#### Introduction to the Revised Total Coliform Rule

#### Ohio EPA

#### **Division of Drinking and Ground Waters**



## Outline

- Background
- Sampling
- Seasonal Systems Start-Up Procedure
- Sample Siting Plans
- Level 1 and Level 2 Assessments
- Summary





- Many studies done since 1989 TCR
- Total Coliform (TC) Bacteria
  - Many TC bacteria = no public health implications
  - Indicator (potential pathway)





- Fecal coliform
  - Analysis may include bacteria that don't originate in human or animal gut
  - Not used in RTCR
- E. coli is a better indicator of fecal contamination
  - Almost always originates in human/animal gut



- U.S. EPA developed the Revised Total Coliform Rule (RTCR)
- Takes effect on April 1, 2016
- Uses more of a preventative approach ("Find and Fix") rather than response-based



## System Types Under RTCR

- Rule requirements depend on system type:
  - 1. Seasonal Public Water Systems (PWSs)
  - Noncommunity Ground Water PWSs serving <1,001
     <ul>
     a) TNC
    - b) NTNC
  - 3. All other PWSs:
    - a) All community PWSs
    - b) All surface water PWSs
    - c) Noncommunity PWSs serving >1,000

#### **Routine Sampling**



## Sampling Requirements - Routine

- Only PWSs with possible changes to monitoring schedule = Noncommunity Ground Water Systems serving <1,001</li>
  - Noncommunity PWSs (e.g., churches, gas stations)
    - Can increase to monthly, if meet criteria (as of 4/1/16)
  - Seasonal Noncommunity PWSs (e.g., campground)
    - Can increase to monthly, if meet criteria (as of 4/1/16)
    - May get new schedule depending on type (eventually)



### Criteria for Increase to Monthly Monitoring

- Only applies if on quarterly monitoring
- <u>Any</u> of the following:
  - Level 2 Assessment (L2)
  - 2 L1s in 12-months
  - EC MCL violation
  - RTCR TT violation



- 2 RTCR monitoring violations in 12-months
- 1 RTCR monitoring violation and 1 L1 in 12-months
- Start month after event
- Must sample monthly at least 12 months



#### Example



- Sloppy Joe's BBQ is on quarterly monitoring
- Collects 2Q routine in mid-April 2016

**4/15/2016** Notified of 2Q Result **4/16/2016** Collects 3 RPs

April 2016 EC MCL, Tier 1 PN, Conduct L2 May 2016 Begin monthly monitoring

EC+









# Qualifying for Reduced Monitoring

- To get back on quarterly, meet <u>all</u> of following:
  - Sanitary survey, LSSV, or L2 in past 12 months
  - Have a clean compliance history for ≥12 months, which means no violations or exceedances of:
    - E. coli MCL
    - RTCR monitoring requirements
    - RTCR TT triggers
    - RTCR TT requirements (e.g., L1/L2 Assessments)



# Qualifying for Reduced Monitoring

- To get back on quarterly (cont.):
  - No significant deficiencies
  - Protected source water
    - Source Water Protection Plan
  - A valid LTO





# Qualifying for Reduced Monitoring

- To get back on quarterly (cont.):
  - No outstanding violations of the following requirements:
    - Nitrate/nitrite MCL or monitoring
    - GWR source water monitoring
    - GWR TT
    - Operational (i.e., disinfection, MORs)



### Seasonal Systems

- RTCR establishes monitoring requirements specifically for seasonal systems (1<sup>st</sup> time)
- 3 Types:
  - Fully-pressurized year-round
  - Partially-depressurized
  - Depressurized
- Each has different monitoring requirements





#### Seasonal Types: Depressurized

- Entire water system is depressurized for a period of time each year (<u>All</u> waterlines are drained)
- <u>Example</u>: Campground that drains all waterlines in winter
  - Under RTCR, will collect one (1) routine sample/month during operating season





### Seasonal Types: Partially-Depressurized

- Water system is partially-depressurized for a period of time each year (<u>Some</u> of the waterlines are drained)
- Example:
  - Golf course has one well
  - Clubhouse is open year-round, but they drain the waterline to the bathroom at the 9<sup>th</sup> hole in the winter



### Seasonal Types: Partially-Depressurized

- Under RTCR, will collect:
  - One (1) routine sample/month during operating season
  - One (1) routine sample/quarter during off-season





