Learn, Design, and Implement for Water Quality Surveillance and Response

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https://water.epa.gov/waterqualitysurveillance

The Intelligent Water Network Summit
Surveillance and Response Systems
(Panel 2, 1:15)

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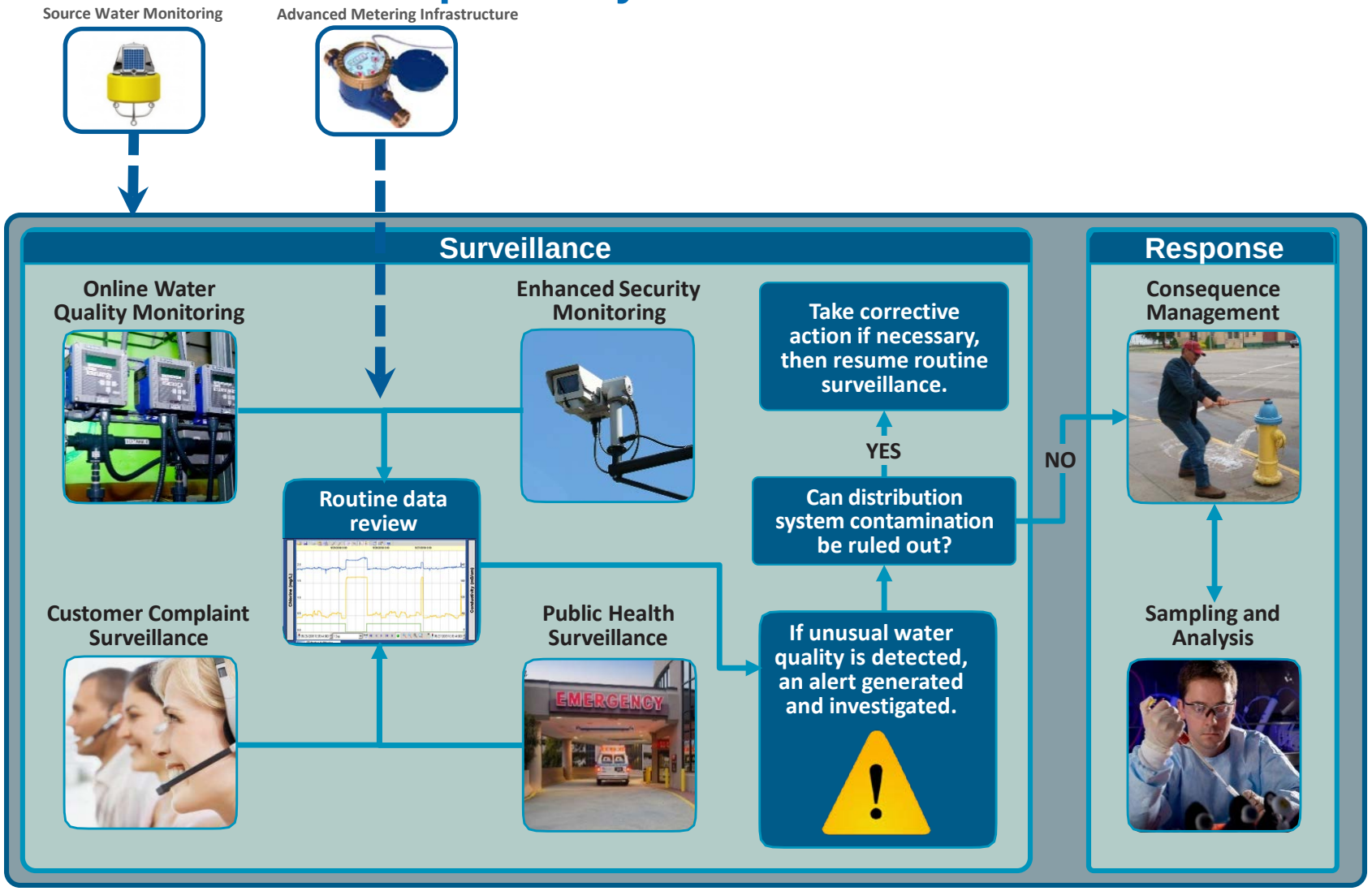
Alexandria, VA

Surveillance and Response System Architecture



EPA

EPA United States Environmental Protection Agency

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Water Quality Surveillance and Response

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Other Resources

- Water Resilience
- Contamination detection research

Join Our Email List

Learn

- Surveillance and response system (SRS) fact sheet
- SRS primers
- SRS case studies

Design

- Assess existing SRS capabilities

Implement

- Access guidance and tools
- Develop and conduct exercises

SRS Guidance and Tools

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Water Quality Surveillance and Response

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- Water Quality Surveillance & Response Home
- Primers
- Case Studies
- Design a Surveillance & Response System
- **Guidance & Tools**

Water Quality Surveillance and Response Systems Guidance and Tools

EPA offers documents and tools to support the design and implementation of Surveillance and Response Systems.

