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GoToWebinar

Requirements for Consecutive Systems GWR, LT2ESWTR, Stage 2 DBPR

November 5, 2009

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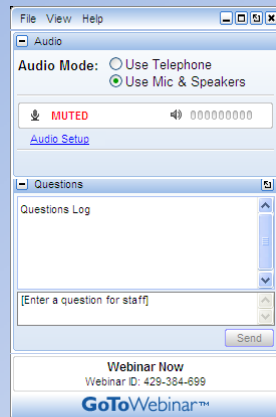
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Today's Speakers

- **Michael Finn, Environmental Engineer, Environmental Protection Agency Office of Groundwater and Drinking Water, Drinking Water Protection Branch.**
- **Adrienne Harris, Environmental Scientist, Environmental Protection Agency Office of Groundwater and Drinking Water, Drinking Water Protection Branch.**
- **Thomas Grubbs, Environmental Engineer with the Environmental Protection Agency Office of Groundwater and Drinking Water, Standards and Risk Reduction Branch. Q&A**

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Webcast Overview

We'll review the regulatory requirements of the new drinking water regulations as they pertain to wholesale/consecutive systems

- Introduction
- Glossary and Acronyms
- Ground Water Rule (GWR) for Consecutive Systems
- Long Term 2 Enhanced Surface Water Treatment Rule (LT2ESWTR) for Consecutive Systems
- Stage 2 Disinfection and Disinfectant Byproducts Rule (Stage 2 DBPR) for Consecutive Systems

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Glossary of Terms

- **Finished Water:** water that is introduced into the distribution system of a PWS and is intended for distribution or consumption without further treatment, except as treatment is necessary to maintain water quality
- **Combined Distribution System:** interconnected distribution system consisting of distribution system of wholesale systems and consecutive systems that receive finished water
- **Consecutive system:** a PWS that buys or otherwise receives some or all its finished water from a wholesale system
- **Wholesale system:** a PWS that supplies finished water to one or more PWS

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Acronyms

- Ground Water Rule (GWR)
- Ground Water System (GWS)
- Ground Water Under the Direct Influence of Surface Water (GWUDI)
- Public Water System (PWS)
- Surface Water System (SWS)
- Total Coliform Positive (TCR+)
- Total Coliform Rule (TCR)



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Poll Questions

General Wholesale/Consecutive Water System Issues

- Contractual restrictions
- No control over source water quality or initial treatment
- Communication challenges
- Varying state requirements

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GWR for Wholesale and Consecutive Systems

- GWR basics
- Triggered Source Water Monitoring
- 4-log Treatment of Viruses
- Summary



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Ground Water Rule - Basics

- GWR applies to all PWSs that use ground water except systems that combine all ground water with surface water prior to treatment
- Systems must either perform triggered source water monitoring or compliance monitoring
- Additional information
 - *Consecutive System Guide for the Ground Water Rule* (EPA 815-R-07-020, July 2007)
 - www.epa.gov/ogwdw/disinfection/gwr/

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GWR – Triggered Source Water Monitoring (TSWM)

- GWSs must conduct TSWM if they:
 - Are notified of a TC+ routine TCR sample
 - **and**
 - Are **NOT** conducting GWR compliance monitoring for 4-log treatment of viruses

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GWR – Triggered Source Water Monitoring

- Consecutive systems must notify wholesale system(s) of TC+ routine sample taken under the TCR
 - Notification required within 24 hours
 - Notification must be provided to all wholesale system(s) with ground water source(s) that provided water to consecutive system when TC+ sample was collected

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GWR – Triggered Source Water Monitoring

- Once notified by consecutive system, wholesale systems must (unless wholesale system is providing 4 log virus treatment):
 - Collect fecal indicator samples from all ground water sources (or those serving the consecutive system if there is a TSWM plan) within 24 hours of notice
 - For any fecal indicator-positive sample, notify all consecutive systems (or those served by that ground water source if there is a TSWM plan) within 24 hours of getting the positive result

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GWR – Triggered Source Water Monitoring

- Consecutive systems with their own sources
 - Must conduct TSWM at their own sources
 - Within 24 hours of being notified TC+ routine TCR sample
 - Notify any wholesale systems of the TC+ routine TCR sample

