

1 TWW composition

1.1 Synthetic WW preparation

Table S1 contains the added concentrations of ammonium, asparagine and glucose for the preparation of the synthetic WW. Table S2 describes the ammonium, TKN and DOC content of the synthetic WW.

Table S1. Synthetic WW composition (added concentrations)

Chemical	Concentration (mg/L)
Ammonium	5
Asparagine	4.5
Glucose	95

Table S2. Synthetic WW chemical composition

Analysis	Concentration (mg/L)
Ammonium test	4.9
TKN	9.2
DOC	103

5 1.2 Real TWW chemical composition

Table S3 describes the chemical composition of the TWW collected from the Dresden WWTP . Table S4 describes the final TWW composition after Glucose and Ammonium were added to reach similar composition to the synthetic WW.

Table S3. Real TWW chemical composition (as collected from the Dresden WWTP)

Analysis	Concentration (mg/L)
Ammonium	1.2
TKN	5.2
DOC	10.7

Table S4. Real TWW chemical composition (after the addition of glucose and ammonium)

Analysis	Concentration (mg/L)
Ammonium	4.9
TKN	10.1
DOC	102

2 Soil characterization

10 Soil from the YAVNE2 pond cluster of the SHAFDAN site was collected. Prior to packing the column, the different layers of the soil were characterized. Particle size distribution, porosity TOC were determined. All soil horizons were found to contain > 86% of sand with an average porosity of ~0.45. Column was packed according to the layering at the field.

Table S5. Soil characterization: porosity, texture and TOC content

Layer	Top (cm)	Bottom (cm)	Porosity (%)	Gravel (%)	Sand (%)	Silt (%)	Clay (%)	TOC (%)
1	0	153	0.48	0.7	93.9	2.4	3	0.25
2	153	258	0.48	0.6	94.4	2.1	2.9	0.1
3	258	352	0.47	0	99.2	0.1	0.7	0.01
4	352	462	0.42	0	97.4	0.6	2	0.02
5	462	480	-	-	-	-	-	-
6	480	600	0.42	0.4	86.4	5.6	7.6	0.05

3 WC and DO during part 2 of experiment 2

Figure S1 presents the Surface head, WC and DO concentrations recorded during the second part of experiment 2 (synthetic WW; DP of 240 minutes).

