

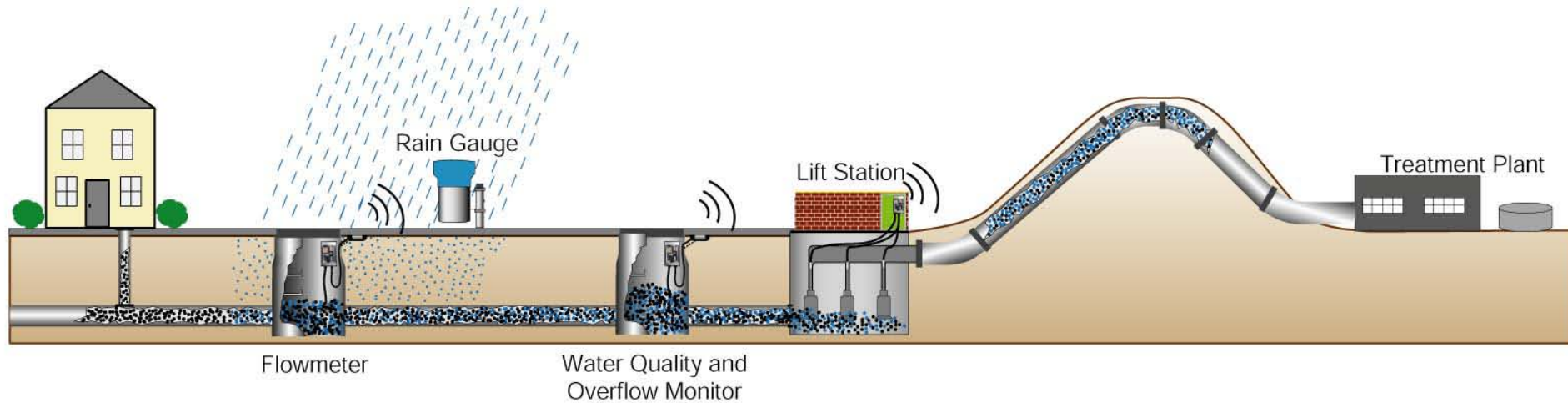


Advances in Collections System Monitoring

Measure more than just level

**Anton Loof
Oratech Controls, Inc.**

Collection System Layout



Locations for Monitoring can include:

- Manholes
- Storm Water and Overflow Basins
- Lift Stations
- Rain Fall Stations