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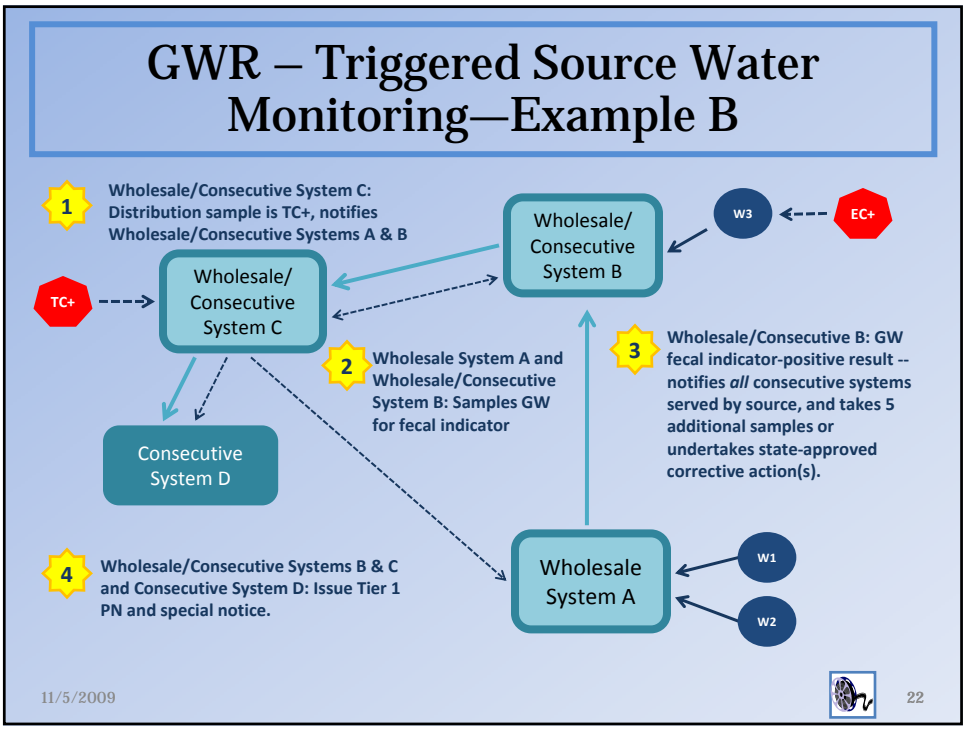
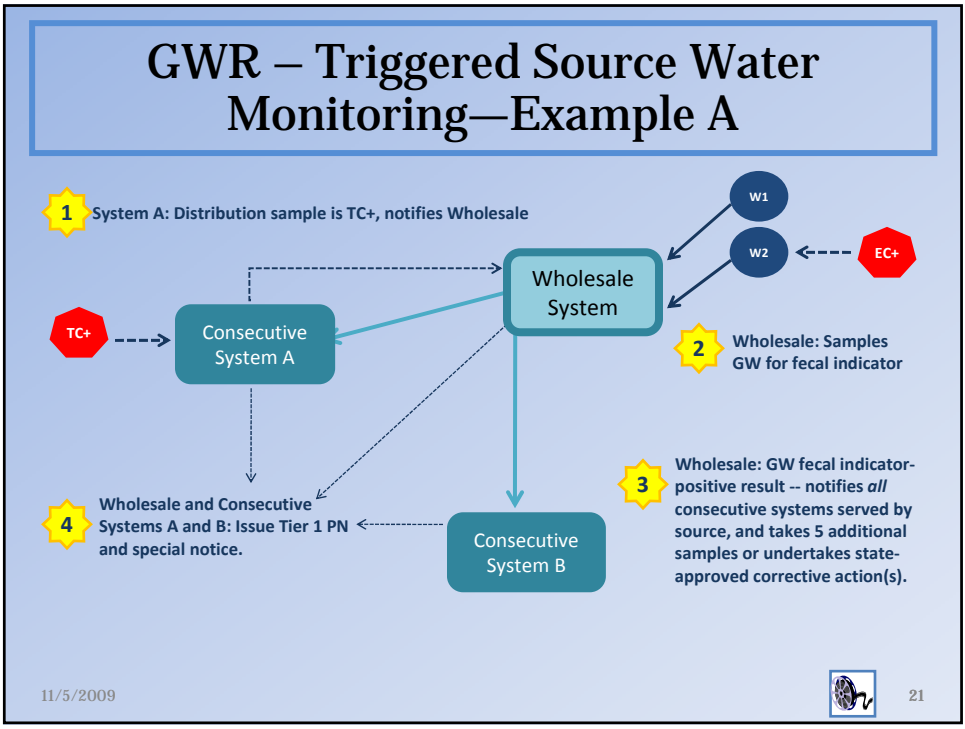
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GWR – Triggered Source Water Monitoring

