

# Revised Total Coliform Rule



March 2016

# Overview of RTCR

- Key Changes from TCR
- Bacteriological Sampling Plan
- Routine Monitoring
- Repeat Monitoring
- Assessments
- Violations
- Public Notice
- Reduced/Increased Monitoring
- Special Monitoring Evaluations (SS)

RTCR



# Revised Total Coliform Rule

- Applies to ALL Public Water Systems
- Addresses potential fecal contamination in distribution systems
- Abbreviations:
  - RTCR Revised Total Coliform Rule
  - TC+ total coliform positive
  - EC+ E. coli positive
  - TC- total coliform negative
  - EC- E.coli negative
  - MCL maximum contaminant level
  - TT Treatment Technique
  - CCR Consumer Confidence Report
  - GWR Groundwater Rule



# Key Changes

- Samples collected based on a written sample siting plan
- ALL systems serving 1000 or less take only 1 distribution
- NTNC and TNC systems monitor quarterly
- Systems not conducting ROUTINE monitoring monthly must collect 3 ADDITIONAL ROUTINE samples the month following 1 or more TC+ samples
- Only three(3) repeat samples are required for TC+ samples for all system types
- No monthly Total Coliform Rule MCL – Level 1 & Level 2 Assessments
- TC+ samples must be tested for E.coli, not fecal coliform



# Sample Siting Plan Basics

- Systems must develop and adhere to a sample siting plan and a system-specific schedule by *March 31, 2016*
- Sample siting plans are subject to state review & revision
- When plan must be submitted to State:
  - Alternative repeat locations (other than within 5 locations up- and downstream)

40 CFR 141.853(a)



# Sample Siting Plan Components

- Sampling locations
  - Must be representative of the water in the distribution system
  - Routine & **repeat** monitoring locations must be identified (may continue to use 5 up/downstream)
  - **Repeat** samples (SOP can be described)
  - Must show all GWR monitoring sites (raw well samples)
  - Raw well water samples routine and for TC+ distribution samples
  - For systems on quarterly monitoring list sites where additional routine samples are taken in month following a TC+ sample



# Sampling Plan (cont.)

- Sample collection **schedule**
  - Samples must be collected at regular time intervals throughout the month
  - Systems serving  $\leq 4,900$  may collect all samples (5) on a single day if taken from different sites
- Monitoring may take place at:
  - Customer's premises, OR
  - Dedicated sampling station, OR
  - Other designated compliance sampling location
- Map – include, plant, storage tanks, wells, service connections, etc.

40 CFR 141.853(a)(1) & (5)



# How to Choose Locations

## Routine Samples –sites to look at

- may have poor water quality
- Dead-end pipe
- Near a storage tank
- Low water pressure
- Where lines branch off

## Faucets - sites to avoid

- Leaking
- Janitorial or commercial sinks
- Too close to ground
- Upward facing
- Threaded taps
- Faucets with aerators

PROTECT





# How to Choose Locations (cont.)

## Repeat Samples

- One at the original location of positive sample
- One within 5 connections upstream
- One within 5 connections downstream

## **Alternate Repeat** sites

- Must provide justification it is more representative of pathways for contamination
- Locations of potential contamination

REPORT



# Routine Monitoring

- ALL systems serving more than 1,000 people must monitor MONTHLY and continue to take the required sites as previously
- Systems must collect samples at regular time intervals throughout the month
  - If you serve 4900 or less can collect all samples on a single day if taken from different sites
- ALL systems serving 1000 or less take 1 distribution
- ALL NTNC and TNC serving 1000 or less sample quarterly

40 CFR 141.853(a)(2) & 141.857(b)



# TC+ and EC+ Samples

## Repeat Monitoring

- 3 REPEAT samples required for each ROUTINE TC+ result
  - Location: original site, within 5 connections upstream, within 5 connections downstream, or alternative sites
  - Additional set of REPEATS for each REPEAT TC+ result, until reaching Treatment Technique Trigger (Level 1 or Level 2 Assessment) or until all repeats are TC-
- Any sample that is TC+ must be further tested for *E. coli*, no longer using fecal coliform as indicator. Approved methods listed in 40 CFR 141.852 table
- PWS can specify in their sample siting plan either fixed alternative locations or criteria for selecting via a standard operating procedure