Manholes

Challenges

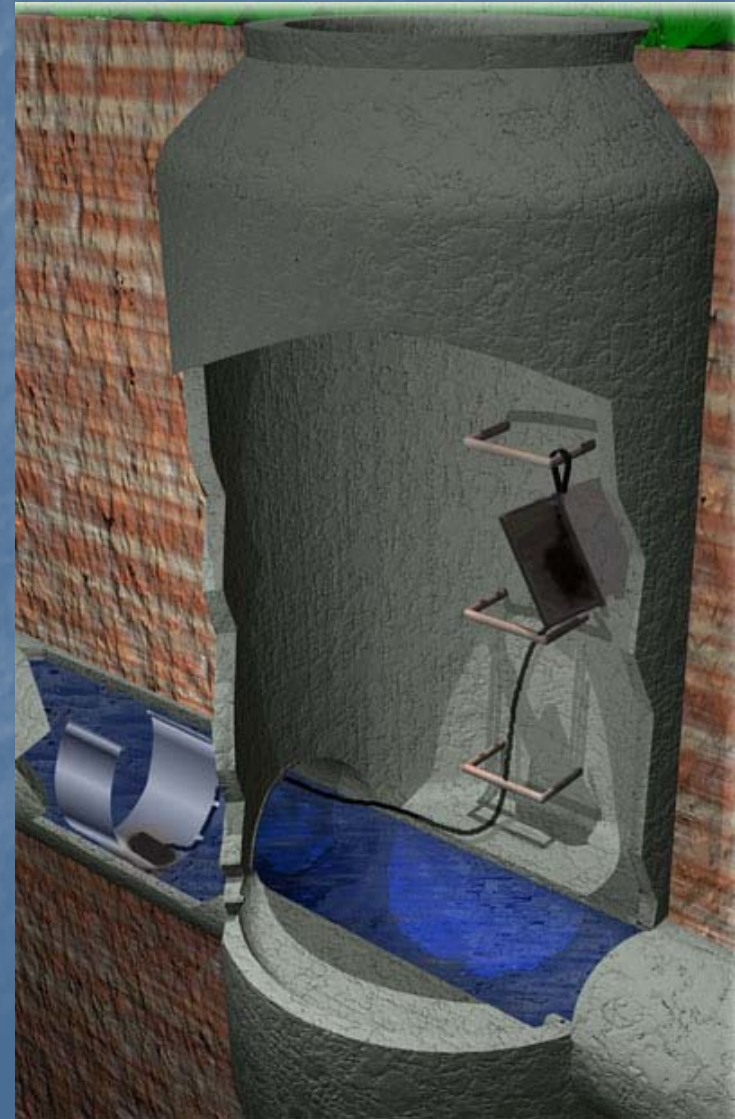
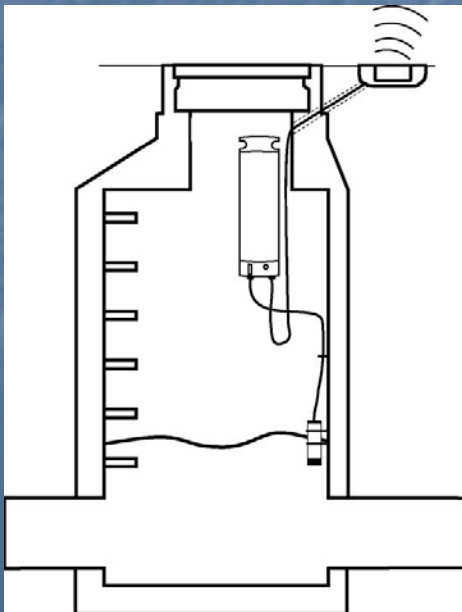
- Confined Space
- Remote Sites
- Traffic
- No AC Power
- Private Property



Manholes

What Can You Monitor

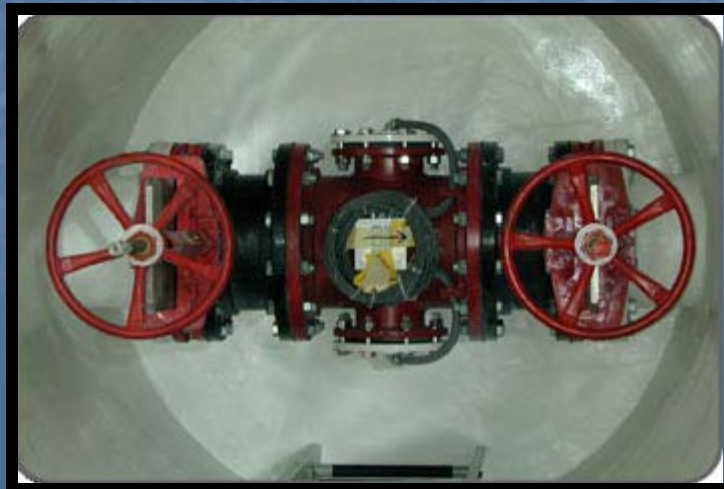
- Flow
- Hi or Lo Level
- SSO Alarms
- Intrusion