- State should ensure
 - Consecutive systems notify wholesale system of TC+ routine TCR sample
 - Wholesale system notifies all consecutive systems served by source
 - Wholesale and consecutive systems issue appropriate public notification
 - Wholesale system takes 5 additional samples or completes appropriate corrective action

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GWR – 4-log Treatment

- GWSs are not required to complete triggered source water monitoring if they
 - Provide 4-log treatment of viruses at or before the first customer using
 - Inactivation
 - Removal
 - State-approved combination of 4-log inactivation & removal
 - Notify the state in writing of existing treatment or provide 4-log treatment as a corrective action
 - Conduct compliance monitoring

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Poll Question

System X receives water from System Y. System Y has a ground water source and provides 4-log treatment. This month System X received a TCR+ result at a monitoring location. System X notifies System Y.

What should System Y do?

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GWR – Summary

- GWR applies to all PWSs that use ground water
- Systems must either perform triggered source water monitoring or compliance monitoring and provide 4-log treatment of viruses
- Consecutive systems must notify wholesale system(s) of TC+ routine sample taken under TCR
- Once notified by consecutive system, wholesale systems doing triggered monitoring must collect fecal indicator samples from all ground water sources serving consecutive system within 24 hours of notice
- Consecutive and wholesale systems must make public notice if there is a positive fecal indicator sample

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Q&A

Have questions? Submit them via the Question/Answer console found on the right side of your screen.

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LT2ESWTR for Consecutive Systems

- LT2ESWTR Basics
- Monitoring Schedules
- Summary



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LT2ESWTR- Basics

- LT2ESWTR applies to all PWSs that use surface water or GWUDI
 - Wholesale systems and consecutive systems that have own surface or GWUDI water source
 - Requires source water *Cryptosporidium*/*E. coli* monitoring
 - Monitoring schedules depend on system size
 - Find additional information at:
www.epa.gov/safewater/disinfection/lt2/

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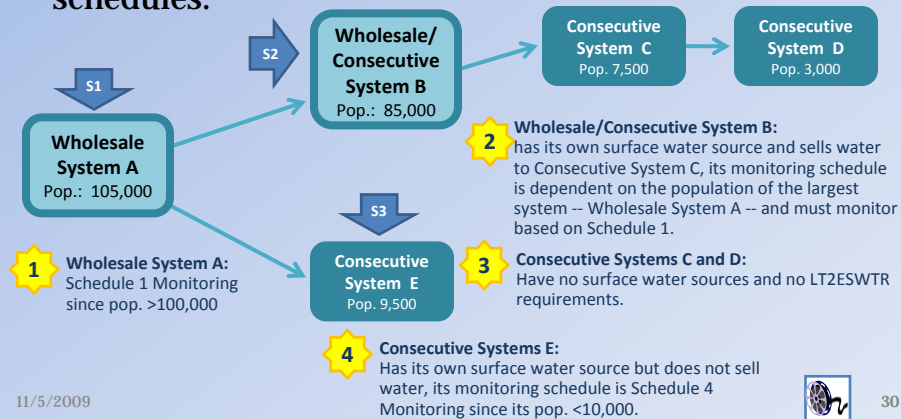
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LT2ESWTR – Monitoring Schedules

- Monitoring schedule of consecutive systems impacted by
 - Largest system in the combined distribution system’s (CDS’s) population
 - Selling or purchasing surface water seasonally
 - Schedule 4 system