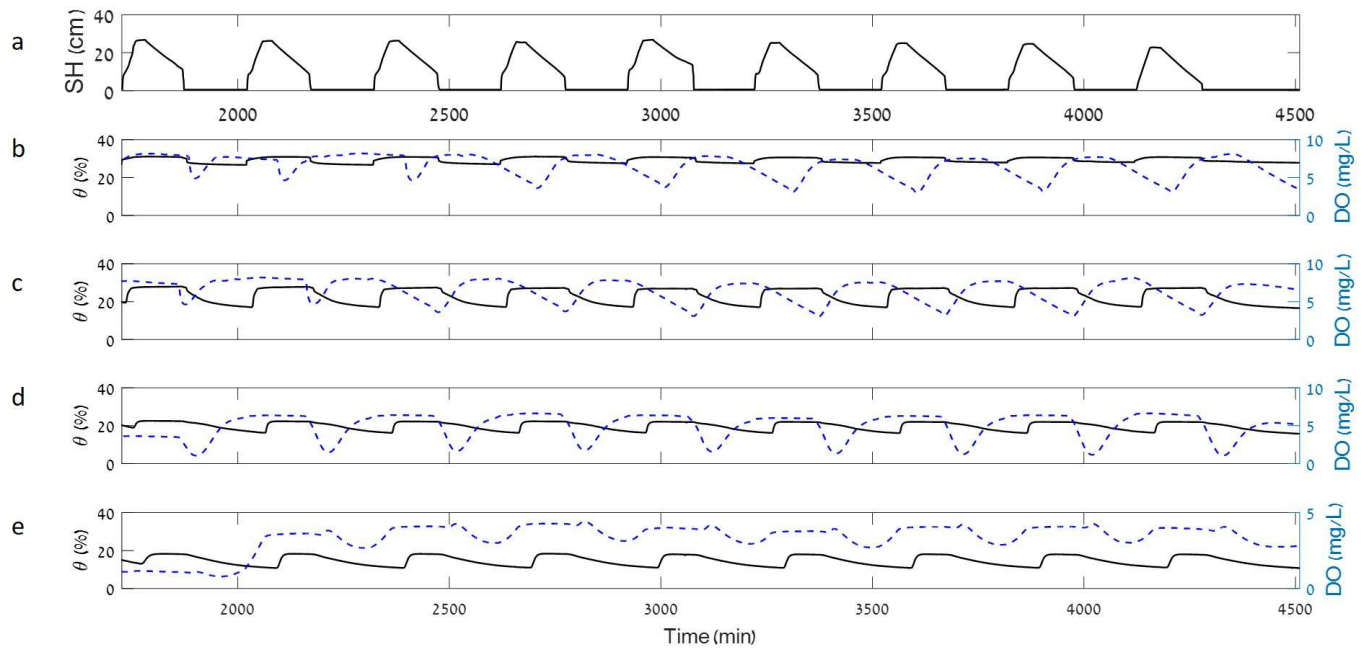


Figure S1. Surface head, water content and DO concentrations with time at depths of : 25, 75, 175 and 275 cm below soil surface during part 2 of experiment 2 (240 minutes drying)

15 4 DO depletion in a preliminary experiment

In a preliminary experiment, cycles of 60 minutes WP and 150 minutes DP were implemented, using synthetic WW. Figure S2 shows that after ~ 3000 minutes, complete DO depletion was observed at the 175 cm DO sensor.

