

Lagoon Influent Flow Monitoring Criteria (POTWs)

Influent flow monitoring data is very important to obtain for lagoon treatment systems. And while the current regulations (10 CSR 20-8.140(8)(G)) require that flow measurement facilities be provided for large lagoon systems on both the influent and effluent, many lagoon systems in Missouri do not have the ability to measure influent flow, and this data is currently not required to be collected by the Missouri State Operating Permit (MSOP). Influent flow data is needed for the design of upgrades, evaluation of inflow and infiltration (I&I) of the collection system, and overall operation of a lagoon system. A lagoon system is designed to provide hydraulic detention time, working volume (treatment), and to mitigate peak flows from the collection system. Because of this, the value of effluent monitoring data is diminished with respect to operational monitoring and design. The design of upgrades to an existing lagoon system and/or for a mechanical plant replacement cannot be completed without an understanding of the hydraulic and organic loading characteristics of the system. Influent monitoring will also allow for observation of peak flows, in both frequency and amplitude, associated with I&I from the collection system. Influent monitoring data will also allow the operator better monitor the detention time and treatment efficiency of the lagoon system.

The following indicators, described below, are criteria that could be used by permit writers to evaluate whether or not language should be placed in the MSOP that requires the permittee to install an influent flow monitoring device (if one does not already exist) and submit influent flow data with discharge monitoring reports. Inclusion of this permit language would be evaluated on a case-by case basis. At this time, these criteria would be used for POTWs only.

Each of these criteria would not necessarily be used independently to determine whether influent flow measurement is needed, but could be used to evaluate the relative need of this facility to further evaluate operations using influent flow measurement.

1. Facilities that are consistently operated as a batch or seasonal discharge (i.e. discharge and hold to avoid discharges during recreational season, irrigation-type systems, etc.)
2. Effluent flow measurements nearing or exceeding 80-90% of design flow (only useful if the facility is not operated/permitted as a batch discharge type of facility)
3. Discharge monitoring report data that suggests hydraulic or organic loading over design capacity and/or detention times that are shorter than design
4. Facilities that have a combination of at least two of the following criteria –
 - a. Excessive number of wet weather SSO or bypass events per year/month relative to the size of the collection system (i.e. > 4/100 mi sewer/year)
 - b. Do not have a written program to inspect, identify, and address I&I issues in the collection system
 - c. Annual I&I Progress Reports (as required by the MSOP) are missing or incomplete, OR reports are complete, but show that little to no progress has been made over time

5. Diluted influent strength – BOD or TSS concentrations frequently outside of the range (high or low) of normal (200-400 mg/L) untreated domestic wastewater, or outside of the range of what would be considered normal for the influent characteristics of that community
6. Percent removal requirement is not consistently being met
7. Facilities that serve customers outside of their political boundaries (i.e. subdivisions, satellite communities, etc.), if no flow meter or written agreement to manage flow exists with the outside customers
8. Facilities that are required to upgrade as part of another schedule of compliance, or are already in the process of upgrading
9. Facilities that already have the equipment and ability to measure influent flow, but are not currently monitoring, recording, or submitting this data on their discharge monitoring report (in this case, only addition of the permit requirement to submit influent flow data is needed)

DRAFT