



Implementing the Revised Total Coliform Rule in Idaho

PNWS-AWWA

May 6, 2016



Basics

- Effective April 1, 2016
- All systems
- Protect public health
 - Reduce potential pathways for pathogens using a “find and fix” approach



Primary Changes

- Assessments and Corrective Actions
- Seasonal System Requirements
- Monitoring (minor)

Much is the Same

- Sample siting plans
- Total coliform monitoring structure (#/frequency)
- Most of the Public Notification



New Stuff

- Definitions
- MCL for *E.coli*
- Seasonal system requirements
- Repeat monitoring changes
- Assessments & corrective actions
- Violations (separated monitoring/reporting)

New Definitions

- **Seasonal system:**
 - Non-community (NC)
 - Not operated year-round
 - Start-up/shut down
 - Start up procedures or exemption

CHECKLIST

<input type="checkbox"/>	_____
<input type="checkbox"/>	_____
<input type="checkbox"/>	_____
<input type="checkbox"/>	_____
<input type="checkbox"/>	_____

Definitions

- **Clean compliance history:**
 - RTCR only
 - No MCL violations
 - No TT violations
 - No TT triggers
- **Protected water source:**
 - RTCR only-criteria for reduced (quarterly) monitoring
 - GW **well**
 - Not susceptible to contamination
 - Well construction
 - Hydrologic data, **OR**
 - Contamination history

Definitions

- **Assessments**

- Triggers
- Reports
- Checklist

- Sanitary defects, corrective actions, timeframes



Evaluation to identify sanitary defects, defects in DS monitoring practices, identify atypical events or changes in practice **to find the likely reason for the trigger.**

And some more...

- **Sanitary defects**

- Defect that could provide a pathway for microbial contamination
- Indicative of a failure or imminent failure in a barrier

- Examples:

Cross connections, inadequate system pressures, sanitary seal issues, improper screening of tank vents, inadequate protection from flooding, history of treatment failures, deterioration of system components, water main leaks or breaks

New: MCL for *E. coli*

Total Coliform

- Repealed MCL & MCLG
- No longer a violation for positive TC (monthly MCL)
- Positives trigger an assessment

E. coli

- **New** MCL & MCLG (zero)



E. coli MCL

Routine	Repeat	MCL Violation?	PN	Assessment
TC+ EC-	TC+ EC-	No (former monthly MCL)	No (former Tier 2)	Level 1 or 2 if second
TC+ EC-	TC+ EC+	Yes	Tier 1	Level 2
TC+ EC-	Missed <u>any</u>	No	No	Level 1 or 2 if second
TC+ EC+	TC+ EC + or -	Yes	Tier 1	Level 2
TC+ EC+	Missed <u>any</u>	Yes	Tier 1	Level 2

Sample Siting Plan



“THE PLAN”

- Form on the PWS Switchboard for systems taking up to 3
- Sample Sites
 - ✓ Schematic/map to ensure representative of DS
 - ✓ Routine locations
 - ✓ Repeat locations
 - ✓ GWR sites/sources (dual site, seasonal notations, wellfield, etc.)
 - ✓ Consecutive system information
- Sample Schedule
 - GW systems <4,900 (5 RT or less): same day OK
 - All others: regular intervals throughout month
 - Seasonal transient on RT quarterly: high vulnerability/use
- Must sample according to THE PLAN

Repeat Locations

- Original positive tap
- Tap within 5 service connections upstream
- Tap within 5 service connections downstream
 - If positive was at the end or one service connection from the end, alternative location okay
- One service connection?
 - May approve 1 RP/day x 3 days or larger volume (300mL+)

PLUS for GW Systems

- Triggered: each source in operation during positive
- Systems with one well & prior approval can count one RP as triggered

