

Revised Total Coliform Rule (RTCR) and Triggered Ground Water Rule (GWR) Challenges in EPA Region 8

October 23, 2024

WWQ PCA - EPA Rule Training

The policy views expressed in this presentation are those of the author and do not necessarily reflect the views of the U.S. Environmental Protection Agency.

THANK YOU!!!!

Providing bacteria-free
drinking water is a
critical job!

Raise your hand if:

- You collect drinking water TC samples for your job?
- You work at a surface water system.
- Your PWS sells or purchases water to/from another PWS.
- Your PWS ever had a **TC+** result? **EC+** result?
- Your PWS triggered a Level 1 or Level 2 Assessment?
- There is treatment on your system?
- You've talked to me on the phone?
- You've heard me give this presentation before?
- **You've called anyone at EPA to ask a question?**

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SOME TIPS ON HOW TO AVOID RTCR & TG GWR VIOLATIONS!

- Check Drinking Water Watch for your RTCR samples around the 8th of the month AFTER the monitoring period. Check for your May sample around June 8th. If it's not there, re-send it.
- Implement the manufacturer recommended cleaning and maintenance on all treatment units.
- Follow your RTCR sample siting plan.
- Label your samples correctly.
- Always collect source samples after a routine TC+ result.

→ **If you have any questions CALL EPA!!!**

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Overview

- Revised Total Coliform Rule (RTCR) Highlights
- Monthly & Triggered Monitoring
 - Sample Types
 - Important Information to Remember
- RTCR & GWR Implementation Challenges
- Assessments & Corrective Action
- TT & MCL Violations



E. coli

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Revised Total Coliform Rule Highlights

- Every water system must have a Sample Siting Plan that identifies routine, repeat, and triggered source samples.
- **All** Region 8 water systems are required to monitor for total coliforms (TC) **monthly**, according to their Sample Siting Plan.
- Monthly sample results are due to EPA by the 10th of the **following** month.
- For every routine **TC+**, system must collect 3 repeat samples and a TG GWR sample (if applicable) within 24 hours.

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Revised Total Coliform Rule Highlights

- Generally, a **Level 1 Assessment** may be triggered if a water system has two or more TC+s in one monitoring period (month).
- Multiple Level 1 Assessments in a rolling 12-month period become a **Level 2 Assessment**.
- An ***E. coli* (EC) MCL violation** occurs when there is a combination of EC and TC routine and repeat samples in the distribution system.
- **Treatment technique violations** are triggered when a required action is not completed on time.
- **Reporting violations** may be triggered if a sample result is received late.
- **Public Notification** is required with all violations.

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Triggered Ground Water Rule Highlights

- Only systems classified as using a groundwater source are subject to the Ground Water Rule.
- If your system doesn't treat the water to 4-log inactivation of viruses a triggered GW source sample is required after any routine TC+ in the distribution system.
- Must be collected from the tap closest to the well/spring, preferably before any storage or pressure tanks.
- Must be collected at the same time as the three repeat RTCR samples.
- Must be collected from any source active at the time the TC+ sample was collected.
- Must be collected BEFORE any treatment, including filters, UV, chlorine, etc.

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E. Coli Waterborne Disease Outbreaks

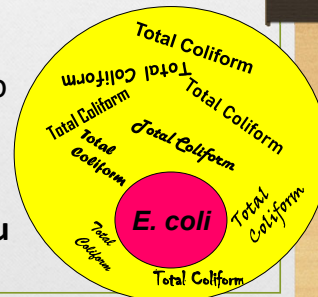
- The CDC defines a **waterborne disease outbreak** as occurring when at **least 2 persons** experience a **similar illness** after ingesting a specific **drinking water**... (Kramer *et al.* 1996).
- **Fecal** contamination, like *E. coli*, ... can make you sick with **diarrhea, abdominal discomfort, nausea, vomiting**, and other symptoms.
- Outbreaks are often **underreported** because a fecal test is required.
- **PREVENTION:** *E. coli* can be inactivated with water treatment like chlorine or UV.