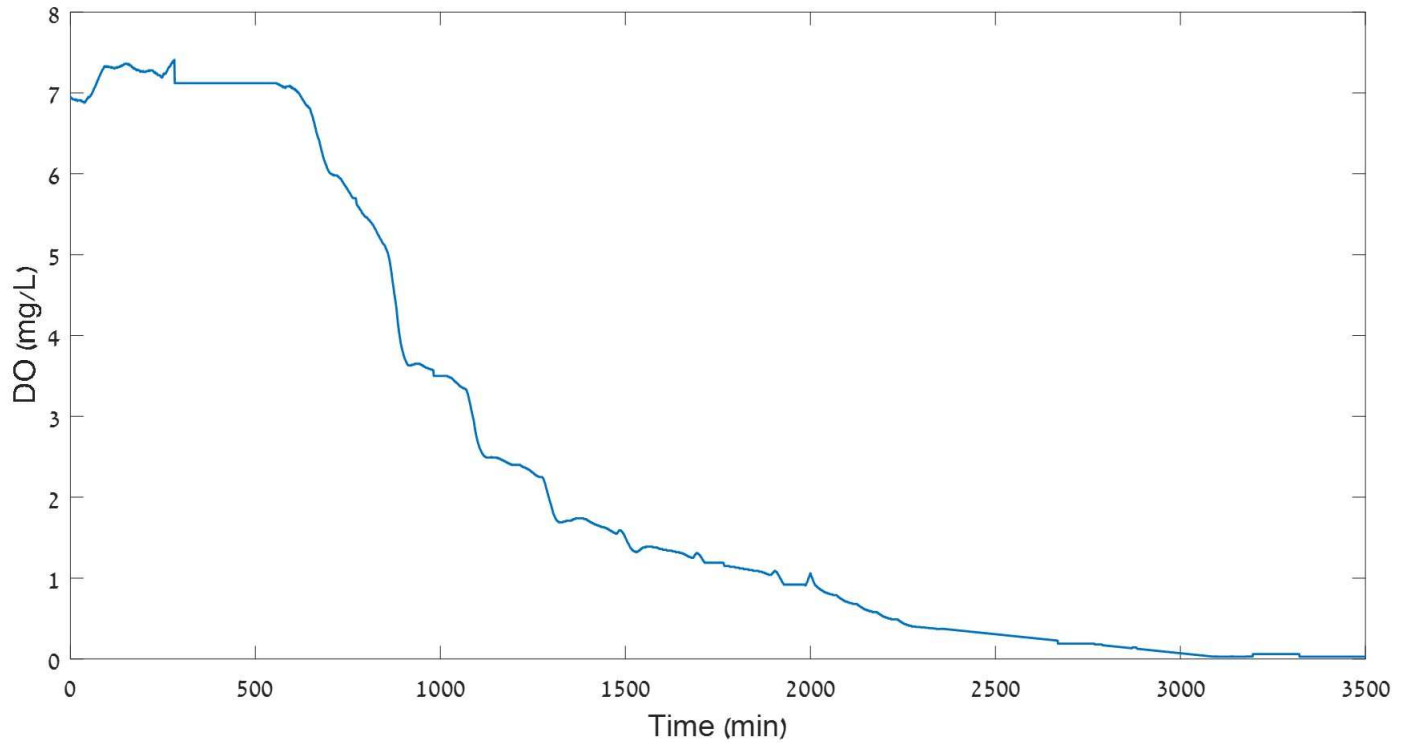


Figure S2. DO concentrations during a preliminary experiment. synthetic WW were used and cycles were of 60 minutes WP and 150 minutes DP

5 ORP during experiments 3 and 4 at a depth of 75cm

20 Figure S3 presents the ORP at a depth of 75 cm recorded during experiments 3 (blue line) and 4 (red line). These results show that the longer DP had a beneficial effect on the ORP at this depth - in experiment 4, ORP values were significantly higher compared to experiment 3, throughout the majority of the experiment, ORP values were greater than 200 mV and reached ~ 400 mV periodically, suggesting that the longer DP contributed to enhanced aeration that in turn resulted in higher outflow quality.

