



Delivering the Measure of Possibility

Wastewater Applications Guide

Pulsar Meters in the Wastewater Treatment Process

1. Sewer Flow (Sanitary, Stormwater, Combined)

Channel Type: Underground closed pipe, partially full to full

Meter: AVFM 6.1, dB Transducers, FlowCERT, MantaRay, MicroFlow, OCF 6.1, Stingray 2.0

Why: Collection system sub-metering. Infiltration and inflow studies. Preventing overflow events. Acquiring baseline data of current system performance, in consideration of expansion due to construction. Underground pipes are not accessible for clamp-on style meters and pipes may not be full. Area-velocity or open channel technologies are best and can be installed via manholes.

2. Stormwater Basin Flow & Level

Channel Type: Underground closed pipe, partially full to full

Tank Type: Underground structure

Meter: AVFM 6.1, dB Transducers, dBR Radar Transducers, MantaRay, OCF 6.1, SLT 5.0, Stingray 2.0, Ultra 4, Ultra 5, UltraTWIN

Why: Measure influent, effluent, and level in the detention/retention tank to verify performance. Underground pipes are not accessible for clamp-on style meters and pipes may not be full. Area-velocity or open channel technologies are best and installed via manholes. Ultrasonic level sensors can withstand temporary submersion in tanks which flood during extremely heavy rainfall.

3. Pump/Lift Station Flow & Level

Tank Type: Underground structure

Meter: dB Transducers, dBR Radar Transducers, DFM 6.1, DFS 5.1, PSL 5.0, SLT 5.0, Ultra 4, Ultra 5, UltraTWIN, The Ultimate Controller

Why: Measure discharge flow rates to calculate volume changes or to understand when pump demand increases. Measure discharge with flow switch to protect pumps from running dry. Measure level and provide 4-20 mA output to user's PLC to control pumps. Or, measure level and control pumps in a single instrument with alternation and a redundant sensor input.

4. Plant Influent

Channel Type: Exposed closed pipe or open channels

Meter: AVFM 6.1, dBMACH3, DFM 6.1, MicroFlow, OCF 6.1

Why: Monitor what is coming in to the plant, for visibility to average, max, and minimum flows. Compare total influent to total effluent.

5. Bar Screen Differential

Channel Type: Open channels before and after screening process

Meter: dB Transducers, DLT 2.0, OCF 6.1, UltraTWIN

Why: Measure level on each side of the screen to trigger rake to clean screen. Manual monitoring not required, and reducing rake run time saves energy.

6. Plant Influent Post Bar Screen

Channel Type: Open channel

Meter: AVFM 6.1, dBMACH3, MicroFlow, OCF 6.1, Ultra 4, Ultra 5

Why: Measure total plant influent that will be treated. Measuring at this location takes any losses through the screening process into account.

7. Grit Chamber Level

Tank type: Settling tank

Meter: dB Transducers, Sludge Finder 2 with Viper transducer, Ultra 4, Ultra 5, UltraTwin

Why: Avoid tank overflows by monitoring the level in the grit chamber. Rapidly rising levels could indicate blockage in the grit discharge line, or from the grit chamber to the next process.

8. Grit Removal Flow

Channel Type: Exposed closed pipe

Meter: dB Transducers, dBR Radar Transducers, DFM 6.1, DFS 5.1, Sludge Finder 2 with Viper Transducer, Ultra 4, Ultra 5, UltraTWIN

Why: Measure flow of grit slurry from separation chamber to disposal processes. Ensure lines do not become clogged, or monitor volume of slurry sent to disposal.

9. Primary Clarifier

Tank Type: Clarifier/Settling Tank

Meter: Sludge Finder 2 & Viper transducer

Why: Continuous monitoring of sludge interface levels or sludge blanket is central to the efficient operation of clarifiers, thickeners, and settlement

tanks. Reliable measurement enables a control system to maintain the optimum depth of sludge in the tank. A sludge interface that is too high can result in pollution incidents caused by carry-over into final effluent channel. The Sludge Finder 2 and Viper Transducer is a versatile, accurate, and reliable solution to the problem of accurately measuring interface levels in Primary or Secondary settlement clarifiers/tanks.