Manholes

What Can you Monitor

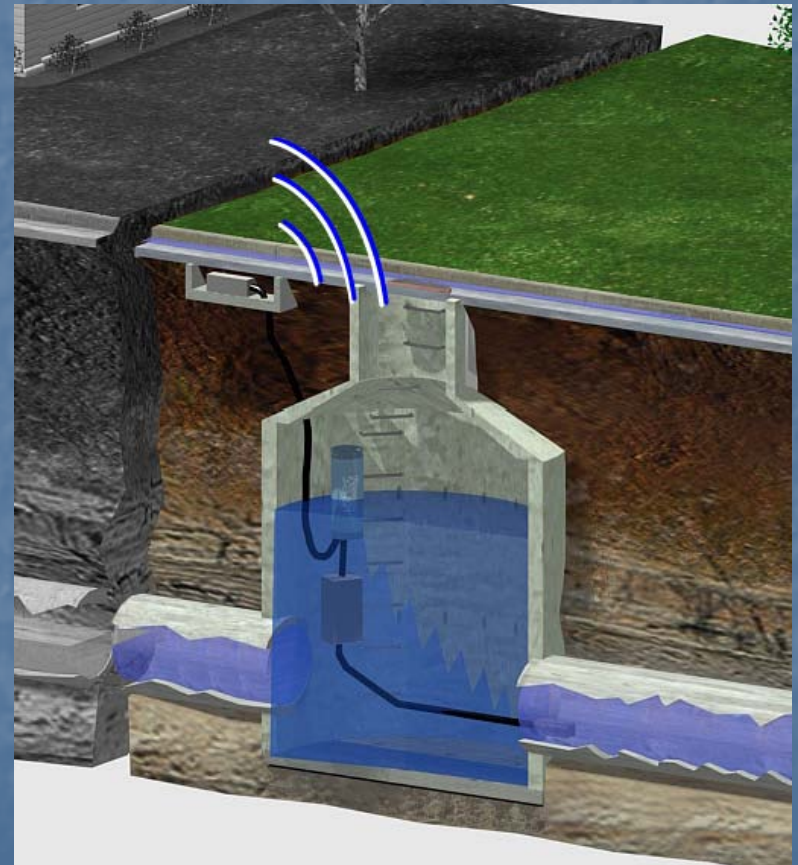
- **H₂S** Concentration
- Industrial Waste Water Quality such as pH
- Conductivity to Detect Salt Intrusion
- Magmeters



Manholes

What's new

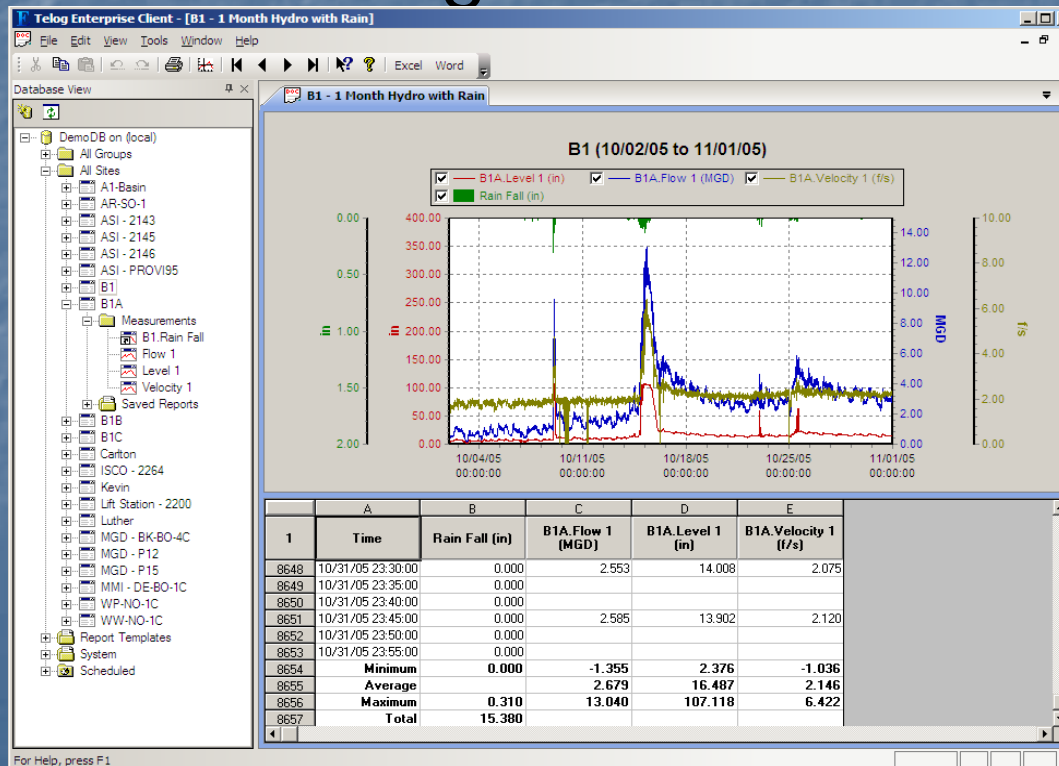
- Long Life Battery Powered Systems
- Devices with built in Telemetry
- Systems that can measure multiple parameters
- Submersible RTU's
- Systems that can alert on historical trends