- System Design Resources
- Online Water Quality Monitoring Resources
- Enhanced Security Monitoring Resources
- Customer Complaint Surveillance Resources
- Public Health Surveillance Resources
- Consequence Management Resources
- Sampling and Analysis Resources

Example of Customer Complaint Surveillance Resources

United States Environmental Protection Agency

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Water Quality Surveillance and Response System Customer Complaint Surveillance Resources

These products support the design and implementation of Customer Complaint Surveillance (CCS), a component of a Surveillance and Response System (SRS).

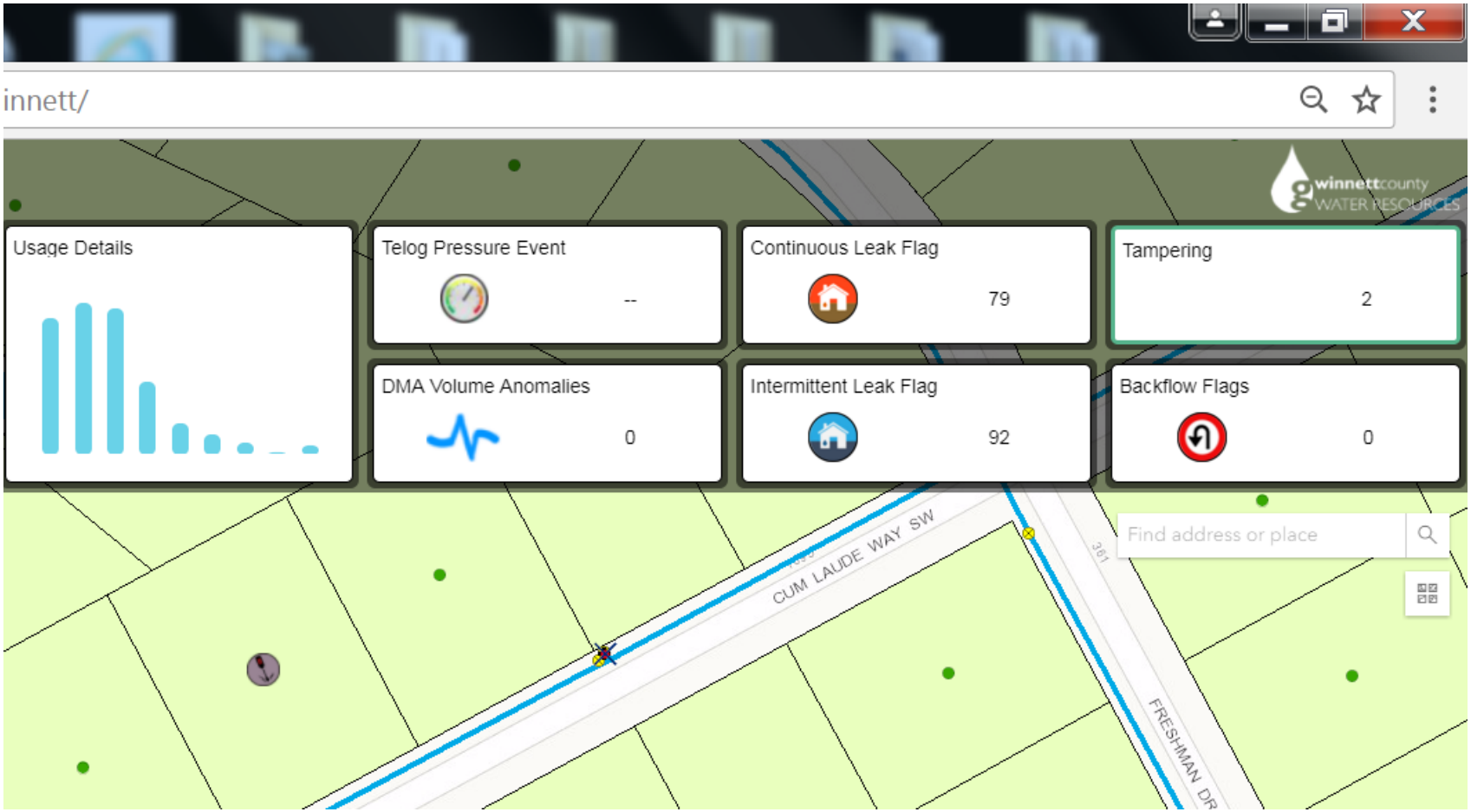
- Threshold Analysis Tool (4 pp, 4 MB) A software tool used to develop alert thresholds for customer water quality complaints.
- Alarm Estimation Tool (1 pg, 269 K) A spreadsheet tool used to estimate the number of CCS alerts generated at a given alert threshold.