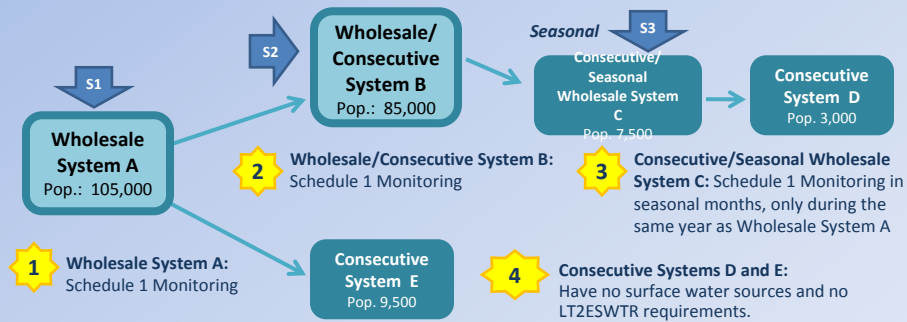
LT2ESWTR – Monitoring Schedules

- A wholesale/consecutive system (B, below) with its own surface water source must use the largest population in the CDS to determine monitoring schedules.



LT2ESWTR – Monitoring Schedules

- A wholesale/consecutive system (C, below) which has a seasonal surface water source and sells water must monitor based on the schedule for the largest population of the CDS during the seasonal months.



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LT2ESWTR – Monitoring Schedules

- A system that is part of a CDS in which the largest system serves less than 10,000 customers qualifies for Schedule 4 monitoring.

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LT2ESWTR – Summary

- LT2ESWTR applies to all PWSs that have their own surface or GWUDI water source
 - Monitoring schedule depends on system size
 - If a consecutive system also has a source, it must conduct LT2ESWTR monitoring
- Monitoring schedule of consecutive systems is impacted by the largest system in the CDSs.

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Poll Question

System A (serving 9,880) and System B (serving 500) receive all of their water from System C (55,000). System C has two surface water sources. None of the systems have uncovered finished water reservoirs.

What are System B's LT2 requirements?

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Q&A



Stage 2 DBPR for Consecutive Systems

- Stage 2 DBPR Basics
- Consecutive Systems
- Monitoring Requirements
- Summary



Stage 2 DBPR - Basics

- Consecutive systems that use a disinfectant other than ultraviolet (UV) light or that deliver water from another system that has been treated with a disinfectant other than UV light are subject to the Stage 2 DBPR.
- Additional information
 - *Stage 2 Disinfectants and Disinfection Byproducts Rule: Consecutive Systems Guidance Manual – Draft* (October 2007)
 - www.epa.gov/ogwdw/disinfection/stage2/
- Work together with other systems in your CDS

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Stage 2 DBPR – Consecutive Systems

- Consecutive systems have limited control over quality of the wholesale supplies entering their system and have limited options to control the continued formation of DBPs
- Consecutive systems may receive purchased water with elevated levels of TTHMs and HAA5
 - Wholesale systems are not required to make modifications to decrease DBP levels in their consecutive systems
 - Increased DBP concentrations can be caused by
 - Disinfectant type and dose, Water Age, Water Temperature, pH

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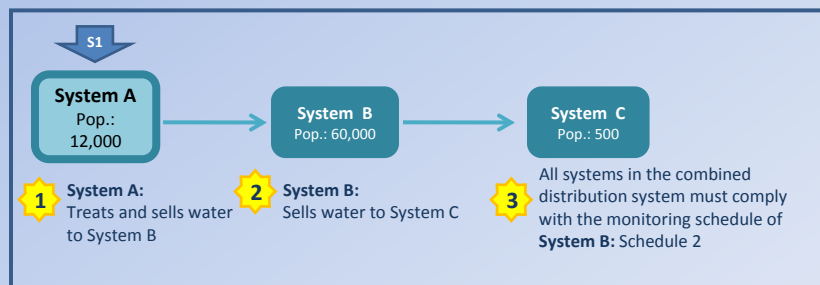
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Stage 2 DBPR – Monitoring Requirements

