COMMENTS COMPLIANCE MATRIX FOR THE BACHELOR OF SCIENCE IN CIVIL AND ENVIRONMENTAL ENGINEERING FOR THE FINAL YEAR PROJECT ORAL DEFENSE PRESENTATION HELD ON THURSDAY 21ST MARCH, 2024

By: ERIC MANEDE S15B32/445

COMMENT		RESPONSE	LOCATION ON THE REPORT	PAGE NUMBER
1	Include the year for the establishment of the standard in the result.	Year 2008, second edition, section 4.1, table 1, page 4.	Chapter 4	18
2	Values for Dissolved Oxygen (DO) are higher than recommended standard and this is worrying for drinking water	The values of Dissolved Oxygen in the treated water is expected to rise from the aeration process that adds oxygen to the water in order to facilitate the redox reactions of Fe^{2+} to Fe^{3+} (An at el, 2021). On the other hand, there is a significant increase of Dissolved oxygen from 6.5 mg/L all the way to 25.5 mg/l which is rather abstract and questionable. Further investigations gave that the dissolved oxygen meter gave hard time to use and operate as it was not powering up initially before we carried out the tests due to the batteries that had spent a while in the	Appendix E (Lab reports)	50

		equipment thus hindering its functionality. After confirming the faultiness of the meter, we tried to calibrate the equipment using Distilled water but this was in vain as the DO meter still gave abstract values. This implies that the meter was faulty because we as well double checked the DO values of our treated water samples using a different DO meter which gave us a value of 6.3mg/L with is within the acceptable range of the Uganda Standards of Treated Potable water. Therefore, our former results of DO have been discarded since they were wrong		
3 4	Test residual phosphoric contents in the water to ensure total removal. Do more literature to ascertain how to reduce phosphoric acid in water	Phosphoric acid was used in the chemical activation of the Carbon from the saw dust. The Chemically activated carbon from the sawdust was thoroughly washed with distilled water followed by pH tests on the residual water. The pH was within the acceptable range of 6.5 to 8.5 implying no contamination. In addition, activated carbon synthesized using phosphoric acid has good acceptance in nutrition, water, as	Chapter 4	19

		well as chemical and pharmacological needs because of its non-contaminating nature (Ibsa Neme, 2022) In order to confirm the absence of any phosphoric acid and phosphoric content residue in the water, Total phosphorous or a phosphate test can be carried out. Phosphate tests were then carried on the respective water samples from the Conventional, PAC 2.5cm, PAC 5cm and PAC 7.5cm. It was found that there was 0 ppm of phosphates according to the phosphate strips color coding. The pH values of the treated water also gave values within the range of 6.5 to 8.5 according to the Uganda National Standard (2008) implying that there was no phosphate residue in the treated water.		
5	Adjust your topic to neutralize iron rather than comparative study. However, look into the deeper chemistry so that	No, because neutralizing refers to the process of bringing a substance to a state of neutrality, usually by adding another substance with an opposite effect (Sołoducha, 2020).	Cover page	-

	the final water is drinkable.	For example, $HCl_{(aq)}+NaOH_{(aq)}\rightarrow H_2O_{(l)}+NaCl_{(aq)}$. when hydrochloric acid (HCl) reacts with sodium hydroxide (NaOH), they neutralize each other to form water (H_2O) and sodium chloride (NaCl) salt. So, the aim of neutralizing is to balance the pH of a solution, bringing it closer to a neutral pH of 7. However, neutralizing does not apply to our study since we are dealing with redox reaction (reduction of iron) but not acid-base chemistry.		
6	What are the limitations of the conventional method that the PAC approach addresses?	**Incomplete Removal of Dissolved Iron** Conventional methods may not achieve complete removal of dissolved iron, especially at low concentrations of (0.1 to 1) mg/L while the adsorption kinetics and equilibrium behavior of PAC for dissolved iron removal are higher to enhance treatment efficiency (Nodeh, 2020). This was properly depicted in the Laboratory reports where the Conventional Method reduced the Iron Concentration from 41.44	Chapter 4 Under Section 4.3 Choosing the Optimal Filter Unit	26

		to 1.98 mg/L whereas the PAC approaches reduced this to 0.38, 0.33 and 0.25 mg/L for the thicknesses of 2.5. 5 and 7.5 cm respectively.		
7	Consult with your supervisor for more guidance	Consultation was successfully done and this table was under the guidance of my Supervisor (Eng. Prof. Eleanor Wozei).	-	-