Manholes

What's new

- Specialized Software to automatically gather remote data and analyze data
- Export to Modeling Software



Lift Stations

Often monitored for basic alarms only.

- Power Fail
- Level
- Intrusion



Lift Stations

What Can You Monitor

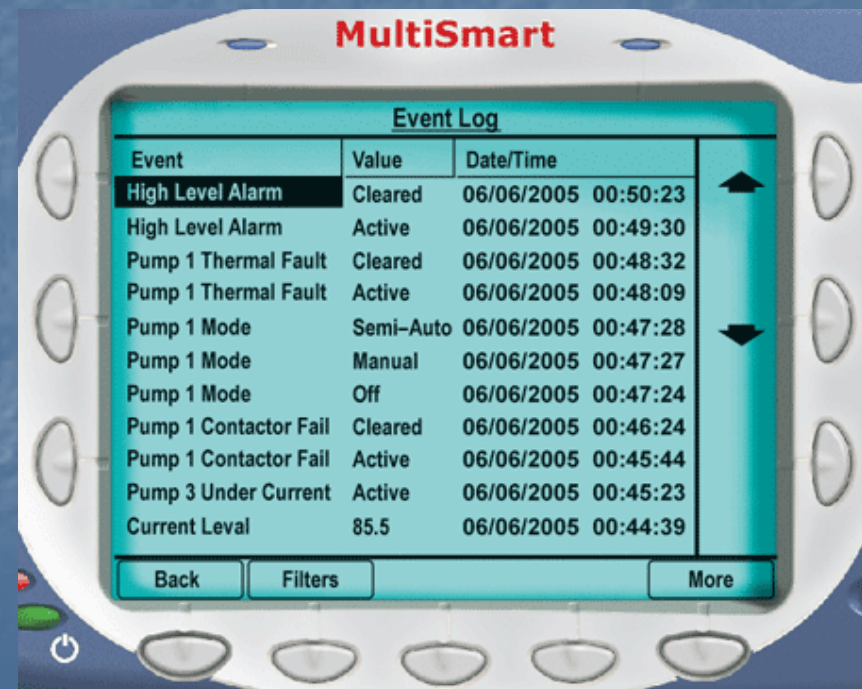
- Flow
- Pump Run Times
- Pump Failure
- Overheated Motor
- Voltage Phase Fail
- Rain Fall to Provide I/I data