10. Aeration Tank

Tank Type: Aeration tank/basin

Meter: dB transducers, dBR Radar Transducers, Ultra 4, 5, Twin

Why: Aeration tanks add air into wastewater to allow aerobic bio-degradation of the pollutant components, allowing for the essential treatment of wastewater. The monitoring of the level in these basins/tanks within the wastewater treatment process is crucial to allow for efficient transportation of treated water around the plant. The UltraTWIN yields the ability to monitor two different channels.

11. Secondary Clarifier

Tank Type: Clarifier/Settling Tank

Meter: Sludge Finder 2 & Viper transducer

Why: Secondary clarification is a vital component of most biological wastewater treatment systems. The objective of these clarifiers is to separate biological floc from the treated liquid waste stream. The Sludge Finder 2 and Viper Transducer is a versatile, accurate and reliable solution to the problem of accurately measuring interface levels in Primary or Secondary settlement clarifiers/tanks.

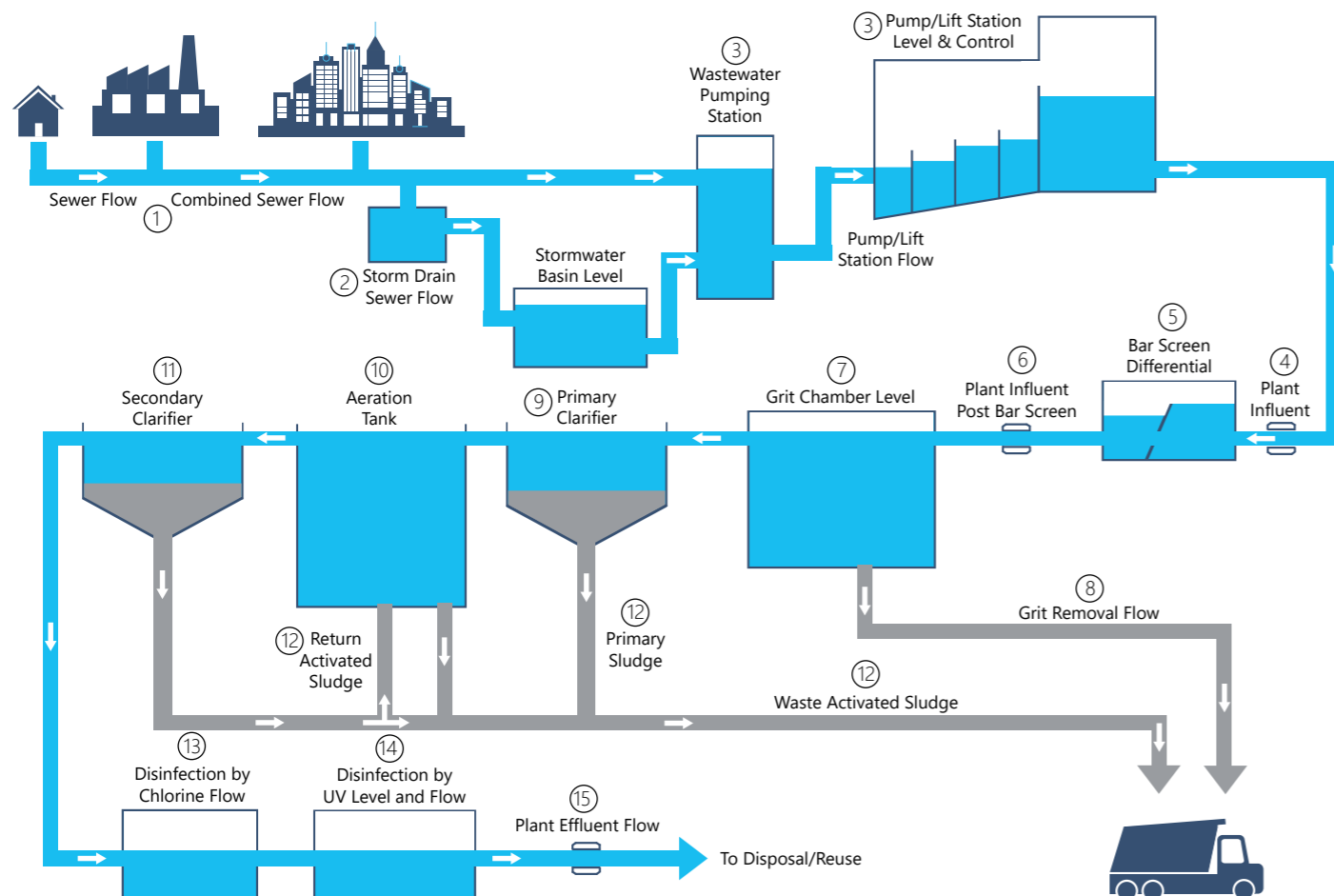
Uniquely, the Sludge Finder 2 is able to reveal and alarm when high levels of FLOC are reached and have a high potential to spill and cause pollution in the local water source. The non-contacting nature of the Sludge Finder 2 and Viper Transducer allows for hygienic, safe, and efficient monitoring of these tank levels.

