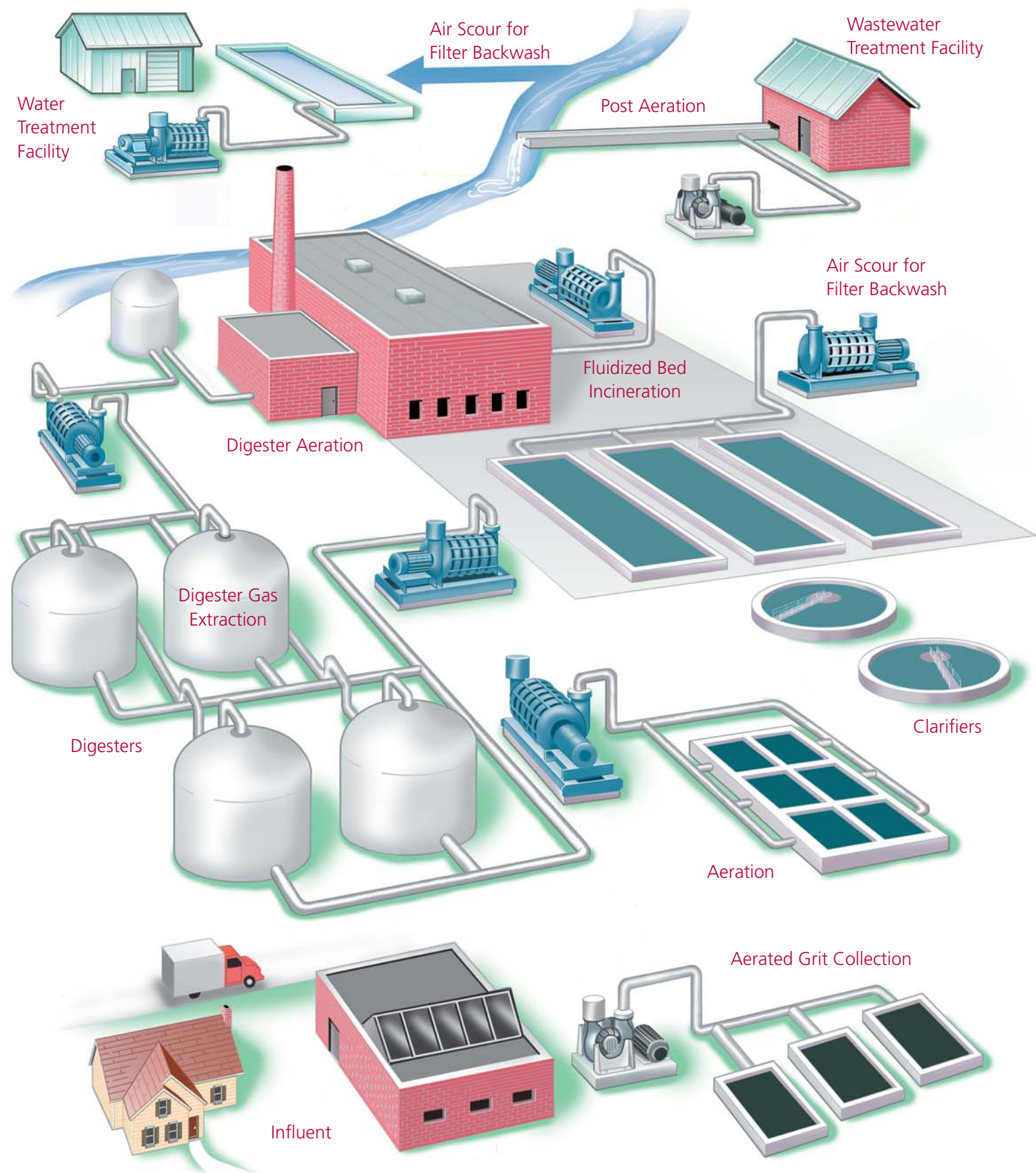
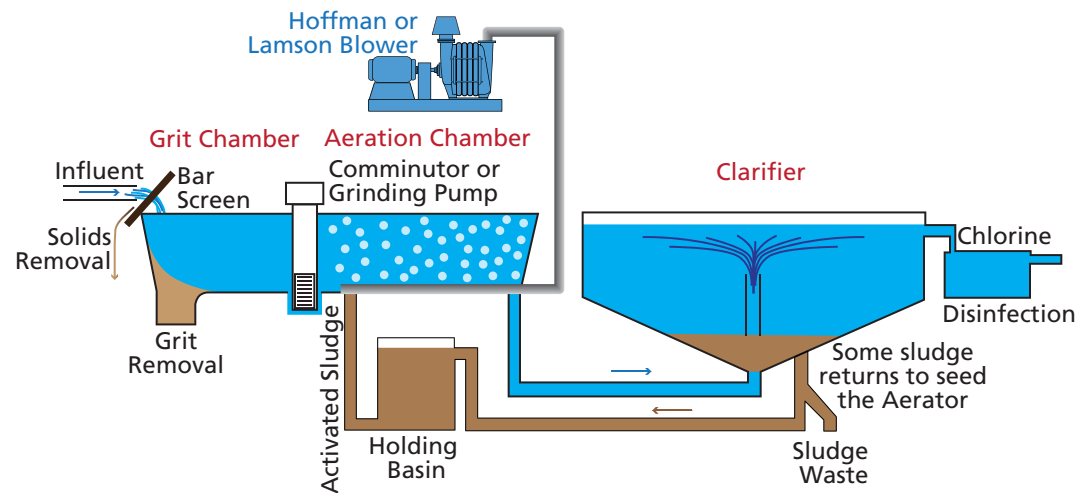