# Follow-up Monitoring for TC+ ROUTINE Sample(s)



Within 24  
hours

Site A <-ROUTINE SAMPLE(S)

TC+



Site C

Site A

Site B <- REPEAT SET

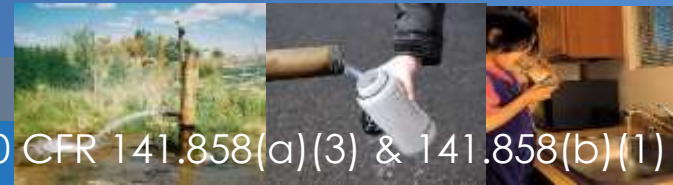
TC-

TC-

TC-

- For every routine sample that is TC+:
  - Collect 3 repeat samples
- All TC+ samples must be tested for *E. coli*

Systems must collect a set of repeat samples for EACH routine TC+ sample, even if a TT exceedance has occurred



# Follow-up Monitoring for TC+ REPEAT



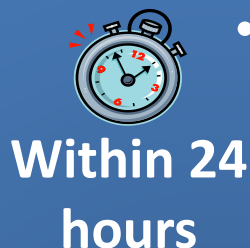
Site A TC+



Site C  
TC+

Site A  
TC-

Site B  
TC+



<-Repeat  
Set 1

Site C  
TC-

Site A  
TC+

Site B  
TC+

<-Repeat  
Set 2

Site C  
TC-

Site A  
TC-

Site B  
TC-

<-Repeat  
Set 3

- For each routine TC+ sample, when there are multiple TC+ repeat samples in a set:

- Collect one set of 3 repeat samples until either:

- TC are not detected in one complete set of repeats

OR

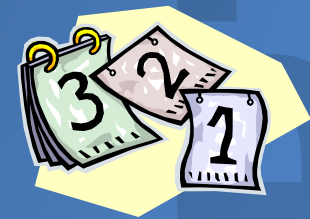
- System determines that a TT trigger has been exceeded and notifies the state

In this example, there are a total of 9 repeat samples at 3 sites.



# Repeat Monitoring Timing

- System has 24 hours after learning about TC+ routine sample to take repeat samples-
  - May be extended on a case by case basis
- Must collect all repeats on same day
  - 3 repeat samples are needed for each TC+ routine sample for all systems