### Seasonal Types: Fully-Pressurized Year-Round

- Entire water system stays fully-pressurized year-round, but <u>no one has access</u> to the water for a period of >90 consecutive days
- <u>None</u> of the waterlines are drained



### Seasonal Types: Fully-Pressurized Year-Round

- Example:
  - Ice cream shop closes for 5 months in winter and no one has access to the water during off-season (building is locked), but the waterlines remain pressurized
- Under RTCR:

- One (1) routine sample/quarter during operating season





### Example #1 - Not Seasonal

- Fully-pressurized year-round and closed ≤90 days
- Example:
  - TNC GW PWS serving <1,001 operates Feb 1<sup>st</sup> through Nov 30<sup>th</sup>
  - Closed for 62 days during the winter (≤90 days), but waterlines remain pressurized
  - Under RTCR:
    - One (1) routine sample/quarter (Year-round)



### Example #2 - Not Seasonal

- Fully-pressurized year-round, has access to water during off-season
- Example:
  - TNC GW PWS serving <1,001 operates April 1<sup>st</sup> through Oct 31<sup>st</sup> (Closed 151 days)
  - Caretaker periodically visits during off-season to check on things (e.g., collect mail, check building). Caretaker has <u>access to the water</u>.
  - Under RTCR:
    - One (1) routine sample/quarter (Year-round)



### New Routine Sampling Schedule

- All PWSs will transition to the RTCR on their current monitoring schedule
- Seasonal System Schedule Change
  - New monitoring schedule for seasonal systems takes effect <u>after</u> Ohio EPA performs a detailed monitoring evaluation
  - Continue sampling according to your <u>current</u> monitoring schedule until this evaluation takes place
- Increase to Monthly Monitoring
  - NCGWSs serving <1,001 can get increased to monthly monitoring if meet criteria beginning April 1, 2016



#### **Repeat Sampling**



- 3 repeats for <u>each</u> routine TC+
  - Example: 3 TC+ routines = 9 repeats
  - No exceptions
  - Must collect all repeats on same day
  - Collect within 24 hours of notification







 If less than 3 taps are available, repeats can be collected from the same tap at 5 minute intervals

Ohio Environmental Protection Agency

- In lieu of the 1 upstream/1 downstream approach, PWSs specify in SSP either:
  - Alternative fixed locations, or
  - Criteria for selecting repeat sites on a situational basis in a standard operating procedure (SOP)
    - Include SOP with SSP
    - Focus on sites that best verify and determine extent of potential contamination based on specific situations
- Must be representative of a pathway for contamination of the distribution system



- If system chlorinates:
  - Must take <u>Total Chlorine</u> sample and include result in Sample Submission Report (SSR)
    - Ohio EPA recommends including Free Chlorine result as well
- Ground Water Rule (GWR) still applies to GW systems



# Sampling Requirements - GWR

- If minimal treatment system:
  - No additional source water sample is required
  - Only collect 3 repeats for each TC+
- If substantial system:
  - Collect source water sample (well) in addition to 3 repeats
    - If <u>multiple wells</u> in use: collect one sample from each well
    - If <u>one well</u> in use: collect sample from well in use at time of TC+ routine
  - Write "GWR00#" in comment section of SSR
    - # identifies the well



### Sampling Requirements - GWR

• Check monitoring schedule to determine if minimal treatment or substantial system

Ohio Environmental Protection Agency	Effective Date: 01/01/2016	2016 MONITORING SCHEDULE
OH0133712 HICKORY VALLEY LL System Type: Transient Noncommunity	C Ground Water Rule Minimal Treatment System	Operating Period: 1/1 to 12/31
Ohio Environmental Protection Agency	Effective Date: 01/01/2016	2016 DISTRIBUTION SCHEDULE
OH0100012 ADAMS COUNTY REG System Type: Community	IONAL WD PWS Ground Water Rule Substantial System	Operating Period: 1/1 to 12/31

- Repeats must be collected within 24 hours of being notified
- Sample collectors will need to coordinate closely with systems to meet 24-hour deadline
- If can't meet 24-hour collection deadline, required to list reason for extension in comment field of SSR