You may need Adobe Reader to view files on this page. See EPA's About PDF page to learn more.

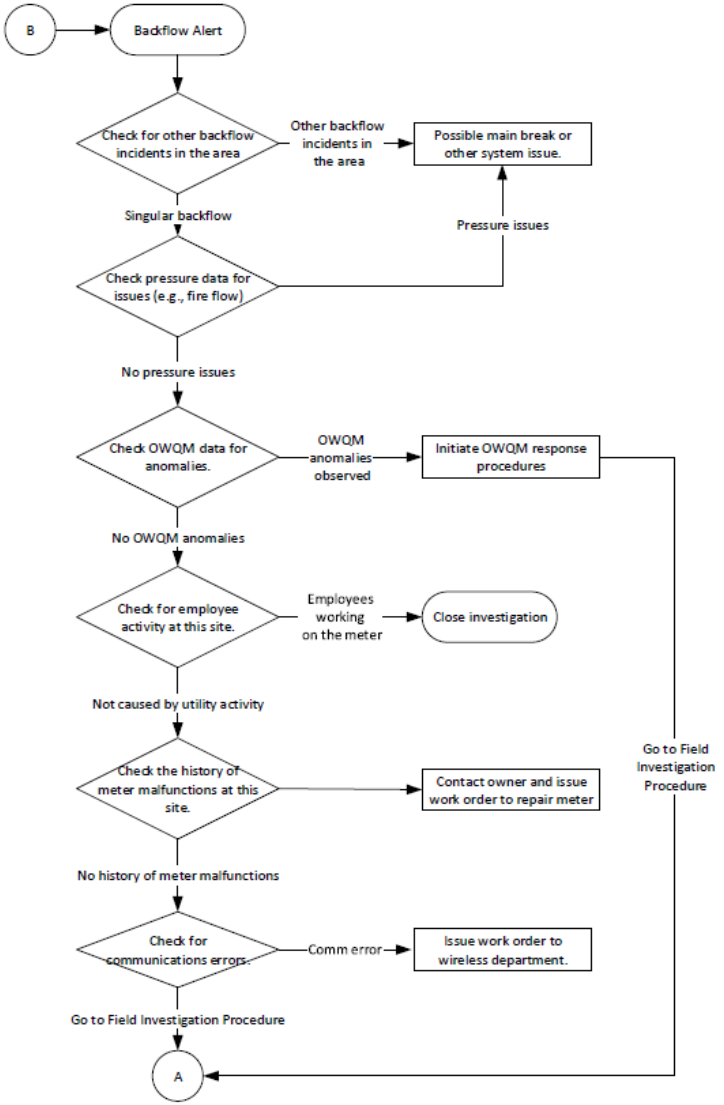
- Evaluation of the Customer Complaint Surveillance Component of the Cincinnati Contamination Warning System Pilot (PDF) (24 pp, 2 MB)

