

Abstract

An assessment was conducted during the pre-commissioning and commissioning period of an integrated wastewater treatment plant (WWTP). The WWTP has been designed to receive multiple effluents from central utility facilities (CUF) and other neighboring plants with varying wastewater characteristics. Commissioning of the plant was necessary as part of the quality assurance for the plant design specification. Operating units of the WWTP during commissioning are the intake collection, effluent monitoring, primary treatment operation, waste homogenizing and biological unit of processes. The assessment includes the monitoring of average flow rate, total suspended solids (TSS), oil & grease (O&G), pH, temperature, biochemical oxygen demand (BOD), chemical oxygen demand (COD), dissolved oxygen (DO), mixed liquor suspended solid (MLSS), and solid settling test. A complete Standard B analysis was conducted on the treated effluent at the first day and final day of the commissioning period. The total COD loading in this plant is 1488 mg/l and at the final discharge point the COD reading was 63 mg/L. It shows that the WWTP has the COD removal rate of 96%. The total TSS loading is 331mg/L and at the final discharge point the TSS reading was 27 mg/L. The average BOD from the untreated effluent streams was 109 mg/L and at the final discharge point the BOD reading was 10 mg/L. The WWTP has almost 91% of BOD treatment efficiency. The DO reading was very satisfactory throughout the 2 months pre-commissioning period with an average reading between 3.0 to 4.0 mg/l and during the commissioning period of 8 days, an average DO reading of 4.2 mg/L was observed. The average MLSS reading was 1690 mg/L. The integrated WWTP is considered operating within the DOE Standard B discharge limit.