Lift Stations

What Can You Monitor

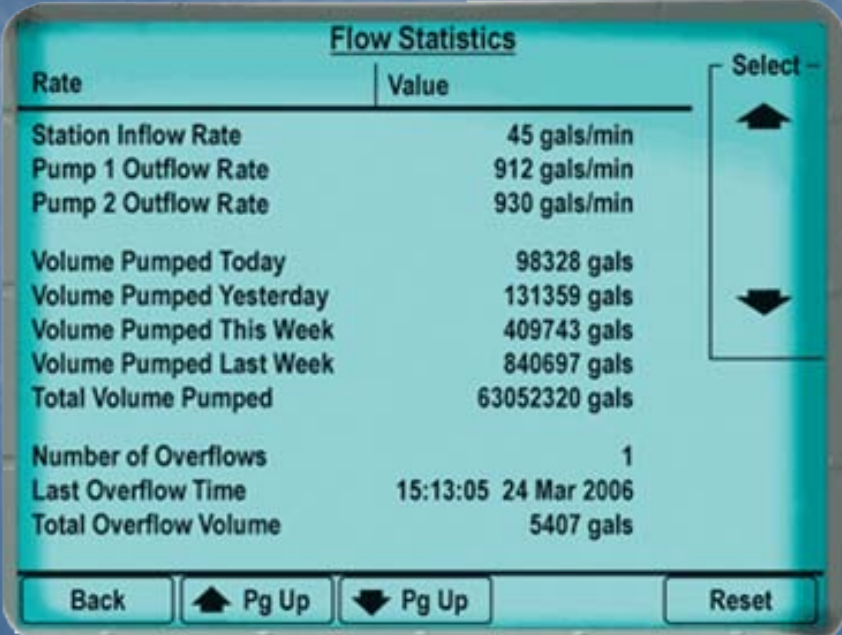
- Pump Starts
- Pump Seal Leakage
- Contactor Failure
- Insulation Resistance
- kVa, Power Factor
- Ground Faults
- SSO Measurement



Lift Stations

What Can You Monitor

- Blocked pump detection
- Pump Efficiency (Gallons/KWh)
- Trend \$\$ / Gallon
- Video



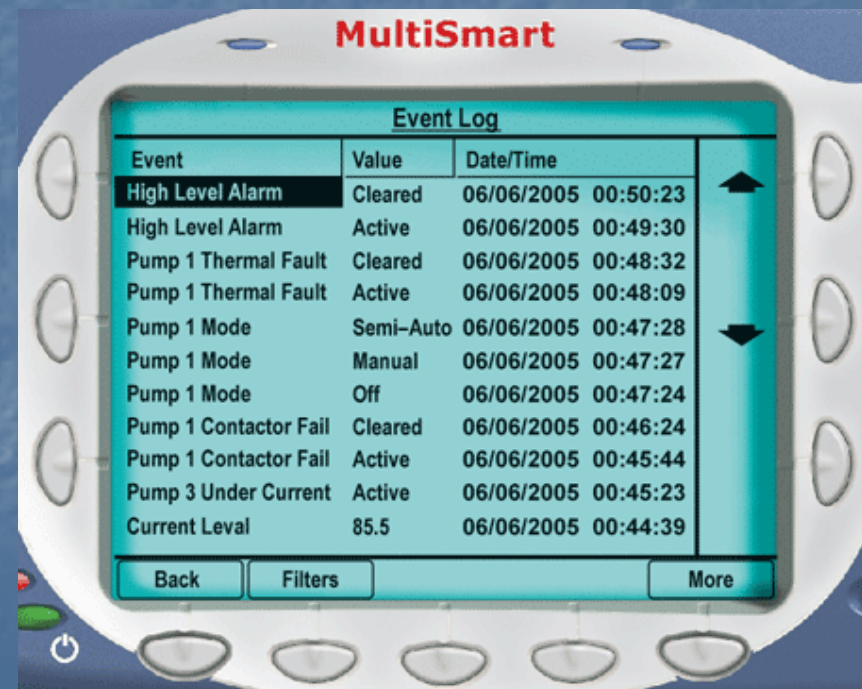
The screenshot displays a 'Flow Statistics' interface with a table of metrics. The table has two columns: 'Rate' and 'Value'. A 'Select' menu on the right side of the table contains two arrow buttons, one pointing up and one pointing down. At the bottom of the screen, there are four buttons: 'Back', 'Pg Up' (with an up arrow), 'Pg Up' (with a down arrow), and 'Reset'.