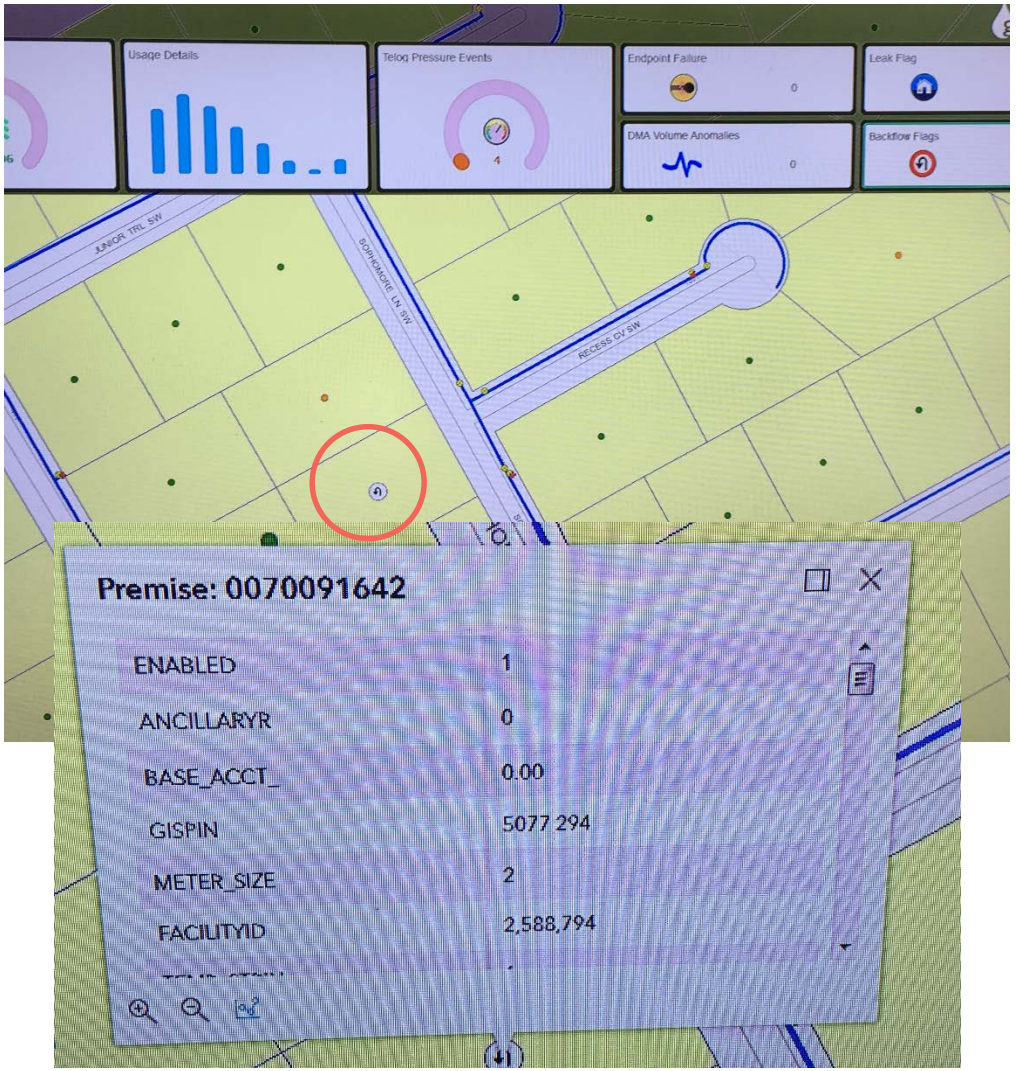
  This component monitors water quality complaint data to identify abnormally high volumes or spatial clustering of complaints that may be indicative of drinking water contamination.