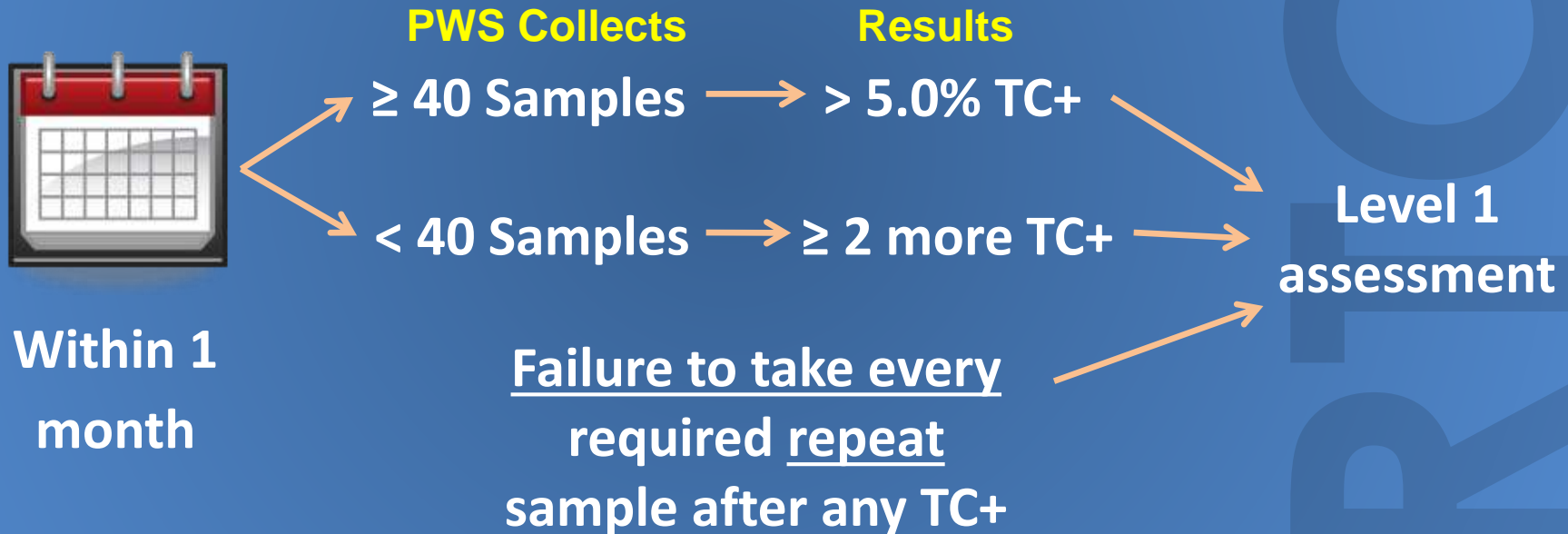
40 CFR 141.858(a)(1) & (2)



# Level 1

## Monitoring

- Results of all ROUTINE and REPEAT sampling included in determining whether an Assessment is triggered.



# Level 2 Assessment Triggers

- Considering all compliance samples (routine and repeat) a system:
  - Has a second Level 1 trigger within a rolling 12-month period
    - Unless the state has determined a likely reason that the samples that caused the first Level 1 TT trigger were total coliform-positive and has established that the system has corrected the problem
  - An *E. coli* violation
  - On approved annual monitoring exceeds a Level 1 trigger in two consecutive years





# Assessment and Corrective Action

- All systems required to conduct assessment when monitoring results show that the system may be vulnerable to contamination
- An assessment is an evaluation to identify sanitary defects & TT triggers. “Find and Fix”
- Systems must conduct a basic self assessment (Level 1) or a more detailed assessment by a qualified party (Level 2) depending on the severity and frequency of contamination or failure to monitor
- Failure to assess and correct is a Treatment Technique (TT) violation



# Elements of Assessments

At a minimum, assessment must include review & identification of the following elements:

- Atypical events that may affect distributed water quality
- Changes in distribution, O & M, PBWN
- Source & treatment considerations affecting water quality
- Existing water quality monitoring data
- Inadequacies in sample sites, sampling protocol, & sample processing

40 CFR 141.859(b)(2)



# Level of Effort – Level 1 vs. Level 2

- **Level 1:**
  - Intended to be a self-assessment by PWS
  - Primarily completed using existing data
  - May include limited inspections or interviews
- **Level 2:**
  - More comprehensive review of existing data
  - May include field investigations, additional sampling, and inspections
  - May involve consultation with additional parties
  - Assessment must be conducted by Certified Operator, FRWA or a Professional Engineer



# Assessment Form Components

- **Must include:**
  - Sanitary defect(s) identified
    - Assessment form may note that no sanitary defects were identified, if applicable
  - Corrective actions taken
  - Proposed timetable for corrective actions not yet completed
- Level 2 assessment elements contain the same elements as the Level 1, but each element is investigated in greater detail

40 CFR 141.859(b)



# Submission & Review



→ Submit completed Level 1 or 2 assessment form to state

Within 30 days of learning that trigger has been exceeded

- State will review assessment to determine if:
  - System identified likely cause of Level 1 or Level 2 trigger
  - System corrected the problem or has an acceptable schedule for correction

