



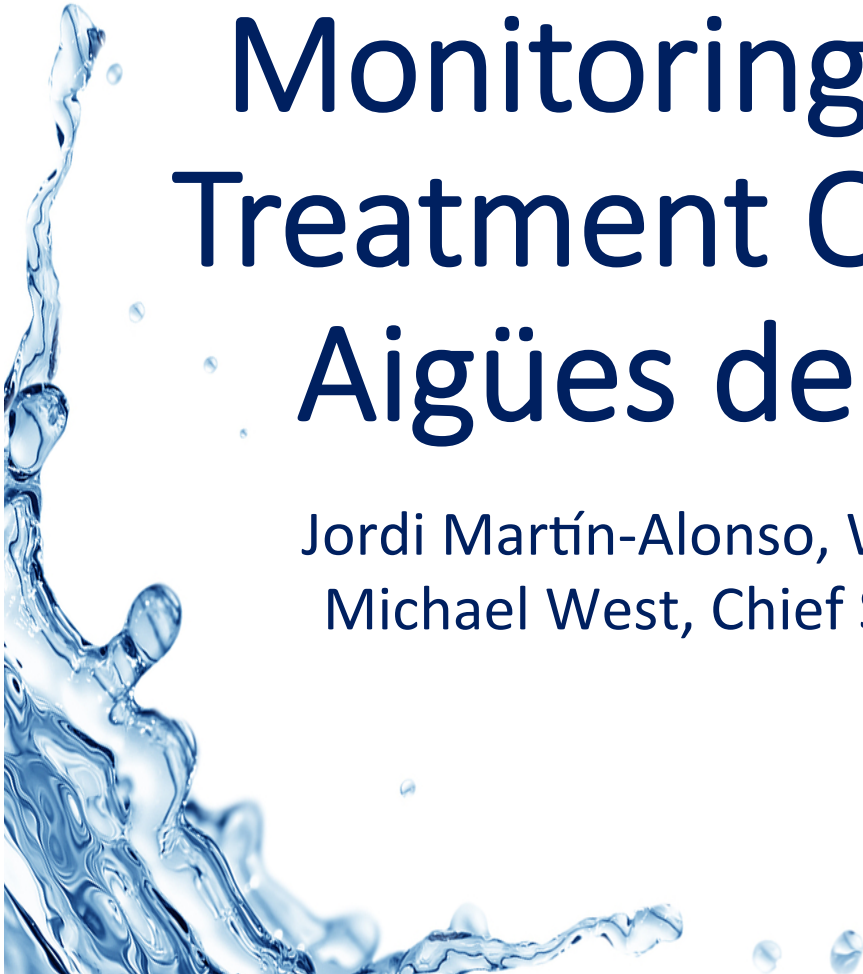
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Data from Online THM Monitoring Aids Water Treatment Operations at Aigües de Barcelona

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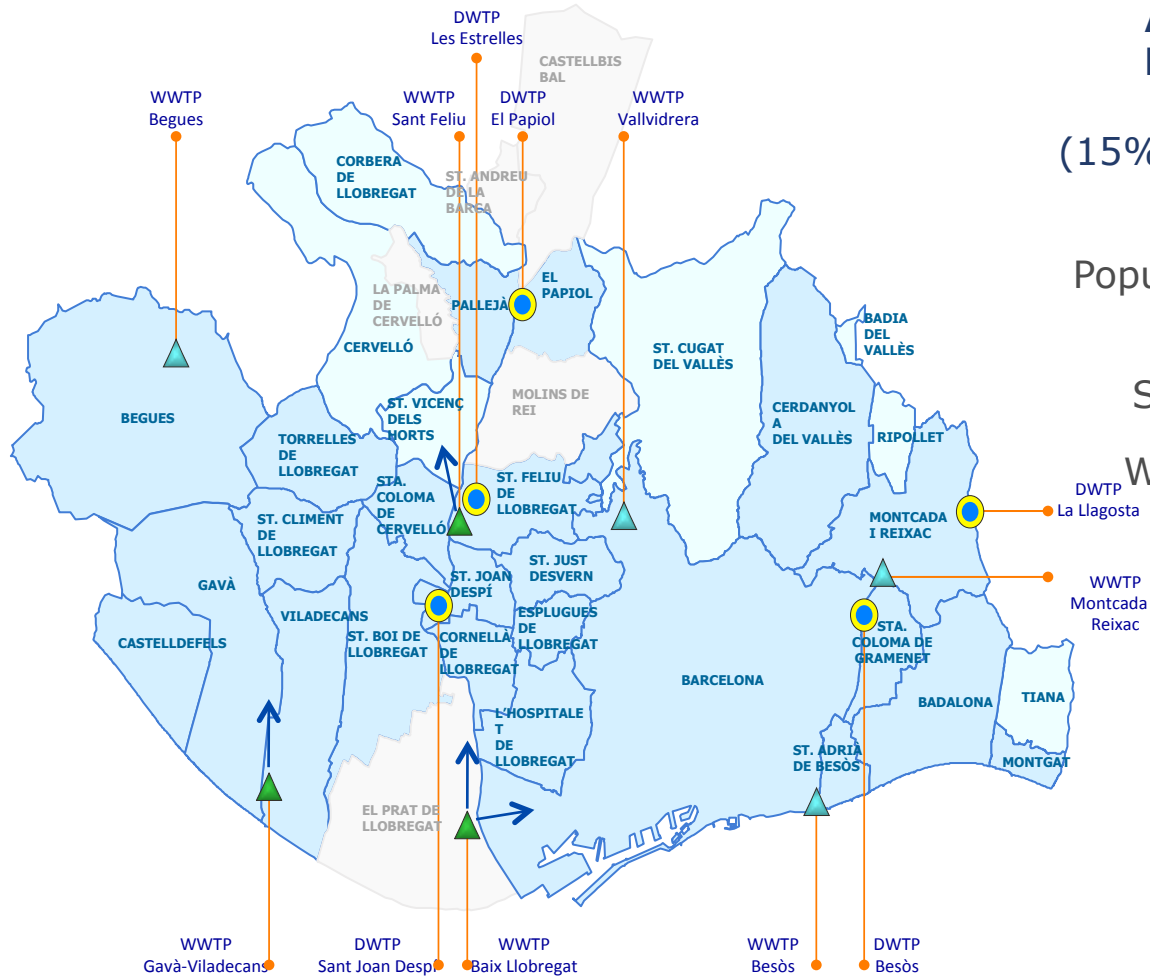
Description & Key Figures