12. Sludge Flows (Primary Clarifier, Return Activated, & Waste Activated)

Channel Type: Exposed pipe

Meter: DFM 6.1

Why: Rate of sludge leaving clarifiers and being recycled back in are key indicators for system performance. Accurate sludge flow measurement



allows for dynamic control with the varying system operating conditions of a wastewater treatment plant.

13. Chlorine Disinfection

Channel Type: Open channel

Meter: AVFM 6.1, dB Transducers, dBR Radar Transducers, MicroFlow, OCF 6.1, Ultra 4, Ultra 5, UltraTWIN

Why: With Chlorine disinfection, the flow rate must be accurately controlled as the contact time is very important to ensure complete disinfection. If the water travels through the chlorine contact basin too quickly then it will not be properly disinfected. The AVFM 6.1 can be used to control the inlet pump of the basin or an outlet valve/gate to control flow rate. If a flume or weir is installed, an ultrasonic open channel flow meter can be used to measure and control flow.

14. UV Disinfection

Channel Type: Open channel

Meter: dB Transducers, dB Radar Transducers, MicroFlow, OCF 6.1, Ultra 4, Ultra 5, UltraTWIN

Why: The level is important to keep the lamps properly submerged and to not let the level get too

high or organisms traveling at or near the surface may not be destroyed. Level is more important than contact time as the UV radiation destroys organisms in a matter of seconds compared to 30-60 minutes for chlorine. UV lamps can be damaged if not kept submerged. If the channel is equipped with a flume or weir, flow rate and level can be measured with an ultrasonic open channel flow meter.

15. Plant Effluent Flow

Channel Type: Open channel, Exposed pipe flow

Meter: AVFM 6.1, dBMACH3, MicroFlow, OCF 6.1, Ultra 4, Ultra 5, UltraTWIN

Why: Calculate total volume of water being discharged from the plant. Important for tracking plant discharge versus input, for determining how much water is exiting to local bodies of water, and for reporting to government agencies. Some of the plant effluent may be used as recycled or reclaimed water. Measure flow on these pipes to determine how much water is being used for these applications.



INFO@PULSARMEASUREMENT.COM

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Registered Address: 1 Chamberlain Square CS, Birmingham B3 3AX
Registered No.: 3345604 England & Wales*

Delivering the Measure of Possibility

United States

11451 Belcher Road South
Largo, FL 33773
888-473-9546

Canada

16456 Sixsmith Drive
Long Sault, Ont. K0C 1P0
855-300-9151

United Kingdom

Cardinal Building, Enigma
Commercial Centre
Sandy's Road, Malvern WR14 1JJ
+44 (0) 1684 891371

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