

## FORWARD FLOW PROCESS

# Start:

**INFLUENT FLOW ENTERS** the plant from three directions and converges into one stream.

**1 SCREENING**—Wastewater generated in the Village of Bensenville is conveyed to the plant through three plant influent sewers. The wastewater enters the treatment facility headworks and flows to one of two mechanical fine screens where coarse solids (“rags”) are removed. Each screen discharges the removed screenings into its respective wash press. The wash presses remove the treatable organics before conveying this material to a dumpster where they will await landfill disposal.

**2 GRIT REMOVAL**—Wastewater flows from the mechanical screens through channels to the vortex style grit tank. Coarse inorganic material is removed in the grit tank. This material is not amenable to further treatment and may cause damage, excessive wear, or otherwise impair the performance of downstream processes. The grit tank has a grit pump that is used to pump the grit from the bottom of the grit tank to the grit washer. The grit washer separates the water and organics that are pumped with the grit and produce a cleaner, dryer grit. An auger on the grit washer conveys the grit to a dumpster where it will await landfill disposal. After grit removal, the raw wastewater is sampled.

**3 INFLUENT PUMPING SYSTEMS**—The Bensenville WWTP employs up to four screw pumps to lift the influent wastewater to a higher elevation after preliminary treatment so it flows by gravity through the rest of the treatment plant.

**4 ACTIVATED SLUDGE**—The activated sludge treatment system consists of two aeration tank trains with anaerobic, anoxic, and aerobic zones. Wastewater is combined with return activated sludge (RAS) to form mixed liquor (ML) before entering the two trains. An anaerobic and an anoxic zone are incorporated into the system design to allow for biological phosphorus removal and nitrogen removal (conversion of nitrate to nitrogen gas) resulting in reduction in the phosphorus and total nitrogen discharged from the facility. Air is provided to the aerated zones with blowers and fine bubble diffusers. The anaerobic and anoxic zones are mixed with floating surface mixers.



**5 FINAL CLARIFICATION AND RAS PUMPING**—Following the activated sludge process, the ML flows to the Mixed Liquor Division Box, which controls flow to each of the two final clarifiers. The clarifiers use quiescent conditions to allow the biological solids to settle from the water. Solids separated in this process are pumped from the bottom of these tanks and returned to the activated sludge process or wasted as biosolids.



**6 TERTIARY FILTRATION**—The treated secondary effluent flows by gravity from the clarifiers to the tertiary sand filters. This process further removes suspended solids from the clarified effluent. Effluent from the tertiary filters then flows through the effluent flow metering Parshall flume.



**7 DISINFECTION**—From the Parshall flume the flow continues into the chlorine contact tank. This process kills any bacteria that remains in the effluent stream. The effluent is then dechlorinated before flowing by gravity into Addison Creek.



**8 EXCESS FLOW AND FLOW EQUALIZATION TANK**—Excess flow is diverted to an excess flow and flow equalization tank. This tank allows temporary storage and partial treatment during wet weather events.