Aigües de Barcelona, Empresa Metropolitana de Gestió del Cicle Integral de l'Aigua, S.A. (Public (15%) – Private (85%) - Partnership company)

Population served: **3 M inhabitants**
(**1,4 M customers**)

Supplied water (2017): **160 hm³**

Water supply network: **4.653 km**



-  Drinking Water Treatment Plant
-  Waste Water Treatment Plant
-  Regenerated water

DRINKING WATER:  AIGÜES DE BARCELONA management  GROUP AGBAR management  OTHER COMPANIES



Background

- The **Sant Joan Despí Drinking Water Treatment Plant (DWTP)**
 - 4.5 m³/s mixed conventional and advanced treatment facility
 - Receives a mix of surface water and groundwater
- In hot seasons, remote zones of the distribution network were experiencing THM values up to 80-90 µg/L, while treatment plant values were 10 -25 µg/L.
- Aigües de Barcelona was looking to monitor THM values more frequently to better understand THM evolution, improve water quality and optimize costs.
- Following validation at their onsite WQ laboratory, Aigües de Barcelona selected the **THM-100 instrument** due to its accuracy, reliability, and ability to produce a high frequency of data in real-time.
- One instrument was installed at the exit of the Water Treatment Plant and 4 more at strategic locations of the Distribution Network.



Sant Joan Despí DWTP



Aerial Plant View



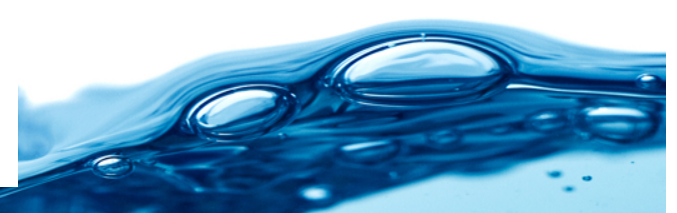
RO Facility



Strategic Placement of THM-100 Instrumentation



- Drinking Water Treatment Plant (THM & THM-FP)
- Distribution Network influenced by the DWTP
- 3 points where purchased water enters the System (control of the quality of water treated by the local Administration)

