



City of Dallas Water Utilities Contamination Warning System

December 1, 2011

Acknowledgements

The City of Dallas Water Utilities Contamination Warning System Project is funded in part by a grant from the USEPA under the Water Security Initiative (WSi).



EPA's Pilot Program Goals

1. Develop a framework to integrate multiple sources of data for event detection
2. Prove the concept for utilities of all sizes/characteristics
3. Promote the implementation by identifying **multiple benefits** (operational, regulatory, security)
4. Communicate the results and best practices

CWS – What Is It Really and How Does it Benefit Our Retail and Wholesale Customers?

- 💧 Expanded and Improved Water Quality Management System

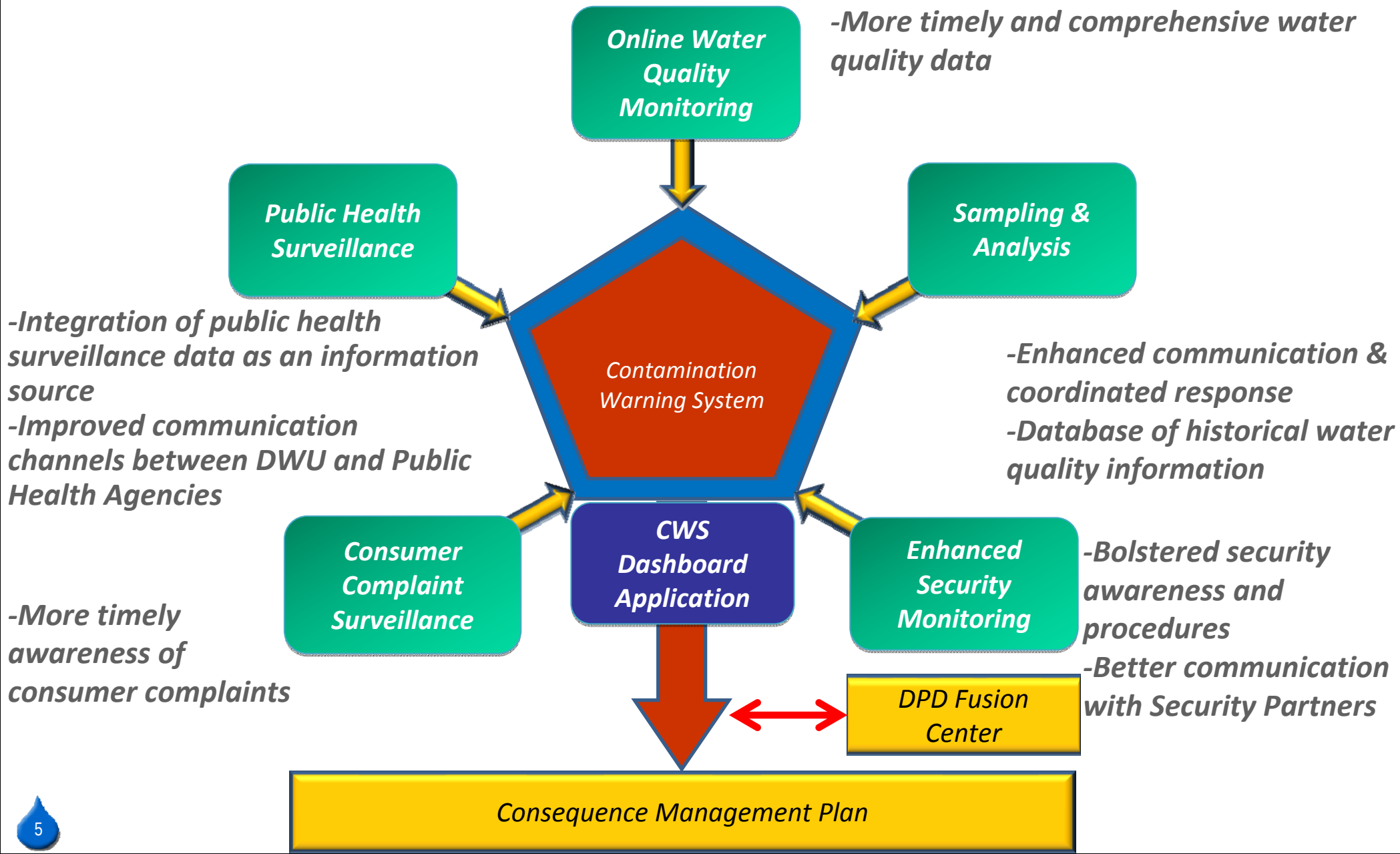


*Continuous Holistic Picture of
Water Quality*



- 💧 More Timely and Rigorous Response to Changes in Water Quality

Dallas Contamination Warning System (CWS)