- Labs need to transfer all comments into eDWR



- May qualify for additional 72-hr extension if:
  - Lab not available (e.g., holiday, weekend)
  - Sample would exceed hold time (30 hrs) due to limited delivery or lab is not open
  - No sample bottles available because lab is closed
  - Extreme weather
    (unsafe for sample collector)



- Upon request, Ohio EPA can grant case-bycase extension to 24-hr deadline if:
  - Other logistical problems collecting repeats
  - Conditions listed previously result in delay beyond an additional 72 hours



- Recommendations:
  - Have extra bottles so that repeats can be collected ASAP
  - PWSs: Know your lab's sample receiving schedule
  - Labs: Have your sample receiving schedule readily available and/or provide to sample collectors



#### **Temporary Routine Sampling**



### **Temporary Routine Samples**

- Month after TC+:
  - If on quarterly monitoring:
    - Collect 3 temporary routine samples (reduced from 5)
    - Doesn't matter if trigger a Level 1 Assessment
  - If on monthly monitoring (or increased to monthly):
    - <u>Do not</u> collect temporary routine samples
    - Conduct routine monthly monitoring


### Example System on Quarterly Monitoring



Increased to monthly starting next month, so collect 1 routine sample next month (not 3 temp routines)



### Example System on Quarterly Monitoring



EC+ routine 3 TC- repeats 3 TC- routines

Still on quarterly, so collect 3 temp routines next month (Aug.)

### **Temporary Routine Samples**

### **Option 1:**

Separate taps: Can collect all 3 on same day



### **Option 2:**

One tap: Must collect at regular intervals throughout the month





### Temporary Routine Samples Postponement

- Can postpone requirement to monitor with 3 samples following month if:
  - PWS collects all repeats
  - Ohio EPA conducts site visit and determines source of contamination within 2 weeks of TC+ notification
  - PWS submits approvable plan to eliminate source of contamination



### Temporary Routine Samples Postponement

- Approvable plan must include:
  - How source of bacterial contamination will be eliminated (details)
  - Who will perform the work
  - Schedule for completing work
    - 90 days or less from date TC+ routine collected



### Temporary Routine Samples Postponement

 If plan is approved, system can collect the temporary routine samples the month after work is completed







- Depressurized or Partially-Depressurized
  - 1. Complete Start-Up Checklist
    - a) Includes Start-Up Sampling
  - Submit "Annual Start-Up Certification" form to Ohio EPA District Office at least five (5) days prior to serving water to the public
- Fully-Pressurized Year-Round
  - 1. Complete Simplified Start-Up Checklist
    - a) Keep on file for Ohio EPA review



- Start-Up Checklist (use correct version)
  - "Seasonal Public Water System Start-Up Requirements and Checklist"
    - Use if depressurized or partially-depressurized
  - "Simplified Start-Up Checklist for Fully-Pressurized Seasonal Systems"
    - Use if fully-pressurized year-round



- 1. Complete Checklist
  - Pre-Inspection Activities
  - Initial Inspection of well, storage tanks, pressure tanks, distribution lines, valves and treatment systems
  - Activate and pressurize
  - Complete any needed repairs
  - Disinfect and flush
  - Verify system is operating properly



- Test chlorine level
  - Non-chlorinated systems = non-detect
  - Chlorinated systems = 0.2 mg/l free, <4.0 mg/l total</li>
  - If no test kit, wait 7 days after flushing to collect TC special purpose samples



Collect "special purpose" TC sample

- Write "Start-Up" in the comments section of the lab Sample Submission Report (SSR)
- Must collect from location noted on Sample Siting Plan



- If TC negative ("Safe"):
  - Good!
  - Submit "Annual Start-Up Certification" form to Ohio EPA District Office at least 5 days prior to serving water to the public
    - <u>Talk to lab about reporting results ASAP to avoid delay in</u> serving water to public
  - Keep Checklist on file for Ohio EPA review

- If TC positive ("Unsafe"):
  - Disinfect and flush again
  - Collect 2 SP samples at least 24 hours apart
  - Once 2 or more SP samples are TC negative:
    - Submit "Annual Start-Up Certification" form to Ohio EPA District Office
    - Must be submitted at least 5 days prior to serving water to the public
  - Keep Checklist on file for Ohio EPA review