- Due to varying state implementation/interpretation of Stage 1 DBPR not all systems have historical TTHM/HAA5 data
 - Some may not have historical TTHM and HAA5 data unless wholesale system collected samples within consecutive system
- Consecutive systems receiving disinfected water must comply with Stage 2 DBPR requirements
 - Unless they are very small (<500 people served), they must either conduct standard monitoring or a System Specific Study (SSS) to comply with the Initial Distribution Evaluation (IDSE) requirements

Stage 2 DBPR – Monitoring Requirements

- All systems in a CDS must monitor under compliance schedule for population of the largest system



Stage 2 DBPR – Monitoring Requirements

- Consecutive and wholesale systems are encouraged to coordinate monitoring
 - Improve understanding of DBP formation (e.g., changes in source, treatment, or operation that impact DBP formation)
 - Work together to formulate a compliance strategy, if necessary

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Stage 2 DBPR – Compliance Monitoring Plan

- Consecutive systems must develop a Stage 2 DBPR Compliance Monitoring Plan
- Must include information on:
 - TTHM/HAA5 locational monitoring samples
 - Chlorine/Chloramines samples

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Stage 2 DBPR – Compliance Monitoring Plan

- Stage 2 DBPR Compliance Monitoring Plan must include:
 - Monitoring locations
 - Monitoring dates
 - Compliance calculation procedures
 - If the state has reduced monitoring requirements, monitoring plans for other systems in the combined distribution system



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Stage 2 DBPR – Compliance Monitoring

- Submit Compliance Monitoring Plan before date required to begin monitoring
- Begin Stage 2 DBPR Compliance Monitoring
 - Monitoring requirements vary by system type and size



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Stage 2 DBPR – Routine TTHM/HAA5 Monitoring Requirements

- Minimum TTHM/HAA5 samples and monitoring frequencies for Subpart H systems

Population Size Category	Monitoring Frequency ¹	Monitoring Locations per Period
< 500	Per year	2 ²
500 – 3,300	Per quarter	2 ²
3,301 – 9,999		2
10,000 – 49,999		4
50,000 – 249,999		8
250,000 – 999,999		12
1,000,000 – 4,999,999		16
≥ 5,000,000		20

¹ All systems must take at least one dual sample set during the month of highest DBP concentration. Systems on quarterly monitoring must take dual sample sets every 90 days.

² System is required to take individual TTHM and HAA5 samples (instead of a dual sample set) at the locations with the highest TTHM and HAA5 concentration, respectively. Only one location with a dual sample set per monitoring period is needed if highest TTHM and HAA5 concentrations occur at the same location.

Stage 2 DBPR – Routine TTHM/HAA5 Monitoring Requirements

- Minimum number of TTHM/HAA5 samples and monitoring frequencies for ground water systems:

Population Size Category	Monitoring Frequency ¹	Monitoring Locations per Period
< 500	Per year	2 ²
500 – 9,999		2
10,000 – 99,999	Per quarter	4
100,000 – 499,999		6
≥ 5,000,000		8

¹ All systems must take at least one dual sample set during the month of highest DBP concentration. Systems on quarterly monitoring must take dual sample sets every 90 days.

² System is required to take individual TTHM and HAA5 samples (instead of a dual sample set) at the locations with the highest TTHM and HAA5 concentration, respectively. Only one location with a dual sample set per monitoring period is needed if highest TTHM and HAA5 concentrations occur at the same location.

Stage 2 DBPR – Reduced TTHM/HAA5 Monitoring

- Systems qualify if LRAAs at all monitoring locations are:
 - < 0.040 mg/L for TTHM, and
 - < 0.030 mg/L for HAA5
- Subpart H systems must also have TOC levels < 4.0 mg/L in source water at each treatment plant
 - Systems must sample for TOC every 30 days to qualify for reduced monitoring



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Stage 2 DBPR – Purpose of Operational Evaluation

- Early warning for systems with possible TTHM/HAA5 MCL violations
 - Early identification allows systems to act to prevent violations
- Provides an estimate of fourth quarter's TTHM and HAA5 level based on data from first three quarters
- First time systems determine whether they have an operational evaluation level exceedence is the 3rd quarter following the start of compliance monitoring
 - Systems must make this determination each quarter thereafter