Online Water Quality Monitors (OWQM)

- 💧 Four monitors give a “fingerprint” of water leaving each plant
- 💧 Twelve distribution monitors provide continuous water quality data in the system
- 💧 Event detection system (EDS) looks for anomalies
- 💧 Six sites completed January 2011
- 💧 Ten remaining sites being installed September to November 2011



Benefits of Expanded Water Quality Monitoring Capabilities

💧 24-7 view of system water quality available to staff and managers

- Multiple parameters, including :

– Nitrate	Total Chlorine	Turbidity
– TOC	Conductivity	UV Spectral/Absorbance
– DOC	pH	Free Ammonia

- Web accessible to DWU Executives and Operators
- Trending

💧 EDS notifies operators and managers of anomalies

💧 Valuable for detection

- Water quality changed from intentional or unintentional actions
- Water quality changes from a natural phenomenon
- Problems at water treatment plants

💧 A look at what is really going on in our system

Sampling and Analysis (SA) – Where Do My Labs Fit In?

- 💧 SA Team involves staff from multiple DWU divisions and outside agencies
- 💧 Team provides sampling and analytical services
 - Year of baseline sampling conducted from August 2011 to August 2012
 - In the event of contamination
- 💧 Selection and implementation of a LIMS system
- 💧 Develop laboratory network
 - Supports DWU in the event of contamination

