

**Sedimentation:**

Sedimentation is a physical process that separates settleable solids from influent by gravitational action. These solids include particulate matter, chemical floc, precipitates in suspension and other solids. Sedimentation takes place in settling or sedimentation tanks, where water rises vertically for discharge through effluent channels in specific flow patterns appropriate to tank size and shape. Water flows horizontally through the sedimentation basin, while the water slowly rises, the floc settles in the opposite direction and is expelled mechanically by continuous-action sludge removal machinery. The process does not remove all of the floc. Particles lighter than the overflow rate flow out with the effluent, and are removed by filtration. Sedimentation basin sludge is disposed of by passing it to a lagoon and holding, or directing it to the sanitary sewer. Sedimentation balances time efficiency against removal-rate efficiency. While the physical laws of gravity work in sedimentation, allowing the removal of materials too small, the lighter materials are more efficiently removed by filtration in the next water treatment process stage.

**Filtration:**

Filtration is also a physical process, one that occurs naturally for groundwater sources. Surface waters filtrate through porous layers of soil where they eventually recharge groundwater, reducing suspended matter and microorganisms to a level that ensures groundwater usually needs no treatment other than disinfection. Filtration of surface water is the last physical step in the process of producing potable water that meets the safe drinking water act turbidity requirement of 0.5 NTU. Generally, about 5% of the suspended solids and other impurities remain after sedimentation. This small percentage of remaining not-settleable floc particulate matter causes noticeable turbidity, and may