AMI: Tampering Alerts

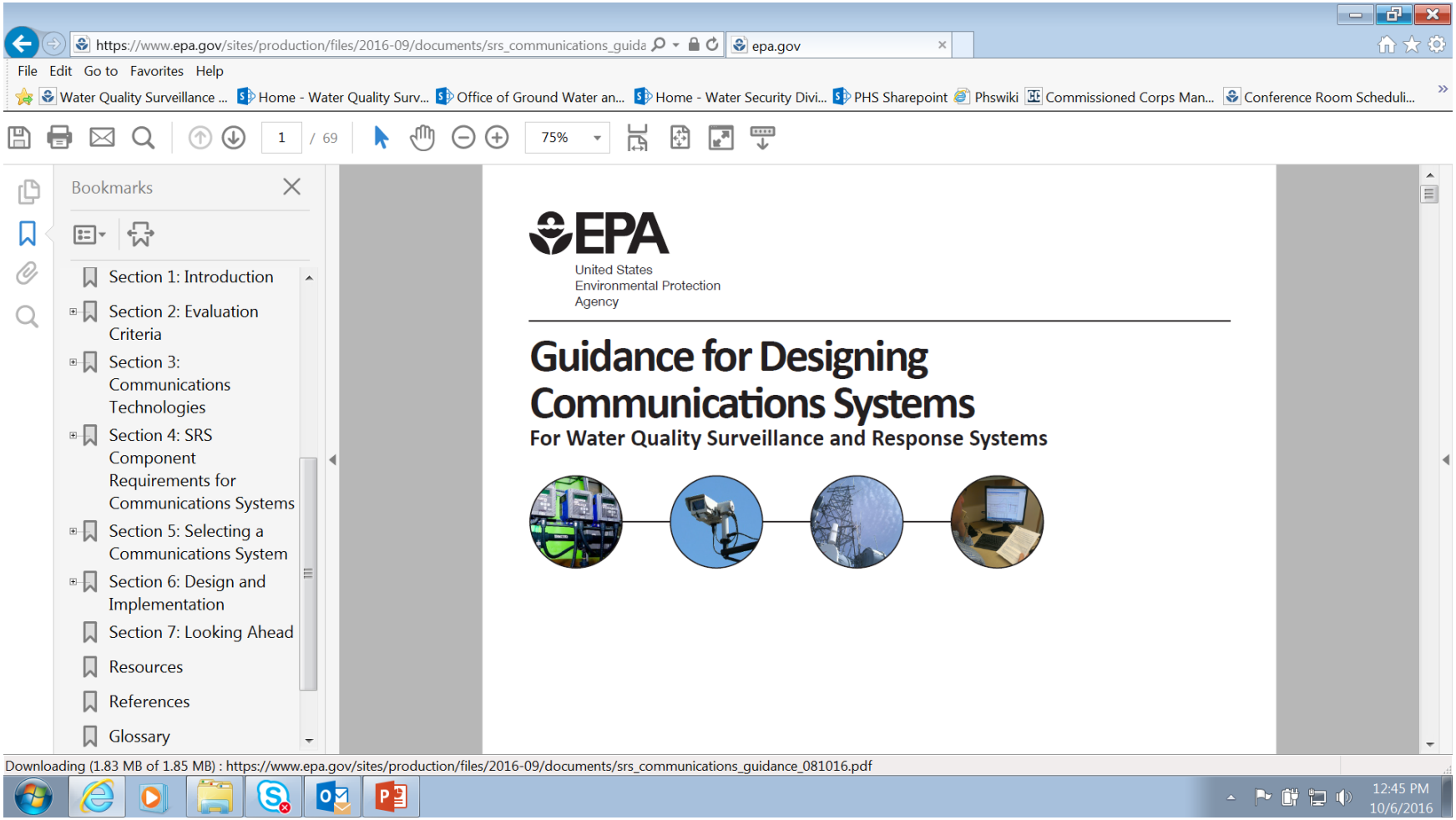


Response Flow Chart for Backflow Alerts



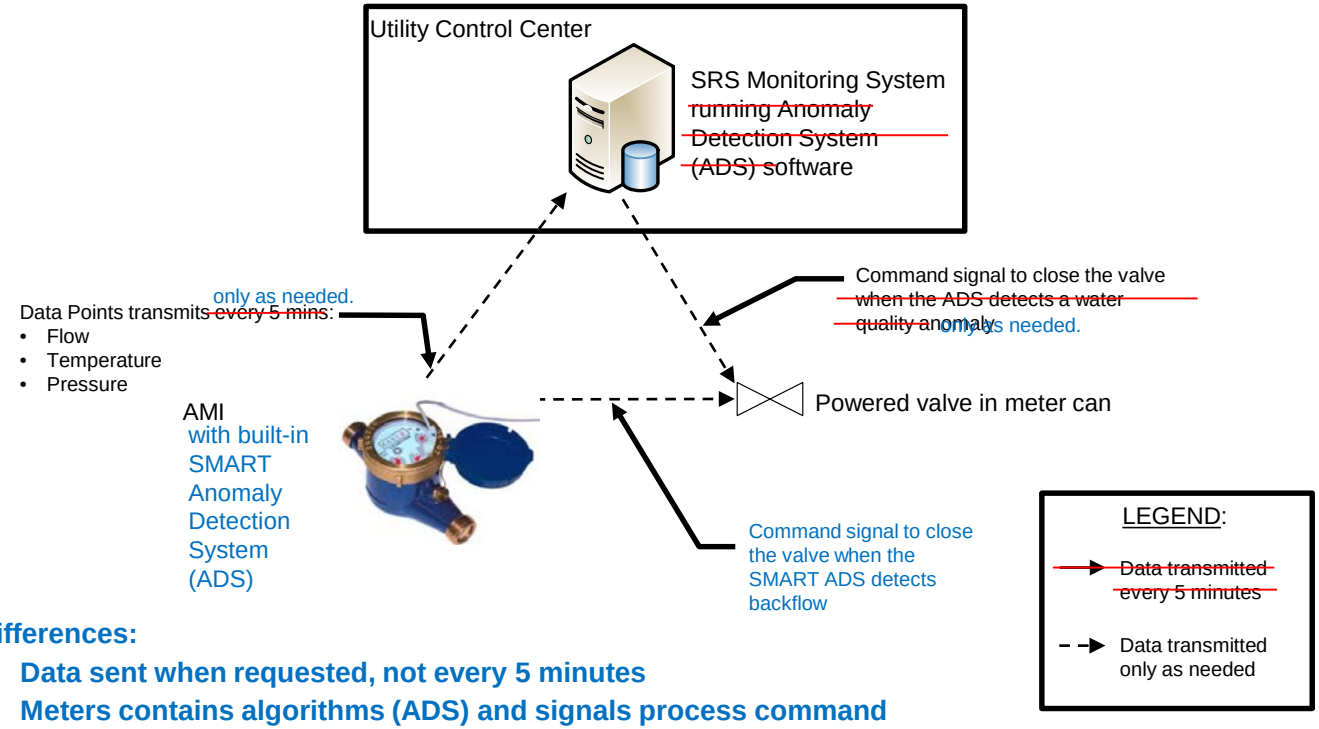


Free Downloads:



Advanced Metering Infrastructure ~~Traditional Interconnect~~

The future of SMART AMI w/ Peer to Peer (P2P) Architecture with At-The-Edge Processing?



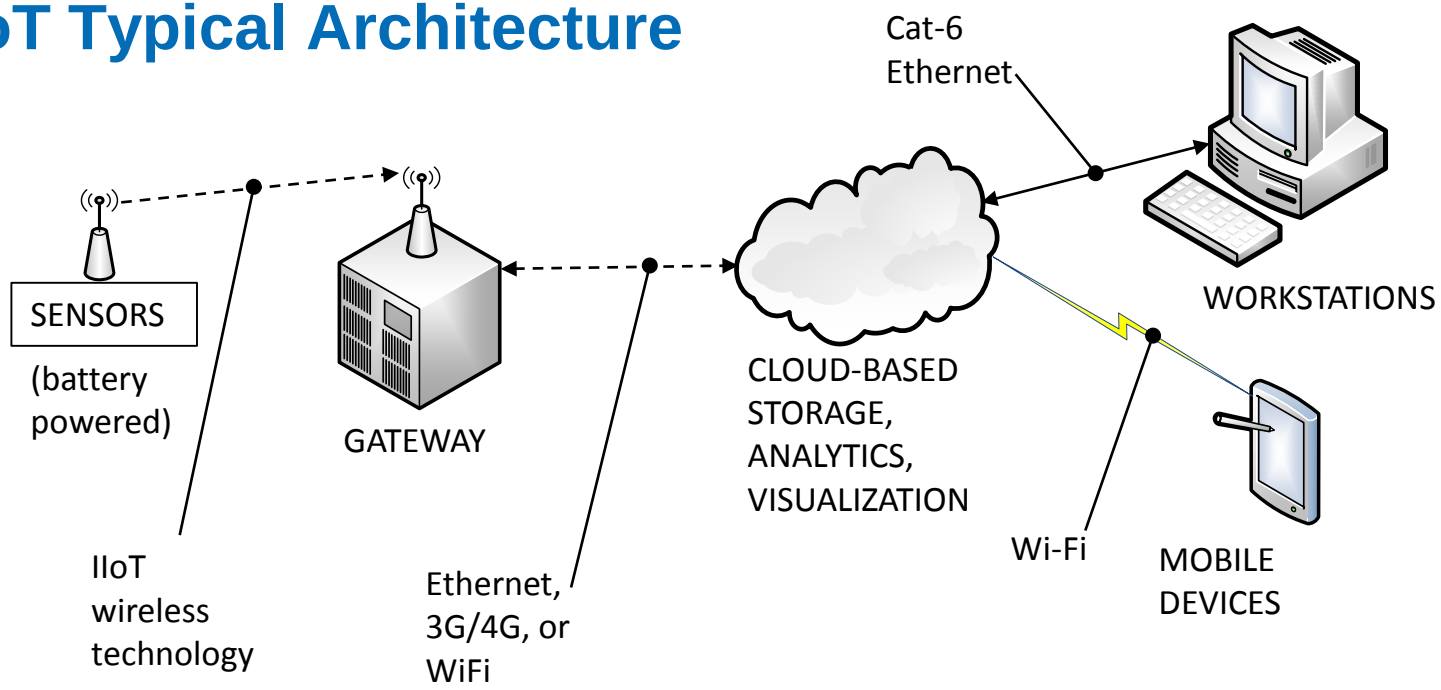
Differences:

- **Data sent when requested, not every 5 minutes**
- **Meters contains algorithms (ADS) and signals process command**

Industrial Internet of Things (IIoT)

- 50 Billion things predicted to be connected to the Internet by 2020.
- Things for the water industry = sensors that are battery powered and generate small amounts of data
- IIoT requires low power, low bandwidth wireless communications technologies
  - Unlicensed frequencies: SigFox, LoRaWAN
  - Licensed frequencies (cellular answer to SigFox and LoRaWAN):
    - NB-IoT, LTE CAT-M

IIoT Typical Architecture



Key Takeaways

- **SRSs can be implementable, sustainable and effective**
  - **Dual use benefits**
  - **Adaptive as data streams can be added**
- **Technology will continue to evolve**
  - **IIOT, analytics, and communications continue to progress and get SMART. Security will always be a factor.**
- **Guidance and other tools are available**
  - **The EPA SRS team is looking to partners to showcase component implantation**

For More Information

Water Quality Surveillance and Response System Website

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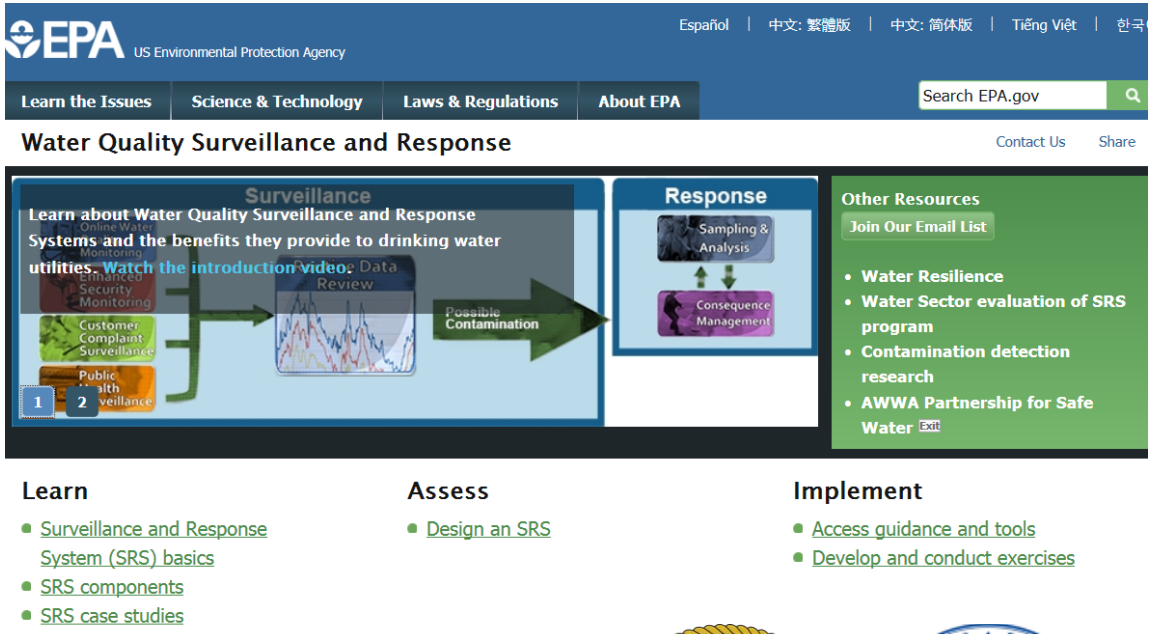

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