Wastewater Treatment Overview



Wastewater treatment methods vary greatly. The volume and composition of the sludge in the influent, as well as how the sludge residue will be disposed, all dictate design aspects of the plant.

A large volume of wastewater will preclude a simple batch system that might be appropriate for a smaller scale treatment facility. Sludge with low potassium or phosphorus content or loaded with heavy metals would not be suitable for spreading on soil.



B.O.D. (Biochemical Oxygen Demand) very quickly. B.O.D. is simply the food matter in the water. This organic matter will be consumed in a couple of hours. The air that bubbles up not only feeds oxygen into the process, but keeps the microorganisms suspended so they don't settle out.

- After the aeration chamber, water enters the clarifier or sedimentation tank. After consuming the organic matter, the microorganisms have food, grit and particulates stuck to their outer enzyme coating. The added weight makes them sink, or "floc out" to the bottom of the clarifier. Some of this sludge is removed. Some of it returns to the aeration chamber to help seed the next batch.
- Occasionally, after the aeration process, the water enters another tank with a sand filter bottom. Gardner Denver blowers are used to backwash the sand to keep it filtering properly.

Basically, the wastewater treatment plant process allows solids to settle out and for microorganisms to then break down the remaining organic matter. Each area of the plant has a specific function:

- Raw wastewater is run through a bar screen. The deflected large solids may be hauled away or reground and reintroduced to the treatment process.
- After passing through the bar screen, the influent enters the grit chamber. This is a large basin that allows the water to slow down and the grit to settle out. Grit includes sand, coffee grounds and eggshells. This material cannot be broken down and must be hauled away.
- The remaining water reaches a grinding pump, called a comminutor. Large pieces in the water are shredded, making it easier for the microorganisms to consume it.
- Then the water enters the aeration chamber where oxygen enriches the water and microorganisms are added. The organic matter begins to break down. The microorganisms multiply rapidly and consume the
- The sludge that will return to the aeration tank is held for ten days in a holding basin. Each day, a new layer of sludge is added. The oldest layer each day moves to seed the activation chamber. During the ten day period, the sludge is activated (stressed) so that it becomes extremely hungry and ready to multiply. About one fifth of the sludge that is removed from the process can be used as a soil conditioner after dewatering or in liquid form. Another method of sludge removal is landfilling.
- When landfill space is not available, wastewater treatment plants turn to incineration. Gardner Denver blowers are used in fluidized bed incinerators and in other incinerators to aide in combustion.
- After the clarifier, the water is called "supernate." Chlorine is added and the water sits in this disinfection chamber while the disease causing microorganisms are killed.
- The water is now safe to be released into a natural body of water.