Rate	Value
Station Inflow Rate	45 gals/min
Pump 1 Outflow Rate	912 gals/min
Pump 2 Outflow Rate	930 gals/min
Volume Pumped Today	98328 gals
Volume Pumped Yesterday	131359 gals
Volume Pumped This Week	409743 gals
Volume Pumped Last Week	840697 gals
Total Volume Pumped	63052320 gals
Number of Overflows	1
Last Overflow Time	15:13:05 24 Mar 2006
Total Overflow Volume	5407 gals

Lift Stations

What 's new

- Pre-packaged controllers that do the previous parameters
- Ability to control station based on Energy usage
- Controllers with Built in Historians



Lift Stations

What 's new

- Purpose built SCADA software
- Reduced Engineering
- Reduced Integration

TwoPumpStation_MTxPC.gdf - GraphWorX32 by ICONICS

Site ID: Site11 Site Name: Smith St
Location: Back of shopping centre car park.

Summary Alarms: Comms, Level, 3 Phase Supply, Analog Fail, DC Supply Fault

Site Notes: Pump Seal fault keeps tripping. Needs a scheduled. This is the first note made for this site

COMMS ACCUMULATORS FULL I/O EVENT HISTORY FLOW

SUPPLY: 201V 201V 203V DC SUPPLY: 11.7 V

Tank Level: 64%

PUMP 1: RUNNING, AVAILABLE, NO FAULT, Last mins run = 3.5, Currents (Amps): A: 17.1, B: 17.4, C: 17.2

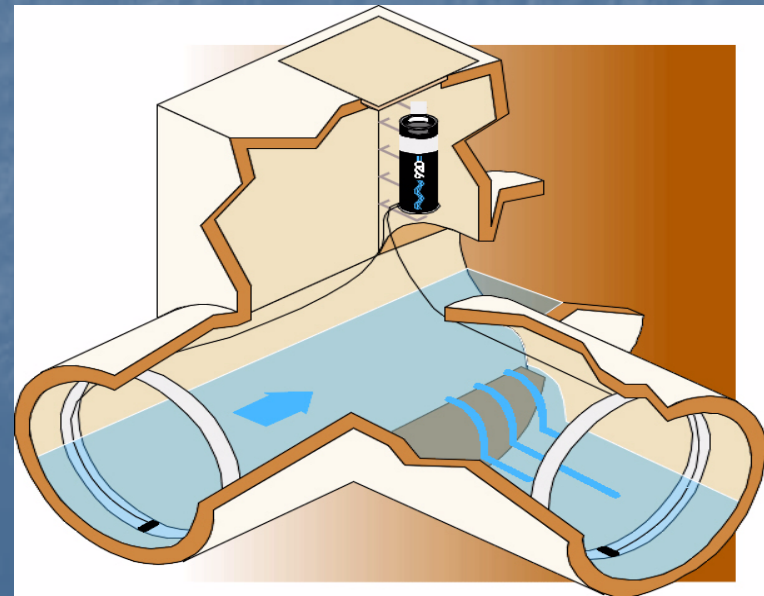
PUMP 2: STOPPED, AVAILABLE, NO FAULT, Last mins run = 8.2, Currents (Amps): A: 16.9, B: 17.1, C: 17.1

Change Pump Mode? Are you sure you want to place pump 1 in OFF mode?

Time / Date	Message	Priority
2:17:42 PM 11/29/2005	Smith St Analog Fail - Active	500
2:13:55 PM 11/29/2005	Smith St DC Supply Fail - Normal	500
1:48:05 PM 11/29/2005	Smith St Motor Overtemp Fault - Normal	500

Surcharge Overflow Chambers

- Measure the amount of surcharge and overflow
- Measure Water Quality during Over Flow



Rain Fall Stations

- Locate on secure buildings such as:
 - Lift Stations
 - Fire Stations



Rain Fall Stations

Features and what to look for

- Telemetry that Pushes data to SCADA
- Long term Battery Powered Sites
- Redundant Rain Gauge Sites
- Can be used in combination with Radar Rainfall data to calibrate Radar Data
- Look for Non-Ferrous materials
- Ability to adjust level
- Secure or weigh down in windy locations



Thank you

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