Operational Evaluation Levels:
 0.080 mg/L for TTHM
 0.060 mg/L for HAA5

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Stage 2 DBPR – Operational Evaluation Calculations

- Sample operational evaluation level calculation

CALCULATION 1

Identify results from last 3 quarters to estimate LRAA

Example:

Location A HAA5 sample
3rd quarter of 2014

2Q 2014: 0.060 mg/L

1Q 2014: 0.060 mg/L

4Q 2013: 0.070 mg/L

CALCULATION 2

Using 3rd quarter to estimate 4th quarter HAA5 level, calculate RAA

Example:

Sum of quarterly averages =
(0.070 + 0.060 + [0.060*2]) =
0.250 mg/L

RAA = 0.250/4

RAA = 0.063 mg/L

This is NOT a violation of the Stage 2 DBPR—0.063 mg/L exceeds the operational evaluation level, not the MCL

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Stage 2 DBPR – Exceeding an Operational Evaluation Level

- If a system exceeds an operational evaluation level, it must:
 - Conduct an operational evaluation
 - Submit a written report of evaluation to State no later than 90 days after being notified of the analytical result causing the exceedance
 - Keep a copy of the operational evaluation report and make it available to the public upon request
 - Report any operational evaluation level exceedances that occurred during the quarter to the State within 10 days of the end of the quarter

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Stage 2 DBPR – Operational Evaluation

- **Step 1:** Ensure sample results causing the exceedance are accurate
- **Step 2:** Determine whether exceedance is system wide or localized
- **Step 3:** Request to limit scope of the evaluation, if system can identify cause of exceedance
- **Step 4:** Identify cause of exceedance
- **Step 5:** Identify steps to minimize future exceedances



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Stage 2 DBPR – Chlorine/Chloramines Monitoring

- Consecutive systems delivering water that has been treated with a disinfectant other than UV must comply with Stage 1 DBPR requirements for chlorine and chloramines
 - Requirement is effective beginning January 1, 2009
 - Associated analytical, monitoring, compliance, and reporting requirements under Stage 1 DBPR are applicable



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Poll Question

State X receives a Stage 2 DBPR compliance monitoring plan for a CDS. The CDS consists of a wholesale system that provides water to 25 consecutive systems. The plan has a total of 24 compliance monitoring locations.

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Stage 2 DBPR– Summary

- **Consecutive systems using disinfected water**
 - **Must comply with Stage 2 DBPR**
 - Unless very small (<500), systems must either conduct standard monitoring or a System Specific Study (SSS) to comply with IDSE requirements
 - All systems in CDS must monitor under compliance schedule for population of largest system
 - Conduct TTHM/HAA5 LRAA compliance monitoring
 - Conduct Operation Evaluations
 - **Must conduct Stage 1 DBPR Chlorine/Chloramines monitoring**

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Q&A



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Communication Issues

- General
- GWR specific
- Stage 2 DBPR specific

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Communication Issues

- Wholesale/consecutive system relationships are *complex and varied*
 - Complex system interactions
 - Multiple wholesalers
 - Seasonal sources
 - Complex contractual relationships
 - Wholesale supply may pass through one or more consecutive systems
 - Wholesaler may only provide emergency connection

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Communication Issues

- Working relationships need to be built between consecutive and wholesale systems
- Some communication approaches :
 - Sharing compliance monitoring data as results are gathered
 - Encouraging laboratory notification of both the consecutive and wholesale system
 - Improving communications via technology
 - Dedicated phone lines with message capacity 
 - Cell phone message transmission 
 - Web-based information pages and message posting 
 - E-mail notification 

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GWR – Communication Issues

- Wholesale systems need timely notification of TCR+ from consecutive systems
- Need to know source(s) in use at time of TCR+ and source(s) serving the consecutive system
- TSWM/communication plans can be prepared for
 - Combined wholesale/consecutive distribution system
 - Individual systems