- Depressurized or Partially-Depressurized
  - 1. Complete Start-Up Checklist
    - a) Includes Start-Up Sampling
  - Submit "Annual Start-Up Certification" form to Ohio EPA District Office at least five (5) days prior to serving water to the public
- Fully-Pressurized Year-Round
  - 1. Complete Simplified Start-Up Checklist
    - a) Keep on file for Ohio EPA review



# Simplified Start-Up Procedure

- Similar to standard checklist
- Key differences:
  - Not required to disinfect (still flush)
  - Start-Up sampling is recommended (not required)
  - <u>Do not</u> submit the "Annual Start-Up Certification" form
- Date Simplified Checklist and keep on file for Ohio EPA review



### Seasonal Start-Up Procedure Transition

- If depressurized or partially-pressurized:
  - Required to complete the Start-Up Procedure in
     2016 if open 4/1/2016 or later
  - All required to complete in 2017 and beyond
- If fully-pressurized year-round:
  - Ohio EPA must conduct Detailed Monitoring Evaluation (if GW ≤1,000) or a sanitary survey <u>before</u> requiring the Simplified Start-Up Checklist



### Sample Siting Plans



# Sample Siting Plans

- All water systems must update their total coliform Sample Siting Plan by **April 1, 2016** 
  - Templates are available on the website: <u>http://epa.ohio.gov/ddagw/rtcr.aspx</u>
- <u>DO NOT</u> submit your Sample Siting Plan
  - Ohio EPA will review it during your next sanitary survey



# Sample Siting Plans

- 3 templates available:
  - Seasonal Systems
  - NCGWS <1,001
  - General
- Use correct template
  - If unsure, call Ohio EPA District Office



### Seasonal Sample Siting Plan





# RTCR Sample Siting Plan Template for Small Seasonal Public Water Systems

(Final 12/04/2015)

This template includes sample siting plan requirements under the Revised Total Coliform Rule (RTCR) for seasonal, ground water, noncommunity systems serving fewer than 1001 persons.

Contact Information for the Water System							
System Name:	Date:						
Address:		PWS ID #:					
Season start date (mm/dd):	Season end date (mm/dd):	County:					
The following people are thoroughly familiar with t	his sample siting plan and are authorized to impler	nent all or part of the plan as necessary.					
Name	Address	Phone Numbers					
		Office:					
		Mobile:					
		Office:					
		Mobile:					
Persons Responsible for collecting samples:							
Primary:	Phone:						
Backup:	Phone:						

 ID Primary, 1<sup>st</sup> alternate, 2<sup>nd</sup> alternate Routine locations, and Repeat locations

#### **Routine and Repeat Bacteriological Sampling Locations:**

If the water system only has <u>one</u> sample tap: Only complete the "Primary Location" section highlighted below (and the "Source Water Sampling" section if applicable), and collect the repeat samples five minutes apart from same tap.

Primary Location	First Alternate Location		
Routine Sample Location	Routine Sample Location		
Describe location and sample tap (e.g., Office hand sink)	Describe location and sample tap (e.g., Office ladies room sink)		
Repeat Sample Locations	Repeat Sample Locations		
1)	1)		
(Same location as routine sample)	(Same location as routine sample)		
2)	2)		
(Within 5 taps upstream from the routine sample)	(Within 5 taps upstream from the routine sample)		
3)	3)		
(Within 5 taps downstream from the routine sample)	(Within 5 taps downstream from the routine sample)		

• Complete Source Water Sampling section

Second Alternate Location	Source Water Sampling (check one box below based on description)
Routine Sample Location	If the water system has <u>a single well</u> and has been designated as a <i>Ground</i> Water Rule <u>Minimal</u> Treatment System (consisting of a water softener or
Describe location and sa (e.g., Office men's roon	sink) cartridge filter) in its Ohio EPA monitoring schedule, then all repeat sites listed in this sample siting plan are considered source water sites. Therefore, the
Repeat Sample Locations	conducting repeat sampling.
1)(Same location as routi	<ul> <li>Source Water Sample Required</li> <li>A water system that has been designated as a <i>Ground Water Rule <u>Substantial</u></i></li> <li>System in its Ohio EPA monitoring schedule is not eligible for dual purpose</li> </ul>
2)(Within 5 taps upstream from t	sampling. Following a total coliform-positive routine sample, the system shall collect a source water sample (i.e., before any treatment) in addition to three e routine sample)
3)(Within 5 taps downstream from	collected from each well. If only one well is in use, then only one source water sample is required and shall be collected from the well in service at the time the positive routine sample was collected. The source water sample(s) will be
	collected from:

Describe source water location(s)

• ID Primary and Backup Laboratory

Certified Laboratory Information					
	Primary Laboratory	Backup Laboratory			
Name					
Address					
Phone Number					
Lab Certification Number					
Days of the week and times lab will accept samples					

ID Start-Up special purpose sample location(s)

#### Start-Up Special Purpose Samples • As part of the Start-Up Checklist, depressurized and partially-depressurized seasonal systems are required to collect at least one special purpose sample at the service connection considered to be most susceptible to contamination for total SAMPLING coliform (TC) analysis. The service connection farthest from the entry point is often the appropriate location. Multiple TC samples are recommended especially in distribution systems that are large or split into different sections. • For each start-up special purpose sample, write "Start-Up" in the comments section on the laboratory Sample Submission Report. START-UP • The sample must be TC-negative before the system may open. If the sample is TC-positive, repeat the disinfection and flushing procedure (See instructions in the Start-Up Checklist). Following flushing, collect 2 special purpose samples at least 24 hours apart. Both samples must be TC-negative before the system can serve water to the public. 2) 3) 1) Location 1 Location 2 Location 3

- ID temporary routine sample location(s)
- 2 options pick one

SAMPLES

TINE

#### Seasonal Systems on Quarterly Routine Monitoring for at Least One Quarter:

Systems that are on quarterly monitoring for at least one quarter and have a total coliform-positive routine sample result during that quarter are required to collect 3 routine samples the following month. These samples can be collected in one of two ways. Select one of the following options based on the number of sample taps available (see Option 1 and Option 2 below).

**OPTION 1:** If all three temporary routine samples are collected from **different sample taps**, they may be collected on the same day from the following three locations. We recommend spreading sample collection out over the month even if samples will be collected at different taps to ensure the quality of the water over time, etc.

Y ROL	1)	2)	3)
AR	Location 1	Location 2	Location 3
OR/		-OR-	
TEMP(	OPTION 2: If all three temporary routine samples a they will be taken at regular intervals throughout th	Location	

- Fully-Pressurized Seasonal Systems
  - Select month in each quarter with peak demand or peak vulnerability (e.g., Month within each quarter with the highest usage)
- Must collect routine samples during the selected months

#### **Fully-Pressurized Seasonal Systems**

Seasonal systems that are fully-pressurized year-round must <u>select one month during each quarter they are open to the public</u> for routine monitoring. The selection shall be based on peak demand or peak vulnerability (e.g., month with highest water usage). Check one box in each quarter below. **Routine samples are required to be collected during the selected months.** 

1 <sup>st</sup> Otr	Jan.	Feb.	Mar.	and Oth	Apr.	May	June	a <sup>rd</sup> Oth	July	Aug.	Sept.	4 <sup>th</sup> Otr	Oct.	Nov.	Dec.
1 Qtr				2 Qtr				□ 3 Qtr				4 Qtr			

### **General Sample Siting Plan**



- On the General SSP Template:
  - Only complete the sections that are applicable to your system
  - For example, this section is only applicable to community PWSs:

ADDITIONAL INFORMATION FOR COMMUNITY PUBLIC WATER SYSTEMS					
Map(s) of the distribution system are located at:					
Copies of this plan, along with the Contingency Plan, are maintained at the following locations:					
1					
2.					
3.					
4.					
5.					

• This section is only applicable to ground water systems:

#### ADDITIONAL INFORMATION FOR GROUND WATER SYSTEMS

#### Source Water Sampling

Following a total coliform-positive routine sample, ground water systems shall collect a source water sample (i.e., before any treatment) in addition to three repeat samples. If multiple wells are in use (e.g., lead-lag), a sample shall be collected from each well. If only one well is in use, then only one source water sample is required and shall be collected from the well in service at the time the total coliform-positive routine sample was collected.

