

Primary Settling Basins



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There are three primary settling basins at the plant. Primary settling basins remove settleable solids (raw sludge) and the skimming of scum from the flow stream. The sludge-collecting unit consists of a set of plows in the bottom of the tank. The plows move at the rate of 10 fpm. The plows push the primary sludge to a sludge collection hopper near the center of the tank.

The Primary Clarifiers have a 90-foot diameter and a 10-foot sidewall water depth. The water depth at the center is 13.7 feet with a radial slope of approximately one in twelve inches. The design flow capacity for these clarifiers is 37.5 MGD, however the rate is limited to 36 MGD peak and 34 MGD sustained due to the bottlenecks downstream of the primaries. The total volume of the tanks is 1.4 million gallons.



Monyo Progressive Cavity Pump

An average of 88,775 gallons of raw sludge is removed from the primary clarifiers daily through 6-inch and 8-inch lines with Monyo progressive cavity pumps to the anaerobic digestion system. The progressive cavity pumps are controlled by the PLCs. Each primary can be pumped at a minimum of 4 minutes to a maximum of 15 minutes each hour and the start time for each tank is offset by 20 minutes. The operators take samples of the raw sludge and gauge the thickness of the sludge. He then adjusts the pumping minutes to maintain the thickest sludge and not more than one to one-and-a-half feet of sludge in the primary clarifiers. The average primary sludge is 3.1 percent solid, with 75 percent volatile. A monthly average of 2,663,242 gallons of primary sludge are pumped to the primary digesters.

The skimmers collect grease off the surface and fill a grease pit, which is decanted automatically and pumped to the anaerobic digester at least once per day, however during storm events the frequency will increase. The build up of grease is a problem in the raw sludge pumping system. The plant annually cleans the primary clarifiers and pressure washes the sludge lines from the center of the primaries to the inlet of the raw sludge pumps with the Service Department's flusher truck.



Primary Effluent Pump Station

The Primary Effluent Pump Station has four vertical pumps, two rated at 15 MGD, one 12 MGD and one 8 MGD, that pumps the flow to the trickling filters. The system is automated in conjunction with several level detectors that automatically control the starting and stopping of the pumps. The SCADA system will increase the pumping capacity if the level in the PEP pit surpasses 6.9 feet and lower the pumping capacity when the influent flow rate drops below preset points. The PEPs pit has a recirculation valve that maintains a liquid level of no less than 6.5 feet. The recirculation valve gets its PEPs pit makeup water from the secondary clarifiers effluent channel.