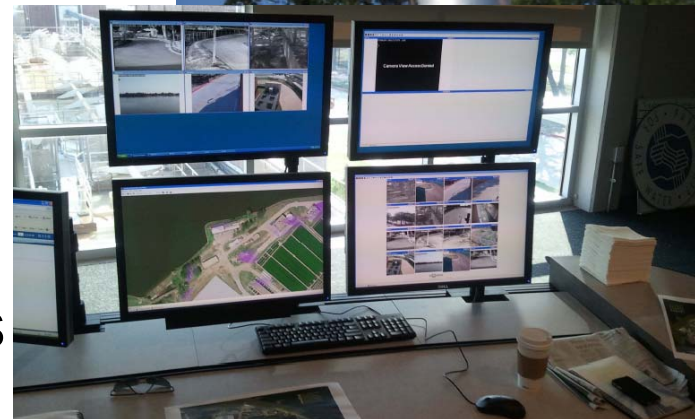


Sampling and Analysis – Benefits to the Customer

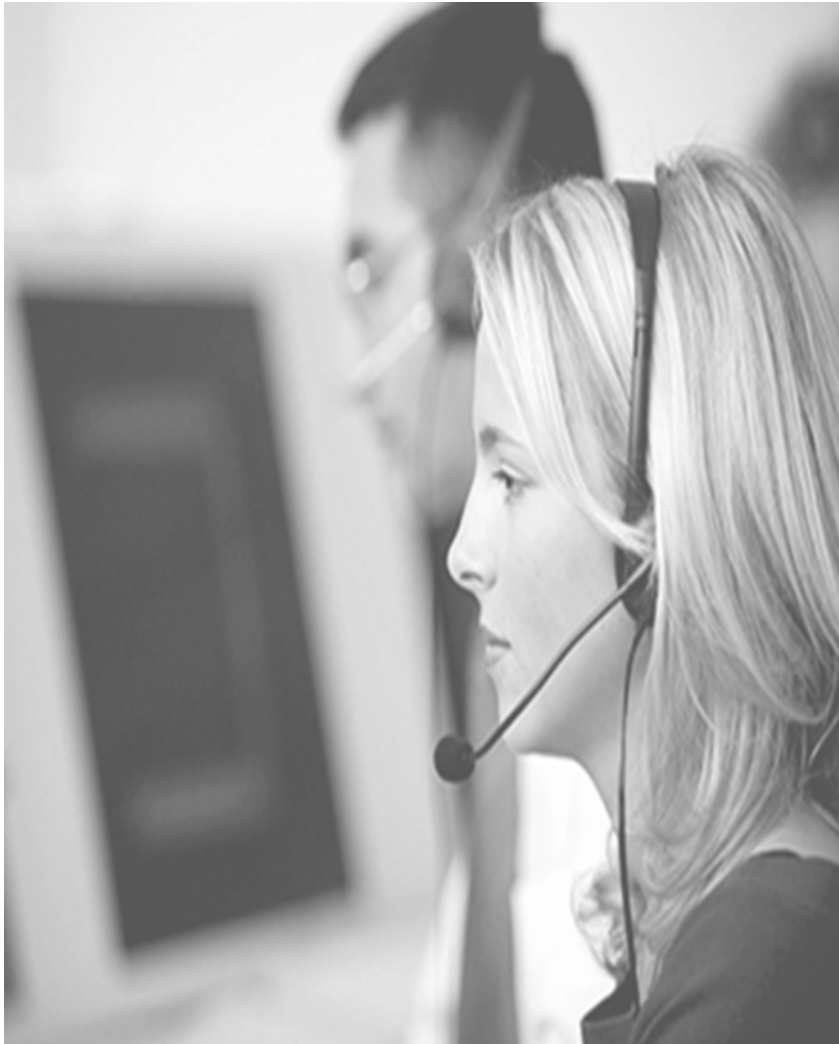
- Improved methods and/or instrumentation to analyze for contaminants of concern to water quality and security
- Expanded data transmission, storage, and retrieval methods and protocols, allowing for more thorough and timely analysis of water quality information through the laboratory information management system (LIMS)
- Enhanced partnerships with regional and state response partners

Enhanced Security Monitoring (ESM)

- 💧 Integrating existing security related documents into a Security Master Plan to be completed December 2011
- 💧 Establish a relationship with potential security responders
 - Familiarize Dallas Police Department with DWU facilities
 - Interface between the CWS and Dallas Police Department's Fusion Center
- 💧 Institute link between security sensors and operators
- 💧 Hired Security Coordinator in 2009
- 💧 Ongoing physical security improvement projects at WTPs and Pump Stations



Consumer Complaint Surveillance (CCS)



- 💧 Water quality complaints received through,
 - 311 call center
 - Water Quality Hotline
 - Wholesale customers calls
- 💧 Categories expanded to better define nature of complaint
- 💧 Complaint entered in City's SAP system
- 💧 CWS pulls data from SAP
 - Complaints geo-coded and displayed on the dashboard
 - Alerts key staff of complaint clusters
- 💧 Completed improvements to SAP complaint handling protocols in April 2011

Consumer Complaint Surveillance – Direct Benefits to the Customer

Enhanced Information Handling and Processing

- The expanded 311 categories give DWU staff a better picture of the nature of the complaint
- All complaints will be input and tracked in SAP
- Staff and managers can view and follow complaints
- Valuable in detecting subtle changes in water quality
 - Where has it changed?
 - How has it changed?
- Improved data allows tailored response and faster resolution

We can now be even more responsive to our customers

- The wholesale customers still contact DWU Wholesale Services and any complaints will be forwarded to the SAP system

Public Health Surveillance (PHS)

💧 Interface with Advanced Practice Center (APC)

- Provides syndromic surveillance for 49 counties in North Texas
- Funded by Center for Disease Control (CDC)
- Monitors emergency room admissions
- Can monitor over-the-counter drug sales
- Interface to be complete by December 2012

💧 Provides indications of a syndromic event

- Waterborne illness
- Poisoning

💧 Establish communication with Dallas County Health and Human Services



Public Health Surveillance – Benefits to the Customer

- 💧 It complements other sensors, OWQM & CCS... and establishes lines of communication
 - The syndromic surveillance alerts us to a potential link to water borne health issues
 - Communication protocols allow rapid validation, or elimination, of a link to water supply
 - Focuses resources on actual contamination source...water supply or other
 - Gives information to medical personal to prescribe the right treatment
- 💧 Wholesale customer city citizens are covered by APC monitoring
- 💧 This is a valuable data stream we never had before