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How the Revised Total Coliform Rule (RTCR) Protects Public Health

- Total coliforms (TC) are used as a warning for potentially serious contamination.
- *E. coli* is one type of bacteria found in total coliforms, it almost always originates in human or animal guts.
- If a sample is TC+, you must instruct your lab to further analyze the sample for *E. coli* (fecal coliform is no longer allowed under the RTCR).
- If any **REPEAT** samples in the distribution system are positive, you must find and fix the problem!



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Monthly & Triggered Monitoring

**Revised Total Coliform Rule (RTCR)
&
Ground Water Rule (GWR)
Sample Types**



MONITORING: Sample Labeling

Revised Total Coliform Rule Sample Types:

- Routine
- Repeat
- Special Purpose

Ground Water Rule (GWR) Sample Type:

- Triggered Ground Water Rule Source Sample

MONITORING: Routine & Repeat samples

- All water systems must collect routine total coliform samples each month they serve water to the public.
 - The number of samples required under the RTRC is dependent on the population served, and/or
 - The number of independent sources/distribution systems.
- Collect a set of three (3) repeat samples for each (1) routine TC+. All repeats must be collected on the same day.
- Repeat samples are required within 24 hours after a TC+ routine sample result. Request for an extension must be in writing.
- After an ***E. coli* + (EC+)**, repeat samples **MUST** be taken within 24-Hours. No extensions allowed.



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**WY and Tribal Revised Total Coliform Rule (RTRC)
LABORATORY SAMPLE FORM**

Sampler(s) Section (For field sampler use only):
 Reminder: Collect RTRC samples every month. If you have a total coliform positive or an E. Coli-positive, you must collect three (3) REPEAT samples according to your Sample Siting Plan. For each positive ROUTINE sample, you must collect REPEAT samples from:
 1) the same site as the positive ROUTINE sample, 2) a REPEAT sample from a site within 5 taps upstream from the positive sample, and
 3) a REPEAT sample from a site within 5 taps downstream of the positive sample. You must also collect a ground water source sample from any wells or springs in use at the time the positive ROUTINE sample was collected. This is the triggered GWR sample. Write the correct Sample Point Code on the form below (e.g., DIST), which may be found in the yearly Monitoring and Reporting Requirements and the address where the sample was taken. Chlorine Residuals are required on routine and repeat samples.
 You cannot use RTRC samples as a GWR source sample, or vice versa.

PWS info

Public Water System (PWS) Name: _____ Sampler's Name: _____
 PWS Identification Number (PWSID): _____ Cell Phone Number: _____
 PWS Street Address: _____ City: _____ State: _____ Zip Code: _____
 Comments: _____

Sample info

Sample Collection		Sample Point Address (Found on your Sample Siting Plan.)	Chlorine Residual (circle one) Total or Free mg/L	RTRC Sample Type - Check One		
Date	Time			ROUTINE - First set of required samples collected during a month.	REPEATS - samples required AFTER any routine sample is positive.	SPECIAL - Is a non-compliance sample that may be collected, for example, to determine if disinfection is adequate after pipe replacement or repair or to find a source of contamination. It is also used for the Seasonal Startup Checklist required sampling and daily sampling required by an Emergency Administrative Order. It cannot be used to determine compliance with the maximum contaminant level.
				<input type="checkbox"/> Routine	<input type="checkbox"/> Repeat	<input type="checkbox"/> Special
				<input type="checkbox"/> Routine	<input type="checkbox"/> Repeat	<input type="checkbox"/> Special
				<input type="checkbox"/> Routine	<input type="checkbox"/> Repeat	<input type="checkbox"/> Special
				<input type="checkbox"/> Routine	<input type="checkbox"/> Repeat	<input type="checkbox"/> Special

Chlorine Residual

Sampler(s) name (Print): _____ Sampler(s) signature: _____ Date signed: _____



MONITORING: Triggered Groundwater Source Sample (Ground Water Rule)

- Triggered groundwater source sample(s) are required when there is a routine TC+ result in the distribution system.
- This sample(s) confirms if the groundwater source itself is the source of contamination.
- Triggered source samples must be taken **BEFORE** any treatment and before the storage tank or pressure tank from each well that was running at the time of the routine TC+.
- If your system purchases water from another GW system and you get a TC+ you are required to notify the wholesale system and have them collect the TG GWR sample. Failure to do so will result in a violation.