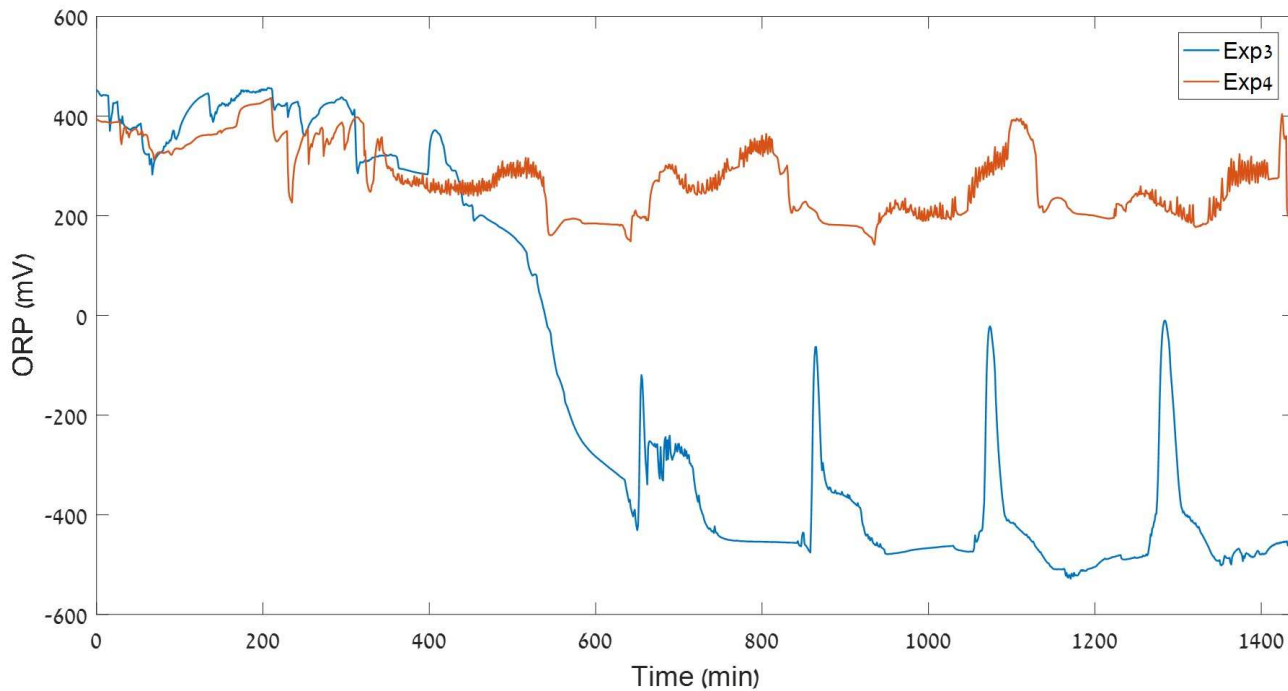


Figure S3. ORP at a 75 cm during experiments 3 (blue line) and 4 (red line)

6 DO concentrations during experiment 3

25 Figure S4 shows DO concentrations at depths of 175 and 275 cm recorded during experiment 3 (shorter, 150 minutes-long DP). DO depletion occurred after ~ 850 and ~ 1400 minutes from the beginning of the experiment (for 175 and 275 cm respectively).