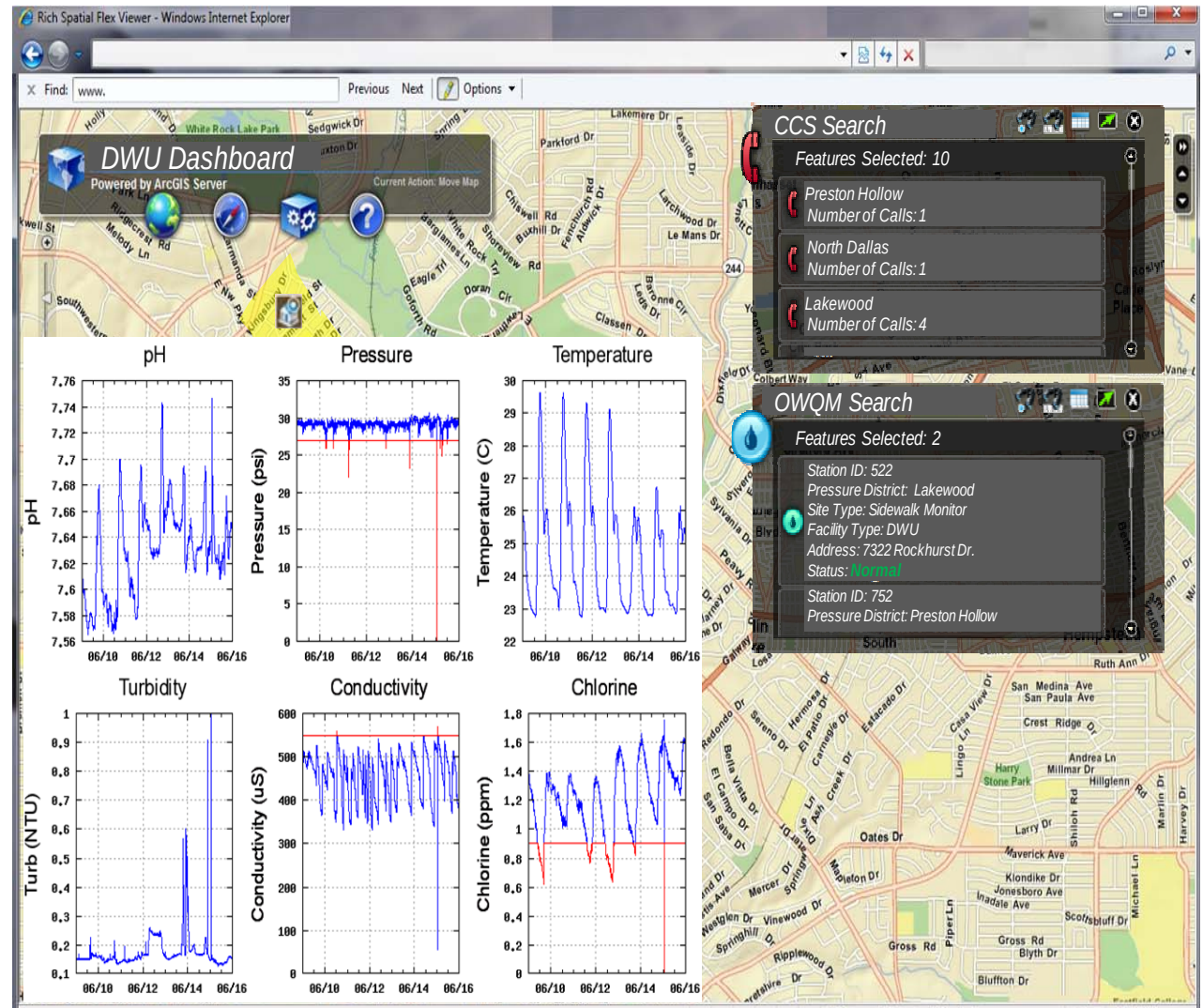
CWS Event Detection Database and Dashboard Provides Notification and Visual Display

💧 “Brains” of the CWS

💧 Continually analyzes sensor data streams

💧 Puts data at staff and manager’s fingertips, 24-7

💧 Signals DWU operators and key managers when anomaly is detected for quicker response