A source water sample will be collected from:

Describe source water location 2 (if applicable)

A source water sample will be collected from:

Describe source water location 3 (if applicable)

A source water sample will be collected from:

Describe source water location 4 (if applicable)

• This section is only applicable to seasonal systems:

#### ADDITIONAL INFORMATION FOR SEASONAL PUBLIC WATER SYSTEMS

#### Start-Up Special Purpose Samples

- As part of the Start-Up Checklist, depressurized and partially-depressurized seasonal systems are required to collect **at least one** special purpose sample at the service connection considered to be most susceptible to contamination for total coliform (TC) analysis. The service connection farthest from the entry point is often the appropriate location. Multiple TC samples are recommended especially in distribution systems that are large or split into different sections.
- For each start-up special purpose sample, write "Start-Up" in the comments section on the laboratory Sample Submission Report.
- The sample must be TC-negative before the system may open. If the sample is TC-positive, repeat the disinfection and flushing procedure (See instructions in the Start-Up Checklist). Following flushing, collect 2 special purpose samples at least 24 hours apart. Both samples must be TC-negative before the system can serve water to the public.

1)		2)	3)		
	Location 1	Location 2	Location 3		

• All systems must complete the Routing Sampling section:

#### **ROUTINE SAMPLING**

Using the table provided below, designate sampling locations for each routine sample required and the associated 3 repeat sampling locations. One of the repeat locations must be the same as routine location.

Nu	Number of <b>routine</b> total coliform samples required per month:						
	Purpose	Tap Name & Location	Phone Number				
1.	Routine sample location						
a.	Repeat sample at routine sample location.						
b.	Repeat sample location within 5 service						
	connections upstream of the routine sample						
	site.						
с.	Repeat sample location within 5 service						
	connections downstream of the routine						
	sample site.						
2.	Routine sample location						

### Assessments



### Assessments

- "Find and Fix" approach when bacteria are found in the water
- If a "trigger" occurs, an Assessment must be performed
- Two types
  - Level 1
  - Level 2



### Level 1 Assessment

- Triggered by:
  - If <40 TC samples/month</p>
    - 2 or more TC+ (formerly monthly TC MCL)
  - If  $\geq$ 40 TC samples/month
    - >5.0% of monthly samples TC+
  - Fails to monitor with <u>all</u> repeats after a TC+
- TT trigger, not a violation


### Level 1 Assessment

- Basic examination of water system to try to identify cause of TC+ sample(s)
- Noncommunity PWSs: Ohio EPA will contact PWS by telephone to review above items
- Community PWSs: Ohio EPA will assist



# Level 1 Assessment Form

- Noncommunity PWSs: Ohio EPA will provide a letter summarizing the phone call

   Includes copy of completed assessment
- Community PWSs: Completed form must be submitted to Ohio EPA within 30 days of trigger date
- Must identify any found significant deficiencies, corrective action(s) completed, and a timetable for needed corrective action(s)



# Level 2 Assessment

- Triggered by:
  - E. coli MCL violation
  - A second Level 1 trigger within a rolling 12-month period (i.e., problem was not resolved after the 1<sup>st</sup> Level 1 Assessment)
- Includes more in-depth examination of water system
- Ohio EPA will perform this evaluation



# Level 2 Assessment Form

- Ohio EPA will provide a letter summarizing the site visit
  - Includes copy of L2 Assessment form



### L1 and L2 Assessments

• If PWS does not complete the required actions, it is a treatment technique violation



#### Summary



# Summary

- Collect routine samples according to monitoring schedule
- If TC+, collect 3 repeats within 24 hours
- Update Sample Siting Plan by 4/1/2016
- Follow through as agreed on Level 1 and Level 2 Assessments



# Summary

- Depressurized and partially-depressurized seasonal systems
  - If open 4/1/2016 or later, must complete Start-Up
     Procedure in 2016
    - All must complete 2017 and later
  - Must submit certification form at least 5 days
     prior to serving water
    - Must have TC- start-up sample results before form can be submitted



#### Resources

- <a href="http://epa.ohio.gov/ddagw/rtcr.aspx">http://epa.ohio.gov/ddagw/rtcr.aspx</a>
- Fact sheets
- Questions?

Contact your Ohio EPA Inspector at the appropriate District Office Northwest: (419) 353-8461 Northeast: (330) 963-1200 Central: (614) 728-3778 Southwest: (937) 285-6357 Southeast: (740) 385-8501

