In partnership with baseform

Reducing treated volumes in networks with I&I detection

A utility targeted an infiltration and inflow (I&I) reduction of 5-10% per year. Using the data analytics software to detect infiltration and rainfall derived inflow (RDI) resulted in potential savings of €1 M.

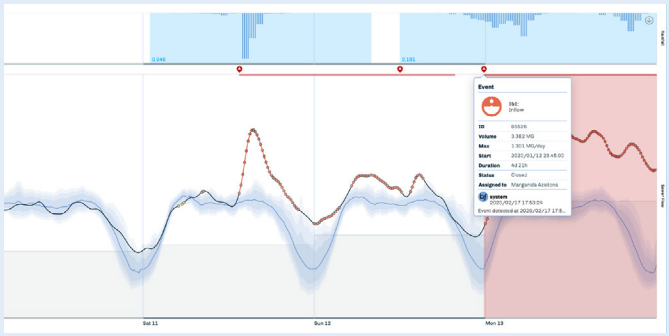
Results include dry weather infiltration flow and continuously updated, basin RDI yield curves as a function of precipitation. These enable real time prediction of their response to storm events, with direct benefits to WWTP management, and its long-term planning.

The unique ability to take in and reconcile billing and AMI/AMR data per basin allows for cross-validation of legitimate sanitary load and increased calibration of the remaining flow components. Indicators per sewer linear foot (or LF), per basin surface area, per capita, or as % of the total allow the utility to prioritize hotspots based on data, quantify the problem, and assess the gains that are progressively made.

The utility uses the I&I/LF indicator to home in on hotspots; in the targeted basins, additional monitoring is installed, and short-term inspect/step-test/rehab projects are prioritized. The software is used to establish base/initial I&I and to monitor the effect of the actions in I&I reduction. A single source of infiltration recently found was alone responsible for 3–4 MGD in extraneous flow.

The tracked down by the software point to an average yearly infiltration volume of 34 MGD. At a treatment cost of $1150/MGal, infiltration alone represents $14 M yearly. With the guided approach, rigorous and automated monitoring and multi-criteria prioritization that the software enables, a conservative estimate of a 7% reduction yearly represents savings in the order of $1 M.

Capacity is another crucial area. Population served is forecast to grow by 20% through 2030, or an expected 2% yearly growth in



sewer flow, impacting the capacity of not only the gravity sewer system but also pumping and treatment plants—all nearing design capacity at present.

Placing a conservative estimate of global capacity increase to meet the projected growth in the region of of $240 M assigns particular relevance to the gains described above, which can significantly delay that need as new capacity is reclaimed through I&I reduction.

The absence of a solution as described would inevitably result in underperforming CIP decisions, at a scale that underpins a clear return on investment for the implementation.

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Possibility in every drop

Utility profile

Population served: 936,250
clients: 240,100
Total network length (water supply): 4,100 mi
Total network length (sewer system): 2,995 mi

Available data systems

- GIS: gravity sewer system, pressure system
- CCTV inspections: records used since 2006
- Sewer flow monitoring: records used since 2015
- SCADA (pumped flows): records used since 2017
- Maintenance/work orders: records used since 2008

Focus of software implementation

- I&I management
- Proactive maintenance and CCTV inspection planning/optimization
- CIP planning (sewer system and WWTPs)

Data leveraged in this case

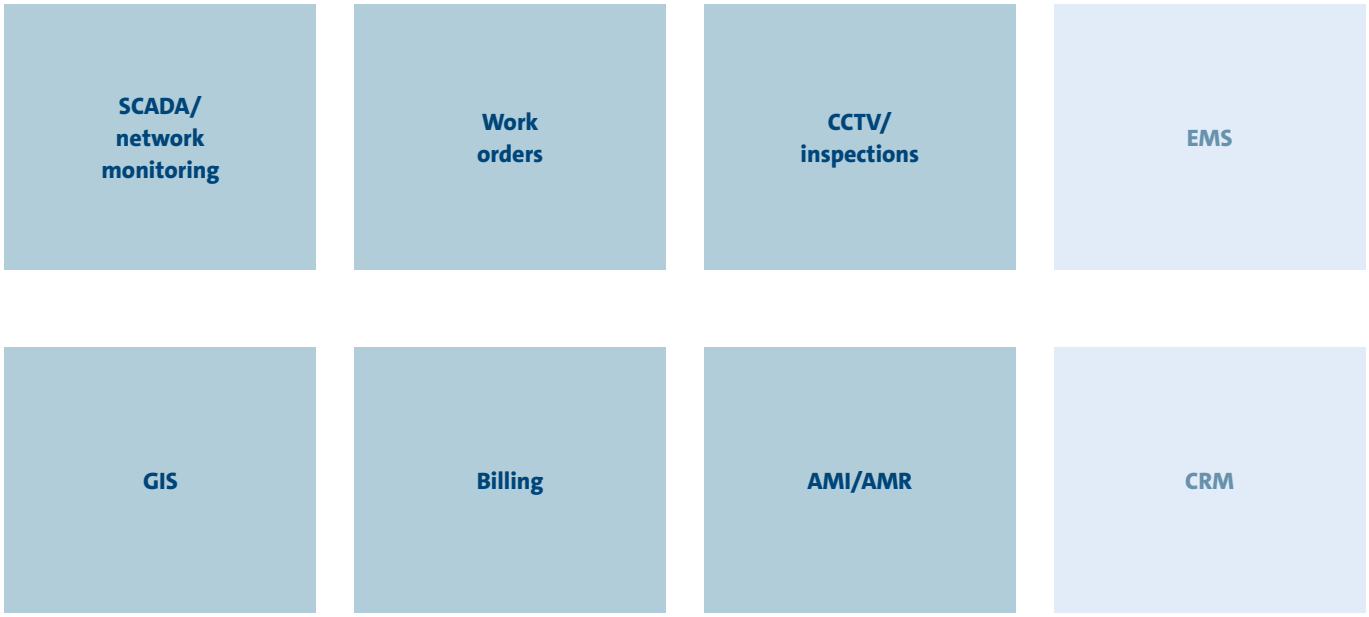
Our software is designed to take full advantage of the data that already exists in the utility, depending on each application objective.

The software connects to the available data systems in an automated, non-intrusive and completely secure manner. In the case of this specific utility and the application described here, data from the systems highlighted below were used.

Grundfos Utility Analytics

Grundfos has entered into a strategic partnership with Baseform to bring powerful digital services to water utilities. The Grundfos global value proposition is being up-scaled to serve the water digital market with Grundfos Utility Analytics, a state-of-the-art Artificial Intelligence (AI), machine-learning asset management technology provided by Baseform.

Find out more at www.grundfos.com



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