

11.59 Outlined below is the sequence of unit operations and chemical additions used in the treatment of a well-water supply. Briefly state the function or purpose of each unit process and the reason for each chemical addition.

1. Prechlorination at the wells.
2. Mixing-flocculation-sedimentation in flocculator-clarifiers using split treatment with lime and alum added to one leg and potassium permanganate to the other leg.
3. Granular-media filtration.
4. Postchlorination.

11.59

1. Prechlorination suppresses iron bacteria and initiates oxidation of iron and manganese.
2. Flocculator-clarifiers provide chemical mixing, flocculation and sedimentation. Lime provides partial precipitation softening, and alum coagulates the calcium carbonate precipitate. Potassium permanganate oxidizes iron and manganese.
3. Filtration removes suspended solids.
4. Postchlorination is to establish a disinfecting chlorine residual.

11.60 Consider the following sequence of unit operations and chemical additions used in the treatment of a river-water supply. Briefly state the function or purpose of each unit process and the reason for each chemical addition.

1. Presedimentation with polymer addition.
2. Activated carbon available when needed.
3. Mixing and flocculation with the addition of alum and polymer.
4. Sedimentation.
5. Addition of activated carbon.
6. Granular-media filtration.
7. Postchlorination.

11.60

1. Presedimentation reduces turbidity, particularly silt, by sedimentation. Polymer is added to enhance settling.
2. Activated carbon adsorbs taste and odor producing compounds.
3. Alum is a coagulant and polymer is a flocculation aid.
4. Sedimentation removes settleable floc.
5. Same as 2.
6. Filtration removes nonsettleable floc.
7. Postchlorination is for disinfection and to establish a disinfecting chlorine residual.

WT-8