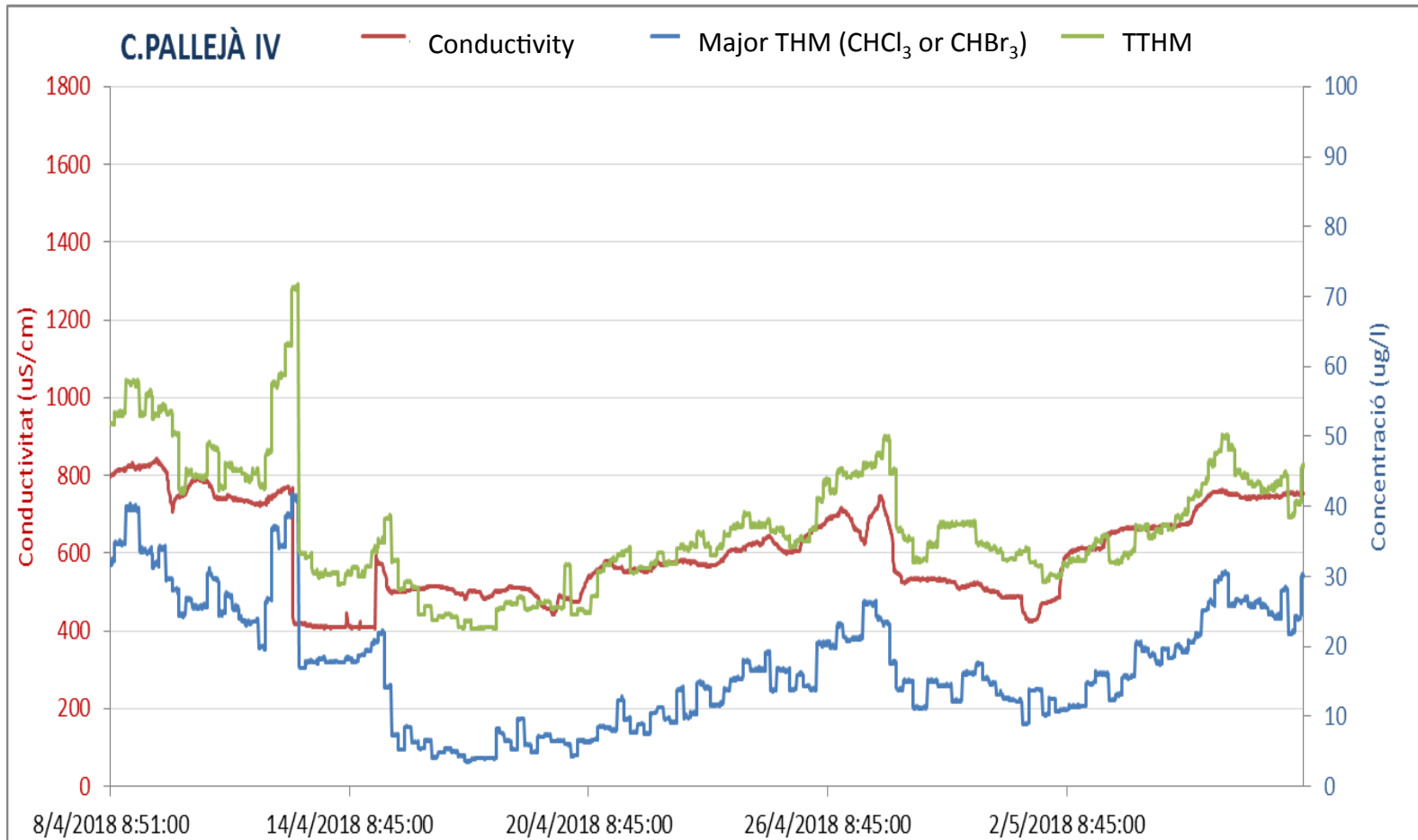


Online THM Monitoring

- TTHM measurement ~120 minutes
- THM-FP measurement ~180 minutes
- 6 samples daily
- Automated process
- Provides real time data on existing and future THM levels to enable proactive plant operations
 - 1 monitor at WTP
 - 4 monitors in network and at compliance handover points
- System is monitored by manufacturer 24/7/365
- Data received on-line in the operator's SCADA



Online Monitoring of THM Data



Data are continuously sent to the SCADA system, where alarms are configured



Regulatory Compliance

- In August 2016, Aigües de Barcelona's Laboratory received accreditation to the **ISO/IEC 17025:2005 Standard** for the use of the online THM monitor to continuously monitor THMs.
- Accurate and repeatable results plus regular quality controls are required to meeting ISO accreditation requirements.
- No other commercially available online THM analyzer operates or is validated to such rigorous standards:
 - Significant breakthrough in the application of online field-based instruments for regulatory control of water quality



San Joan Despí WTP Optimization

- During low daily THM and THM-FP levels, treatment is adjusted so that a lower percentage of water is treated by the RO line, producing an average costs saving of >\$35,000/month (€30,000/month):
 - Change in the number of RO racks in use
 - Water blending (introduction of groundwater)
- Other operational changes include a reduction of the residence times of treated water in the network and storage tanks and, where feasible, lowering re-chlorination doses.



Conclusions

- Online THM and THM-FP monitoring has helped Aigües de Barcelona:
 - Optimize treatment processes
 - Assist in monitoring water quality at handover points and improve the quality of water produced at the treatment plant and supplied along the distribution network
 - Reduce operational expenses while ensuring regulatory compliance
 - Intensify the control and improve the quality of water purchased to the Administration
 - Improve the confidence of the Regulator (intensive control, online availability of results and ISO 17025 accreditation of the measurements)

