Software Architecture Diagram

Pipe Overflow VFS

Reservoir Warning HFS

Reservoir Critical HFS

In Flow Meter

Return Flow Meter

Pump Override Switch

INPUTS

ESP32 S2 Microcontroller
- **Debouncing**
- **MQTT connect**
- **Pump shutdown**

Publish

Every 30s or on change

Subscribe

Adafruit IO + MQTT Broker

Cloud Platform (Adafruit IO)

Alert Notifications

Alert Notifications

Pump

LED Indicators

1   2   3   4   5   6

OUTPUTS

Output LED

1. In Flowmeter
2. Return Flowmeter
3. Pump Status
4. Reservoir Warning
5. Reservoir Critical
6. Pipe Overflow