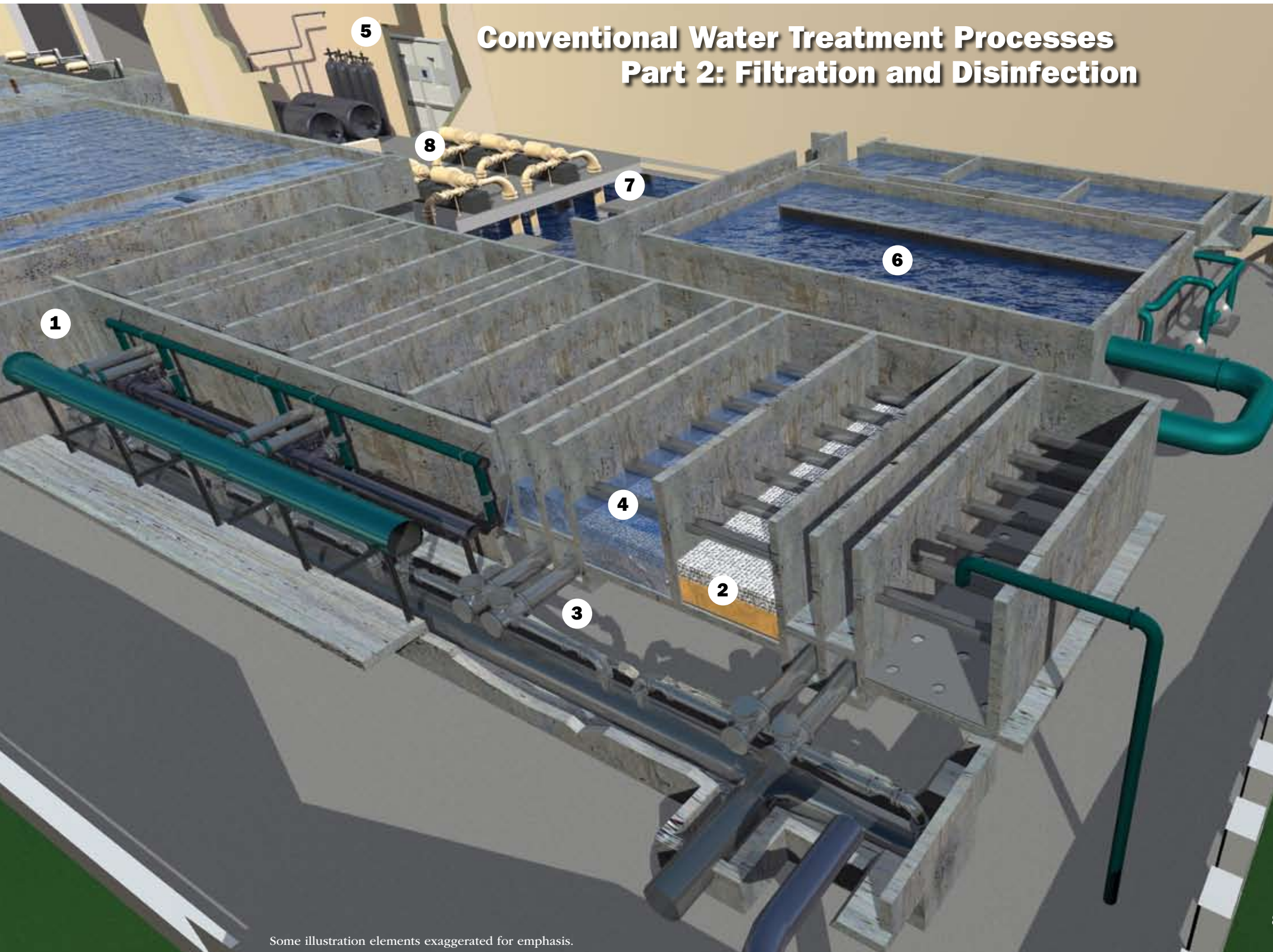


How Water Works

ILLUSTRATED PROCESSES, EQUIPMENT, AND TECHNOLOGY

Conventional Water Treatment Processes Part 2: Filtration and Disinfection



Filtration of suspended solids occurs when water passes through a bed of granular material called filter media. The suspended material removed from surface water can include floc from the coagulation, flocculation, and sedimentation processes; microorganisms; and precipitates. As water passes through the filter bed, the suspended particles are captured by the media and prevented from passing in the effluent. The water is disinfected to destroy or inactivate disease-causing organisms, such as viruses, bacteria, fungi, and protozoa. Chlorination is the most common disinfection method, but other methods are also used. Next month, How Water Works will begin looking at the distribution process.

1. Filter tanks are generally rectangular and constructed of concrete. Several filter tanks are usually constructed side by side on either side of a central pipe gallery to minimize piping.

2. Dual-media filters usually have a bed of sand covered by a layer of crushed anthracite coal or garnet. Often, a layer of granular activated carbon provides taste and odor control. The coarse layer on top removes most of the suspended particles. The particles that do pass through this layer are removed by finer media below.

3. A filter underdrain system collects the filtered water uniformly across the bottom of the filter and distributes backwash water evenly when a filter must be cleaned.

4. A trough is placed over the filter media to collect the backwash water during washing and carry it to waste.

5. Chlorine is added for disinfection. The chlorination feed equipment is usually housed in a separate room.

6. Finished water basins ensure contact time is allotted for adequate disinfection. Snake-like flow through the basin maximizes contact between chlorine and the effluent.

7. A covered clearwell stores water before it enters the distribution system.

8. Pumps send clean, safe water throughout the community.

Some illustration elements exaggerated for emphasis.