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MONITORING: Triggered Groundwater Source Sample (Ground Water Rule)

- If your system has more than one well, you must call or email EPA and tell us which wells were active at the time the TC+ sample was collected. Failure to do so may result in a monitoring violation.
- If you use multiple wells that combine before treatment, you may take your samples from a combined tap. This must be **clearly** marked on the sample and lab form and reported to EPA.
- If your GWR sample tap is near the pressure tank, make sure the pump is running when you collect the sample so that you get water from the well and not stagnant water from the pressure tank.

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MONITORING: Triggered Groundwater Source Sample (Ground Water Rule) *E. coli*

- If your triggered source water sample is ***E. coli* positive** you will have to collect 5 more samples from the well or spring immediately.
- **EC+** triggered source samples require a Corrective Action Plan (CAP) to address the contaminated source water:
 - Install disinfection to 4-log inactivation of viruses,
 - Find and remove the source of contamination, or
 - Obtain a different source of water.



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MONITORING: SPECIAL PURPOSE SAMPLES



- Samples labeled as Special purpose cannot and will not count towards monthly compliance.
- Special purpose samples cannot be changed to ROUTINE samples after they are analyzed.
- Special samples are required if an Emergency Administrative Order is issued or in a loss of pressure situation.

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WHEN TO CONTACT EPA:

- **When the lab reports an *E. coli* positive result.**
- When the lab reports a total coliform positive result.
- If you have more than one well running at the time the TC+ sample was collected.
- If your triggered source sample will be collected ANYWHERE other than a tap directly after the well before any storage or treatment.
- Samples are missing in Drinking Water Watch.
- Any other time!

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IMPLEMENTATION CHALLENGES

RTCR Implementation Challenges: Samples

- **Labeling Samples** – The RTCR site name must include the actual location where the sample was collected. SP0# is not an acceptable sample site for total coliform samples.
- **Incomplete Chain of Custody (Sample Form)** – If there is no PWSID on the lab form then EPA will not accept the result. Other items often missing include the sample date, sample time, and sample type (routine, repeat, or special purpose).
- **Reporting Results Late to EPA** – Be clear with your lab about who is sending results to EPA and when. Check Drinking Water Watch.

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RTCR Implementation Challenges:

- **One-time Sample Site Change** - What if you can't access the location on the Sample Siting Plan?
 - Return to the site on a day when you will have access,
 - Sample at a nearby location, or
 - Use an outdoor faucet that you have thoroughly flushed, cleaned, and disinfected, and
 - Email Jamie (me) immediately and include 1) where the sample was supposed to be collected, 2) where it was collected and 3) why it was collected there.
- **Permanent Sample Site Change** - What if a sample site went out of business or someone moved? Revise and resubmit your sample plan.

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TRIGGERED GROUND WATER RULE IMPLEMENTATION CHALLENGES

GWR Implementation Challenges: Samples

- **Multiple Sources** – If you have more than one water source it is your responsibility to tell EPA which wells were running at the time of the TC+. Failure to do so will result in a **VIOLATION**.
- **Labeling Samples** – The Triggered GWR sample must be labeled as the Triggered sample, it can't be labeled as a Repeat.
- **Sample Location** – The purpose of the TG GWR source sample is to characterize the source water, not the water in the storage tank or the pressure tank.

BEFORE ANY TREATMENT!

- **Sample Timing** – If you don't take your repeat samples on time, after a TC+, it triggers an Assessment. If you don't take your triggered source water samples on time it results in a **VIOLATION**.

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ASSESSMENTS & CORRECTIVE ACTIONS

PURPOSE OF ASSESSMENTS

- **Find and fix the problem!**
- The RTCR requires PWSs to investigate the entire water system when there are multiple TC+ or EC+ in the distribution system. The problems found are called “sanitary defects”.
- A **sanitary defect** is an issue that could provide a path for microbial contaminants, like total coliforms, to enter the distribution system **OR** it indicates a failure in a protective barrier that is already in place.