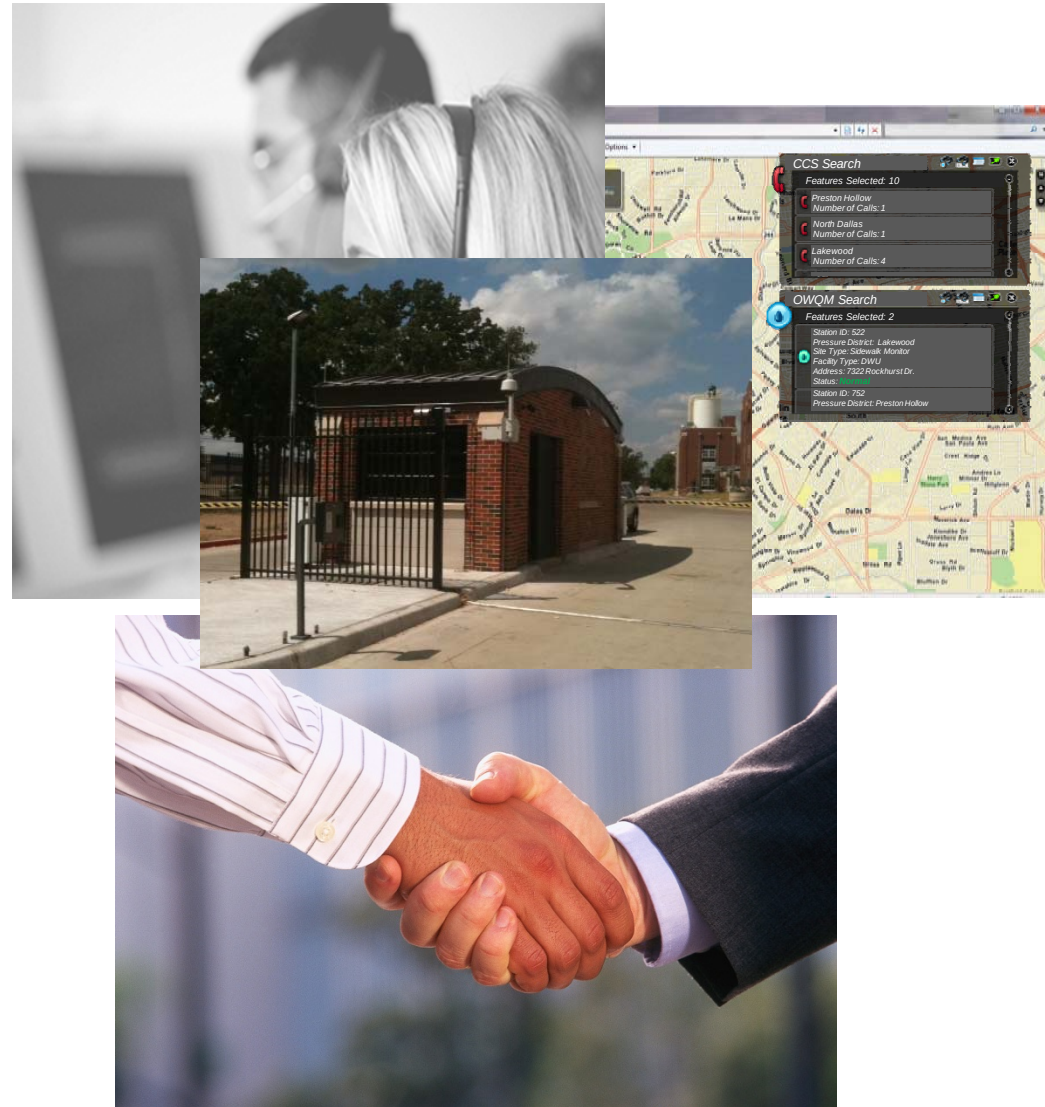
Consequence Management Plan (CMP)

Key Components

- 💧 Sets clear organizational roles and responsibilities for water quality incident response
- 💧 Incorporates into DWU's Integrated Contingency Plan (ICP)
- 💧 Includes extensive drills, training and exercises conducted routinely through July 2012
- 💧 Defines and includes key external response partners

Summary of DWU CWS Water Quality and Security Benefits

- 💧 Tool for system-wide water quality management
- 💧 Improved customer service
- 💧 Enhanced culture of security
- 💧 Established partnerships
- 💧 A robust response plan
- 💧 Reduces overall response time in a contamination event





Thank you for your attention!

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