentences have been revised from the words and Grammarly. The revised sentences are shown below:

Ultrafiltration (UF) as an emerging alternative technology to conventional water treatment processes, has been widely used to remove pollutants such as particles, col-loids, bacteria, and viruses, thus reducing the risk of water-borne diseases [10]. Size exclusion is considered the primary removal mechanism for the UF. However, in the case of the PPCPs with a small molecular weight (typically < 600 Da), UF membranes also cannot effectively reject these PPCPs, but nanofiltration and reverse osmosis are able to remove these PPCPs based on the thin-film composite [11, 12].

**Point 5:** Please add t-test results in Table 1 for each parameter to understand the significant differences. Authors may provide data in the supporting information file.

**Response 5:** Thanks very much for this comment. The t-test results have been added in the revised Table1.

**Table 1.** Raw water quality parameters of river water (significant value, 0.05).

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Parameter (unit).** | **Raw water** | | | | |
| **Range** | **Avg.** | **Std. Dev.** | **95% Confidence**  **Interval of the**  **Difference**  **(Lower, Upper)** | **Sig (2-tailed)** |
| pH | 6.71-8.07 | 7.08 | 0.32 | (6.99, 7.18) | 1.84E-59 |
| Turbidity (NTU) | 15.3-231.0 | 53.01 | 51.30 | (37.41, 68.61) | 2.09E-8 |
| DO (mg L-1) | 4.35-7.46 | 6.14 | 0.77 | (5.90, 6.37) | 9.13E-40 |
| Salinity (mg L-1) | 102-217 | 159.5 | 28.42 | (151.88, 167.13) | 4.72E-28 |
| CODMn (mg L-1) | 1.88-13.79 | 7.62 | 2.63 | (6.82, 8.42) | 9.94E-23 |
| NH4+-N (mg L-1) | 0.09-4.54 | 2.31 | 1.29 | (1.91, 2.70) | 3.81E-15 |
| NO2−-N (mg L-1) | 0.15-0.54 | 0.25 | 0.08 | (0.22, 0.27) | 6.35E-24 |
| NO3−-N (mg L-1) | 0.87-8.26 | 2.12 | 1.95 | (1.04, 3.20) | 8.61E-4 |

**Point 6:** Why the same trend of increase or decrease in graphs (Fig. 1) was observed in Fig. 1(c). Why is the DO concentration of BAC-effluent sometimes higher than the Raw water. Please explain it in the manuscript. The reviewer suggests statistical analysis using a t-test (Raw water- BAC-Effluent and Raw water – BAC/UF-effluent).

**Response 6:** Thanks very much for this comment. The same trend (Figure 2) was mainly due to the stable removal ability of BAC and UF for organics, causing the removal restriction. The periodic backwash (7days) of BAC caused sometimes the dissolved oxygen concentration of BAC-effluent higher than that of raw water. After the gas scrubbing and the hydraulic backwashing, the dissolved oxygen detection of the effluent was carried out, resulting in the above results for dissolved oxygen. Besides, the t-test was used and proved the significant difference between BAC-Effluent and BAC/UF-effluent.

**Point 7:** The reviewer suggests evaluating the statistical t-test for Figures 4.

**Response 7:** Thank you very much for your kind reminder. The statistical t-test was evaluated for Figure 4, which was added in the text of "3.2. Removal of nitrogen" Section.

**Point 8:** T-test results should be included in Table 2. Why is the standard deviation of Erythromycin showing a high value?

**Response 8:** Thanks very much for this comment. The t-test results have been added to the revised Table2. The concentration of Erythromycin was generally varied between 1047.14 ng L−1 and 2037.72 ng L−1.

**Table 2.** Concentrations of typical antibiotics in the raw water (significant value, 0.05).

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **PPCPs** | **Raw water (ng L−1)** | | | | |
| **Range** | **Avg.** | **Std. Dev.** | **95% Confidence**  **Interval of the**  **Difference**  **(Lower, Upper)** | **Sig (2-tailed)** |
| EM | 500.56-3994.07 | 1542.43 | 894.38 | (1047.14, 2037.72) | 1.0E-5 |
| EA | 0.00-39.05 | 14.24 | 11.48 | (7.89, 20.60) | 2.79E-4 |
| SM2 | 5.49-127.50 | 46.08 | 31.86 | (28.44, 63.72) | 6.50E-5 |
| SMX | 8.76-31.88 | 15.63 | 6.03 | (12.29, 18.97) | 8.99E-8 |
| SMP | 0.75-200.84 | 78.04 | 63.91 | (42.65, 113.43) | 3.23E-4 |
| SMD | 7.16-203.03 | 75.09 | 58.71 | (42.57, 107.60) | 2.12E-4 |
| SCP | 0.00-58.56 | 19.78 | 15.70 | (11.09, 28.48) | 2.43E-4 |
| SDZ | 10.48-175.21 | 87.58 | 53.21 | (58.11, 117.05) | 1.7E-5 |
| TMP | 0.00-16.23 | 3.93 | 5.80 | (0.72, 7.14) | 0.020 |
| CF | 25.41-125.34 | 75.13 | 28.23 | (59.50, 90.77) | 6.40E-8 |

**Point 9:** Please look at the curve of BAC/UF; there was a symbol missing in near 85 days. Please show each symbol.

**Response 9:** Thanks very much for this comment. Some symbols were overlapped in Figure 5h. The symbols near 85 days have been entirely shown by correcting Y-axis settings, such as Figures 5a and 5f.

**Point 10:** The conclusion may be revised.

**Response 10:** Thanks very much for this comment. The conclusion has been revised, including the style and sentences.