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TYPES OF ASSESSMENTS

- The type of Assessment required is dependent on the severity and frequency of the problem:
- **Level 1 Assessment** - a basic assessment completed by the PWS.
- **Level 2 Assessment** - a more detailed assessment conducted by an EPA-approved third party.
- Failure to complete an Assessment and/or correct a sanitary defect is a **treatment technique (TT) violation.**

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RTCR ASSESSMENTS VS. SANITARY SURVEYS

An RTCR Assessment is REACTIVE
and a Sanitary Survey is PROACTIVE!

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Disinfection Matters!

There were 20 Level 2 Assessments triggered in Wyoming and Indian country in 2023:

- 20% of Level 2 Assessments were in CWSs
- 100% had groundwater sources
- 0% used disinfection

Some systems in Wyoming and Indian country had more than 20 TC+ sample results. Once they began disinfection, TC+ stopped.

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LEVEL 2 ASSESSMENT FINDINGS

- Sanitary defects found during Level 2 Assessments include:
 1. Poor sampling technique,
 2. Leaks in the distribution system/unreported pressure loss,
 3. Dirty storage tanks,
 4. Problems with sanitary seals,
 5. Missing #24 mesh,
 6. Broken treatment or inadequate maintenance of treatment units, and
 7. Holes or openings in the well or spring box.

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(SOME) RTCR VIOLATIONS

(Treatment Technique and MCL Violations)

TREATMENT TECHNIQUE VIOLATION

- A treatment technique violation happens when an action is required (besides monitoring) and it's not done. Some examples include:
 - A Level 1 Assessment is not completed and sent to the EPA, or
 - A system fails to complete a sanitary defect corrective action identified in an Assessment.
- The PWS is required to notify the public (Tier 2 PN) within 30 days when a treatment technique violation occurs.

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E. coli MCL Violation Description

Routine sample	AND	Repeat sample
(1) TC+		EC+
(2) EC+		TC+
(3) EC+		Fails to take <u>all</u> required repeat samples
(4) TC+		TC+ (but not analyzed for <i>E. coli</i>)

40 CFR 141.63 & 141.860(a)

E. COLI (EC) MCL VIOLATION REQUIREMENTS:

YOU MUST notify EPA within 24 hours.

- Because it's related to an EC+, you may be required to issue a **boil water advisory** and provide an alternative source of water.
- Hand deliver public notification.
- An Emergency Administrative Order (EAO) may be issued by the EPA Enforcement Division.

Within 30 days, complete the following requirements:

- Participate in a Level 2 Assessment, and
- "Find and fix" all sanitary defects identified by EPA.

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SOME TIPS ON HOW TO AVOID RTCR & GWR VIOLATIONS!

- Check Drinking Water Watch for your RTCR samples around the 8th of the month AFTER the monitoring period. Check for your May sample around June 8th. If it's not there, re-send it.
- Implement the manufacturer recommended cleaning and maintenance on all treatment units.
- Follow your RTCR sample siting plan.
- Label your samples correctly.
- **If you have any questions (about any regulations)
CALL EPA!!!**

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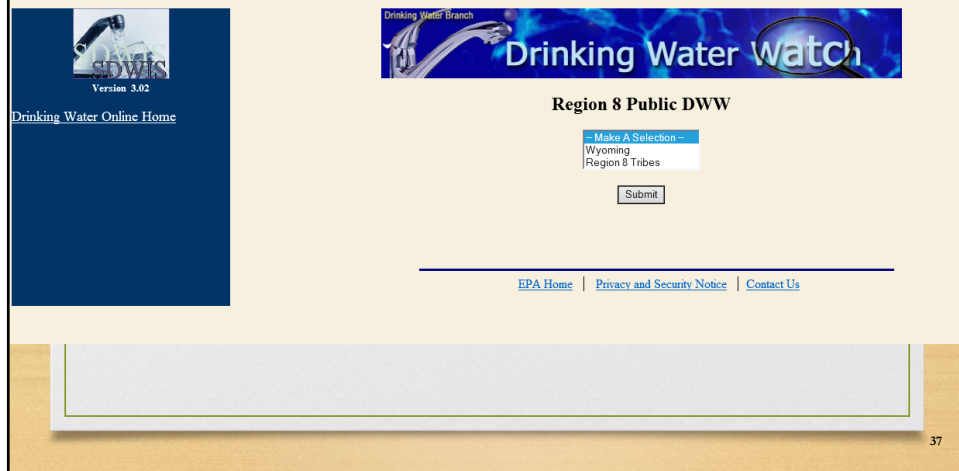
Drinking Water Watch Online