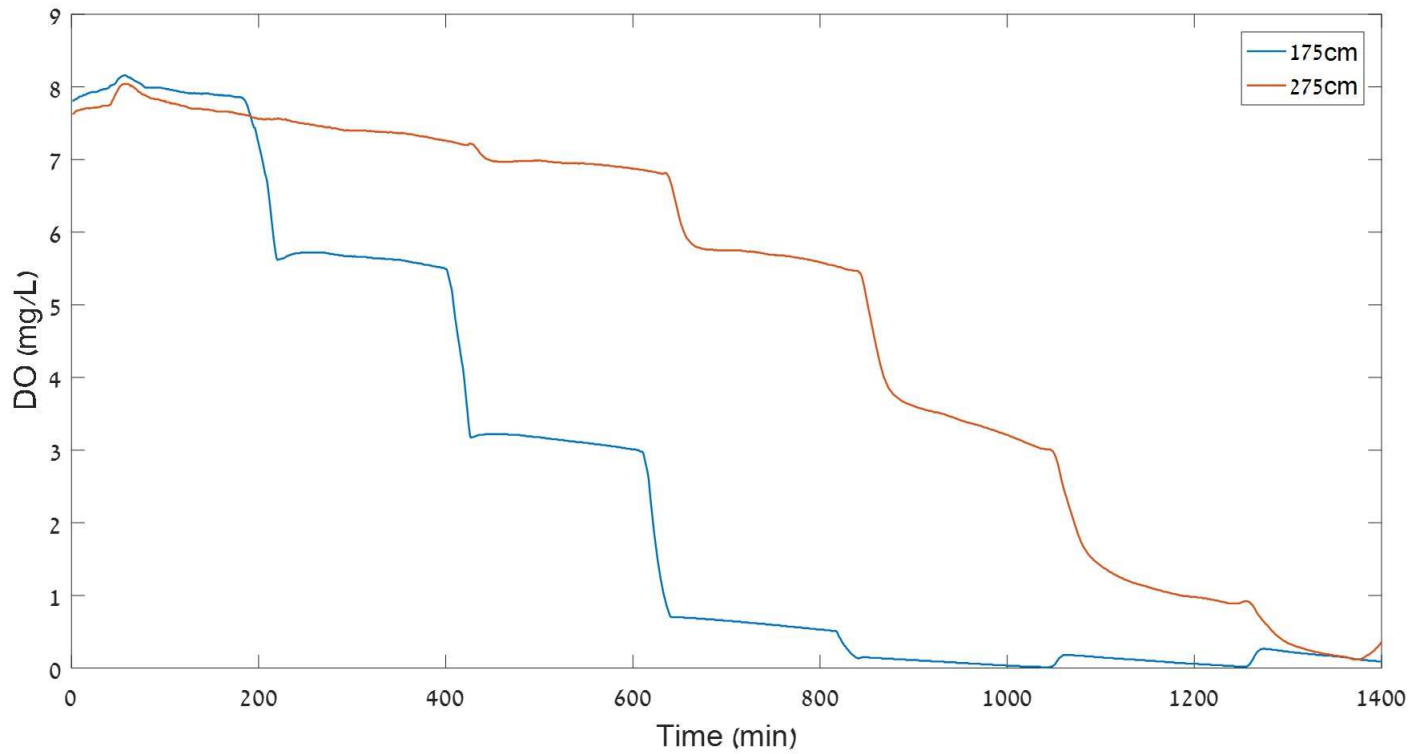


Figure S4. DO concentrations at 175 and 275 cm during experiment 3

7 ORP and DO values during experiment 2

Figure S5 shows DO and ORP concentrations recorded during experiment 2 at a depth of 75 cm. A correspondence between the two monitored parameters is observed.

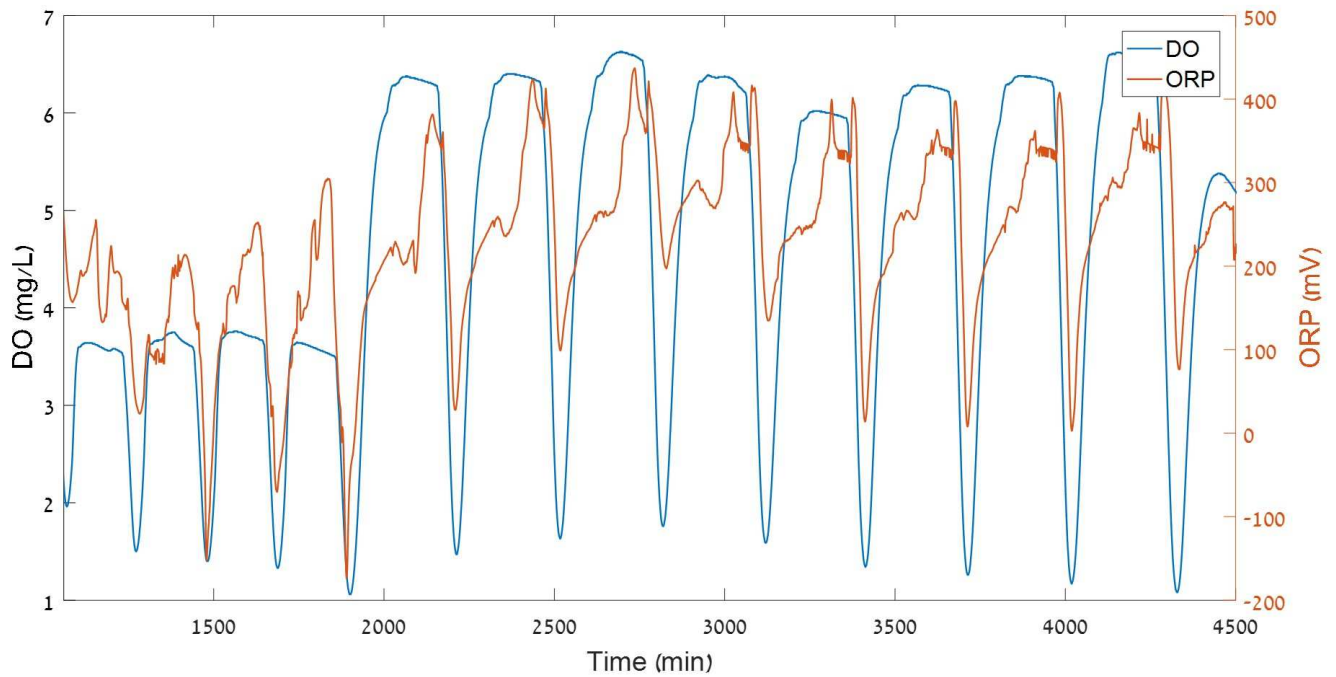


Figure S5. DO and ORP concentrations at 75 cm depth during experiment 2