40 CFR 141.859(b)(3)(iii) and (4)(iv)



# Timing of Corrective Action

- System must complete corrective action:
  - By the time assessment form is submitted, which is within 30 days of the trigger
- OR
- Within state-approved timeframe
- System must notify the state when each scheduled corrective action is completed
- Either system or state can at any time request a consultation with the other party to discuss the corrective action

40 CFR 141.859(c)-(d)



# Common Causes of Contamination & Corrective Actions

Common Cause	Common Corrective Action(s)
Failure to disinfect (or improper disinfection) after maintenance work in the distribution system	<ul style="list-style-type: none"><li>• Disinfection</li></ul>
Main breaks	<ul style="list-style-type: none"><li>• Disinfection</li><li>• Replacement/repair of distribution system components</li></ul>
Holes in storage tank, inadequate screening, etc.	<ul style="list-style-type: none"><li>• Maintenance of storage facility</li><li>• Addition of security measures</li><li>• Development &amp; implementation of an operations plan</li></ul>
Cracks in well seal, casing, etc.	<ul style="list-style-type: none"><li>• Replacement/repair of well components</li></ul>



# Common Causes of Contamination & Corrective Actions (cont.)

Common Cause	Common Corrective Action(s)
Inadequate disinfectant residual	<ul style="list-style-type: none"><li>• Disinfection</li><li>• Flushing</li><li>• Maintaining appropriate hydraulic residence time</li><li>• Addition or upgrade of on-line monitoring &amp; control</li></ul>
Contaminated sampling taps	<ul style="list-style-type: none"><li>• Replacement/repair of distribution system components</li><li>• Sampler training</li></ul>
Sampling protocol errors	<ul style="list-style-type: none"><li>• Sampler training</li><li>• Development &amp; implementation of an operations plan</li></ul>





# RTCR Violations

- *E. coli* MCL violation- triggers Level 2
- TT violations (Assessment violations)
- Monitoring violations
- Reporting violations

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RTCR

40 CFR 141.860



# *E. coli* MCL Violation

A PWS is in violation of the *E. coli* MCL when any of these conditions occur:

E. coli MCL Violation Occurs with Any of These Sampling Result Combinations	
ROUTINE	REPEAT
EC+	TC+
TC+	EC+
EC+	Any missing repeat sample
TC+	TC+ (but no <i>E. coli</i> analyzed)

40 CFR 141.860(c)



# Treatment Technique Violations

- A PWS is in violation of the RTCR TT when any of the following occur:
  - Failure to conduct a Level 1 or Level 2 assessment within 30 days of learning of the trigger
  - Failure to correct all sanitary defects from a Level 1 or Level 2 assessment within 30 days of learning of the trigger or in accordance with schedule approved by the state

40 CFR 141.860(b)



# Monitoring Failures

Violation consists of failure to:	Monitoring Violation	E. coli MCL Violation	Triggers Level 1 or Level 2 Assessment
Take routine sample	Yes		
Take/analyze for E. coli following a TC+ <u>routine</u> sample	Yes		
Take repeat samples following a TC+ routine sample			Triggers Level 1 assessment*
Take repeat sample following a EC+ routine sample		Yes	Triggers Level 2
Take/analyze for E. coli following a TC+ <u>repeat</u> sample		Yes	Triggers Level 2

\* A Level 2 assessment is triggered if a second Level 1 assessment was triggered within a rolling 12-month period.