Internet Search Term: Region 8 EPA Drinking Water Watch

- No password needed.
- Check sample results for all reported analytes.
- Give EPA about a week to enter results after you received them from your lab.
- Check annual monitoring and reporting requirements.
- Send all data to R8DWU@epa.gov with the PWSID and contaminant in the subject line.

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Drinking Water Watch Online



Drinking Water Watch
Region 8 Public DWW

Make A Selection ~
Wyoming
Region 8 Tribes

Submit

[EPA Home](#) | [Privacy and Security Notice](#) | [Contact Us](#)

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Drinking Water Watch Online



Drinking Water Watch

Public Water Supply Systems Search Parameters

Water System No.

Water System Name

Principal County Served

Water System Type

Primary Source Water Type

Sample Search Parameters

Sample Class

Sample Collection Date Range
(The Sample Search always produces results for the last 2 years, unless you provide a specific date range.)
10/23/2020 To 10/23/2022

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Links

- [Water System Facilities and Schematics](#)
- [Sample Schedules, Reminders, and ChemRad Sample Form](#)
- [Coliform/Microbial Sample Results](#)
- [Coliform Sample Summary Results](#)
- [Lead And Copper Sample Summary Results](#)
- [Chem/Rad Samples/Results](#)
- [Chem/Rad Samples/Results by Analyte](#)
- [Violations/Enforcement Actions](#)
- [Site Visits](#)
- [Milestones](#)

Return Links

- [Water Systems](#)
- [Water System Search](#)
- [County Map](#)

Glossary

Drinking Water Branch

Water System Details

Water System No. : WY56

Water System Name :

Principal County Served : LARAMIE

Status : A

Federal Type : C

State Type : C

Primary Source : GW

Activity Date : 05-01-1978

Points of Contact

Name	Job Title	Type	Phone	Address
	OWNER	OW	307.	
	CONTRACT OPERATOR	DO	847.	
	CONTRACT OPERATOR	EC	847.	
	CONTRACT OPERATOR	AC	847.	

Annual Operating Periods & Population Served

Start Month	Start Day	End Month	End Day	Population Type	Population Served
1	1	12	31	R	50

Service Connections

Type	Count	Meter Type	Meter Size Measure
RS	24	UM	0

Sources of Water

Name	Type Code	Status
WELL	WL	A

Service Areas

Code	Name
R	MOBILE HOME PARK

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Drinking Water Watch Online

Sample Collection Date From To

Type	Lab Sample No.	Collection Date & Time	Sampling Point	Sample Location	Presence/Absence Indicator	Free CL Res	Tot CL Res	Analyte Code	Analyte Name	Monitoring Period Begin Date	Monitoring Period End Date	Laboratory
RT	S2209048-001	09-05-2022 14:15:00	DIST	DISTRIBUTION SYSTEM	A			3100	COLIFORM (TCR)	09-01-2022	09-30-2022	PACE ANALYTICAL SERVICES - SHERIDAN
RT	S2209048-001	09-05-2022 14:15:00	DIST	DISTRIBUTION SYSTEM	A			3014	E. COLI	09-01-2022	09-30-2022	PACE ANALYTICAL SERVICES - SHERIDAN
RT	S2208005-001	08-01-2022 06:00:00	DIST	DISTRIBUTION SYSTEM	A			3100	COLIFORM (TCR)	08-01-2022	08-31-2022	PACE ANALYTICAL SERVICES - SHERIDAN
RT	S2208005-001	08-01-2022 06:00:00	DIST	DISTRIBUTION SYSTEM	A			3014	E. COLI	08-01-2022	08-31-2022	PACE ANALYTICAL SERVICES - SHERIDAN
RT	S2207199-001	07-12-2022 16:30:00	DIST	DISTRIBUTION SYSTEM	A			3100	COLIFORM (TCR)	07-01-2022	07-31-2022	PACE ANALYTICAL SERVICES - SHERIDAN
RT	S2207199-001	07-12-2022 16:30:00	DIST	DISTRIBUTION SYSTEM	A			3014	E. COLI	07-01-2022	07-31-2022	PACE ANALYTICAL SERVICES - SHERIDAN