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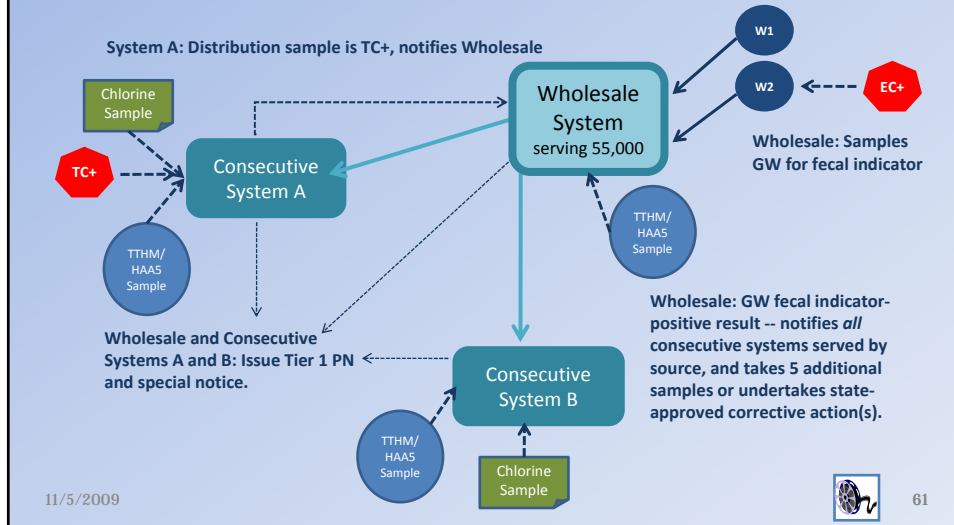
Stage 2 DBPR – Communication Issues

- Purchase agreements vary
 - Can help establish lines of communication and assign responsibility
 - Purchase agreements may conflict with Stage 2 DBPR requirements and may need to be revised
- Regular exchange of information on water quality and operational issues
- Operational evaluations should initiate discussions with wholesale suppliers

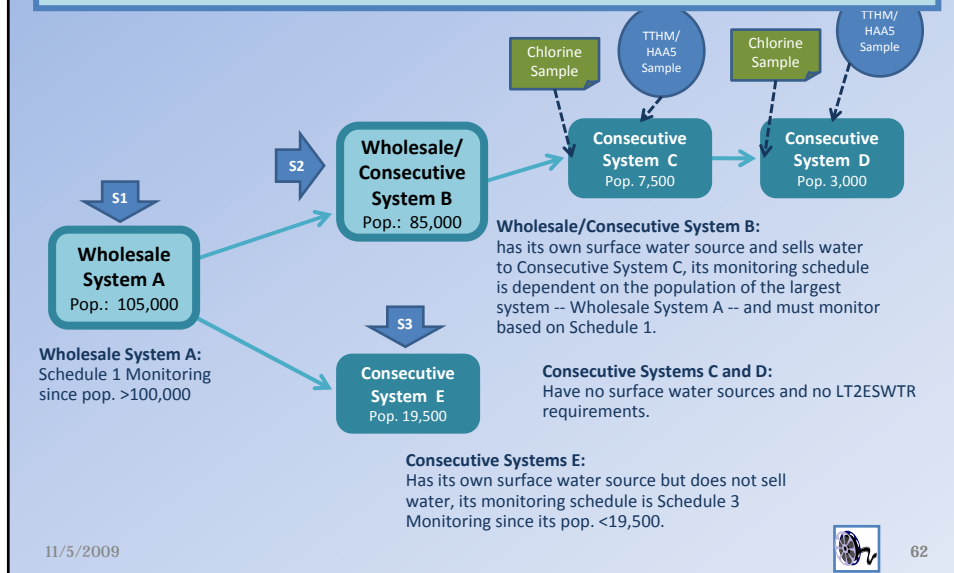
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Consecutive systems receiving disinfected ground water – Example



Consecutive systems receiving disinfected surface water – Example





Q&A



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Resources

- GWR Website
www.epa.gov/ogwdw/disinfection/gwr/
- LT2ESWTR Website
www.epa.gov/safewater/disinfection/lt2/
- Stage 2 DBPR Website
www.epa.gov/ogwdw/disinfection/stage2/

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