40 CFR 141.859(a)(1)(iii); 141.860(c)



# Monitoring Violations

- The following two types of monitoring failures are monitoring violations:
  - Failure to take routine total coliform sample
  - Failure to analyze for *E. coli* following a TC+ routine sample

40 CFR 141.860(c)



# Reporting Violations

- A PWS is in violation of reporting requirements when any of the following occurs:
  - Failure to submit monitoring report
  - Failure to submit a completed Level 1 or Level 2 assessment form within 30 days of learning of the trigger
  - Failure to notify the state by the end of the day/next business day following an *E. coli*-positive sample or *E. coli* MCL violation

40 CFR 141.860(d)



# Public Notification (PN)

- Notify public within 24 hours if system confirms fecal contamination (E. coli)
- Notify public within 30 days if system does not investigate and fix the identified problem (replaces the PN for total coliform MCL violations, reducing system costs and consumer confusion)
- Notify public within 90 days regarding monitoring, reporting and recordkeeping violations



# Public Notification

Violation	Tier of Public Notification
E. coli MCL Violation	Tier 1- within 24 hours
Treatment Technique Violation	Tier 2- within 30 days
Monitoring Violation	Tier 2– within 30 days*
Reporting Violation	Tier 2—within 30 days*

\* FAC 62-560.410 (3)(d)



# Consumer Confidence Reports (CCR)

- CWS must report
  - Until March 31, 2016
    - Total coliform, fecal coliform & *E. coli*: number or percentage of positive results
  - Starting April 1, 2016
    - *E. coli*: number of positive results
    - Level 1 or Level 2 assessment language
      - # required assessments and # completed
      - # of required corrective actions and # completed
      - # assessments missed and corrective actions not completed

40 CFR 141.153(c)(4); 141.153(d)(4)(vii), (viii), & (x)



# Reduced Monitoring

- **Reduced annual monitoring available for NTNC and TNC water systems serving  $\leq 1,000$ ; stringent criteria to qualify and stay on**
  - **Examples**
    - **Clean compliance history for 12 continuous months**
    - **Free of sanitary defects/on schedule for correcting defects**
    - **Meets setbacks for sanitary hazards**
    - **Meets approved construction standards**
    - **Well log**
    - **Annual Level 2 Assessment**



# Increased Monitoring – GW NCWS Serving $\leq 1,000$ People

- Increases from annual to quarterly monitoring the quarter after the system has one RTCR monitoring violation
- Increases from quarterly or annual to monthly monitoring the month following any of these events:
  - Triggered Level 2 assessment or a 2nd Level 1 assessment in a rolling 12 months
  - *E. coli* MCL violation
  - Coliform TT violation
  - For a system on quarterly monitoring, two RTCR monitoring violations, or one RTCR monitoring violation and one Level 1 assessment, in a rolling 12 months

40 CFR 141.854(f)



## Reduced Monitoring Criteria – GW Systems Serving $\leq 1,000$ People

Reduced Monitoring Criteria	Non-seasonal NCWS (RETURNING to quarterly)	Non-seasonal NCWS (RETURNING to annually)
Clean compliance history – 12 months	Mandatory	Mandatory
Sanitary survey, site visit, or Level 2 Assessment within last 12 months and free of sanitary defects	Mandatory	Mandatory
Protected water supply	Mandatory	Mandatory
Annual site visit from state or Level 2 Assessment	N/A	Mandatory



# Sources for Guidance

## DOH-Hillsborough County site

<http://hillsborough.floridahealth.gov/programs-and-services/environmental-health/drinking-water/index.html>

## Environmental Protection Agency

<http://www.epa.gov/dwreginfo/total-coliform-rule-compliance-help-public-water-systems>

## American Water Works Association

<http://www.awwa.org/resources-tools.aspx>



# DOH-Hillsborough County Contacts for the RTCR

For Questions and notifications 813-307-8015:

- Kathy Norman ext. 5938  
[Katherine.Norman@FLHealth.gov](mailto:Katherine.Norman@FLHealth.gov)
- Therese LaDouceur ext. 5934  
[Therese.LaDouceur@FLHealth.gov](mailto:Therese.LaDouceur@FLHealth.gov)
- After hours phone: 813-307-8000

## DEP-Contact each individual District

or David Wales, Interim Program Administrator  
[David.Wales@dep.state.fl.us](mailto:David.Wales@dep.state.fl.us)

850-245-8631

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