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Questions?

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US EPA Region 8
Mail code: 8WD-SDR
1595 Wynkoop Street
Denver CO 80202-1129

Phone: 1-800-227-8917 ext. 312-6072

Direct: 303-312-6072

Fax: 1-877-876-9101

Email: harris.jamie@epa.gov

R8 website: <https://www.epa.gov/region8-waterops>



Email sample results to R8DWU@epa.gov,
not to individual rule managers!

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Resources

- **Revised Total Coliform Rule Lab Sampling Form**
<https://www.epa.gov/region8-waterops/revised-total-coliform-rule-lab-sampling-form> (Search Term: EPA total coliform lab form)
- **RTCR and GWR Sample Labeling Instructions**
<https://www.epa.gov/region8-waterops/rtcr-and-gwr-sample-labeling-instructions> (Search Term: GWR Sample Labeling)
- **EPA Region 8 Drinking Water Unit Tech Tips: Follow-up to a Total Coliform Positive Sample** <https://www.epa.gov/region8-waterops/epa-region-8-drinking-water-unit-tech-tips-follow-unsafetotal-coliform-positive> (Search Term: Follow-up to an Unsafe Total Coliform)
- **Best practices to collect a total coliform water sample (You Tube video)**
https://www.youtube.com/watch?v=k_l294gppak (Search Term: Coliform Sample Best Practice)

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Resources

- **Reporting Public Drinking Water System Results in Wyoming and Tribal EPA Region 8** <https://www.epa.gov/region8-waterops/reporting-public-drinking-water-system-results-wyoming-and-tribal-epa-region-8> (Search Term: Reporting Results EPA Region 8)
- **Information on Maintaining or Restoring Water Quality in Buildings With Low or No Use** <https://www.epa.gov/coronavirus/information-maintaining-or-restoring-water-quality-buildings-low-or-no-use> (Search term: EPA Restoring Water Quality in Buildings)
- **Revised Total Coliform Rule (RTCR) Commonly Used Forms** <https://www.epa.gov/region8-waterops/reporting-forms-drinking-water-systems-wyoming-and-tribal-lands-epa-region-8#rtcr>
- **A Guide to Reading Your Revised Total Coliform Rule (RTCR) Level 2 Assessment** <https://www.epa.gov/region8-waterops/wyoming-public-water-systems-newsletter-2020>

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Resources

- ▶ **Required Information for Total Coliform Lab Reports for the Revised Total Coliform Rule (RTCR)** <https://www.epa.gov/region8-waterops/wyoming-public-water-systems-newsletter-2020>
- ▶ **What's in a Sample Bottle Name? How to Properly Label a Nitrate Sample and a Total Coliform Sample** <https://www.epa.gov/region8-waterops/wyoming-public-water-systems-newsletter-2020>

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POLL QUESTION #1:

Which is the correct location for collecting the triggered source sample?

- 1) SP01 (after the chlorinator)
- 2) The well, before the filter and UV
- 3) Within the distribution system

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POLL QUESTION #2:

Which is the correct location for collecting the Routine total coliform sample?

- 1) SP01 (after the chlorinator),
- 2) The well, before the filter and UV,
- 3) Within the distribution system.

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POLL QUESTION #3:

What is one of the first things you must do when the lab notifies you of an *E. coli* positive sample result in the distribution system?

- 1) Yell **HOLY *E. COLI*!!!!**
- 2) Call EPA to report the *E. coli* positive.
- 3) Collect repeat samples early the next morning and get them to the lab immediately.