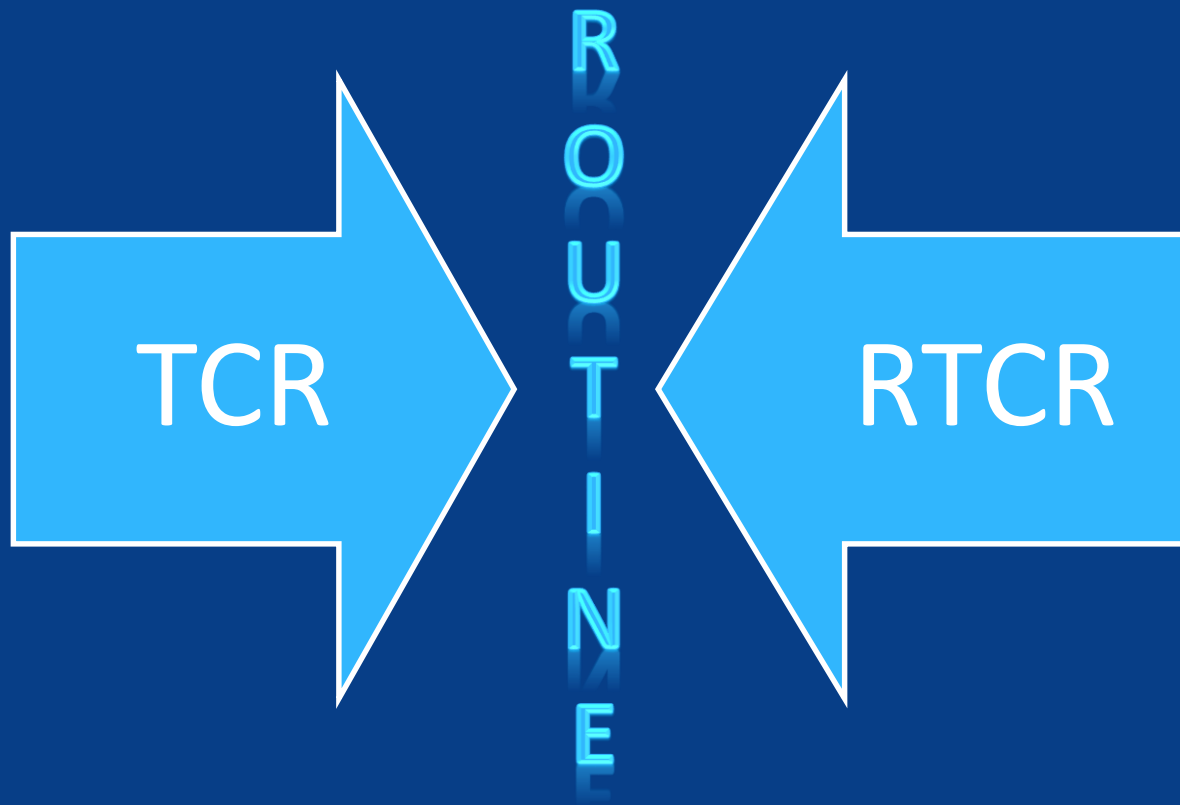
Monitoring



Basics

- Transition on same schedule
- Ability for reduced monitoring = quarterly if eligible
 - Most states, including Idaho, did not adopt annual
- Repeat monitoring = 3 for all
- No “5 RTs the following month”
 - Systems on quarterly → 3 RTs

Subpart H (surface water) All PWSs serving >1,000



Routine Monitoring for PWSs $\leq 1,000$

- Ground Water (GW)
 - CWS = 1/month
 - can reduce to quarterly
 - Non-community and seasonal = 1/month
 - can reduce to quarterly
 - Non-community and *not* seasonal = 1/quarter
- Subpart H: Surface Water (SW) or GWUDI
 - 1/month

Community, GW, <1,000

- Can go to quarterly if:
 - Licensed operator
 - Clean compliance history for 12 months
 - Free of sanitary defects/significant deficiencies
 - Has a **protected water source** & meets approved construction standards
 - Plus, one or more:
 - Annual visit by state ~ Level 2 or 3rd party Level 2
 - Approved CCC program
 - Continuous disinfection and state specified residual
 - 4-log removal/inactivation (GWR)
 - Other equivalent enhancements

- Return to monthly

1. Trigger a Level 2 assessment

- Two Level 1 assessments in 12 months
- *E.coli* MCL violation

2. RTCR Treatment Technique violation

- Failure to conduct assessment
- Failure to correct sanitary defect(s)

3. Two RTCR violations in rolling 12 months



Non-community, GW, <1,000

- Monthly or quarterly
- Increased (Quarterly → Monthly):
 1. Level 2 Assessment triggered (*E.coli* or 2 Level 1s)
 2. Treatment technique violation
 3. Two RTCR FTMs or one FTM & one Level 1 Assessment in a rolling 12 month period

Non-community, GW, <1,000

- **Reduced: Monthly → Quarterly**
 - ESS or site visit by State within 12 months or a Voluntary Level 2 by approved party
 - Free of sanitary defects AND has a protected water source

Protected Water Source: GW well that is not susceptible to contamination on the basis of well construction, hydrologic data, or contamination history

- Clean compliance history for 12 months

Clean compliance history: No RTCR MCLs, No FTMs, No TT triggers/violations

Any system on quarterly...

Positive in January =

2015 JANUARY						
SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	31

2015 FEBRUARY						
SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28

3 Routines in February (next month)

GW Serving $\leq 1,000$

System Type	Increased	Baseline	Reduced
CWS	N/A	1/month	1/quarter
Non-Seasonal NC	1/month	1/quarter	N/A
Seasonal NC	N/A	1/month	1/quarter

Seasonal Non-community, GW, <1,000

- Routine monthly unless qualify for quarterly
 - Approved sample siting plan
 - Designate high demand/vulnerable time periods
 - Sample accordingly
 - ESS or site visit or voluntary Level 2 assessment
 - Free of sanitary defects; protected water source
 - Clean compliance history for 12 months
- Start-up procedures

Seasonal Start-up Procedures

- Checklist/form
- Exemption
 - Fully pressurized year-round?
 - Request exemption?
 - 5 year clean compliance history?
 - Uncorrected significant deficiencies from recent ESS?
 - Clean sample(s) 30 days prior to serving water?
- May also exempt site visit/assessment

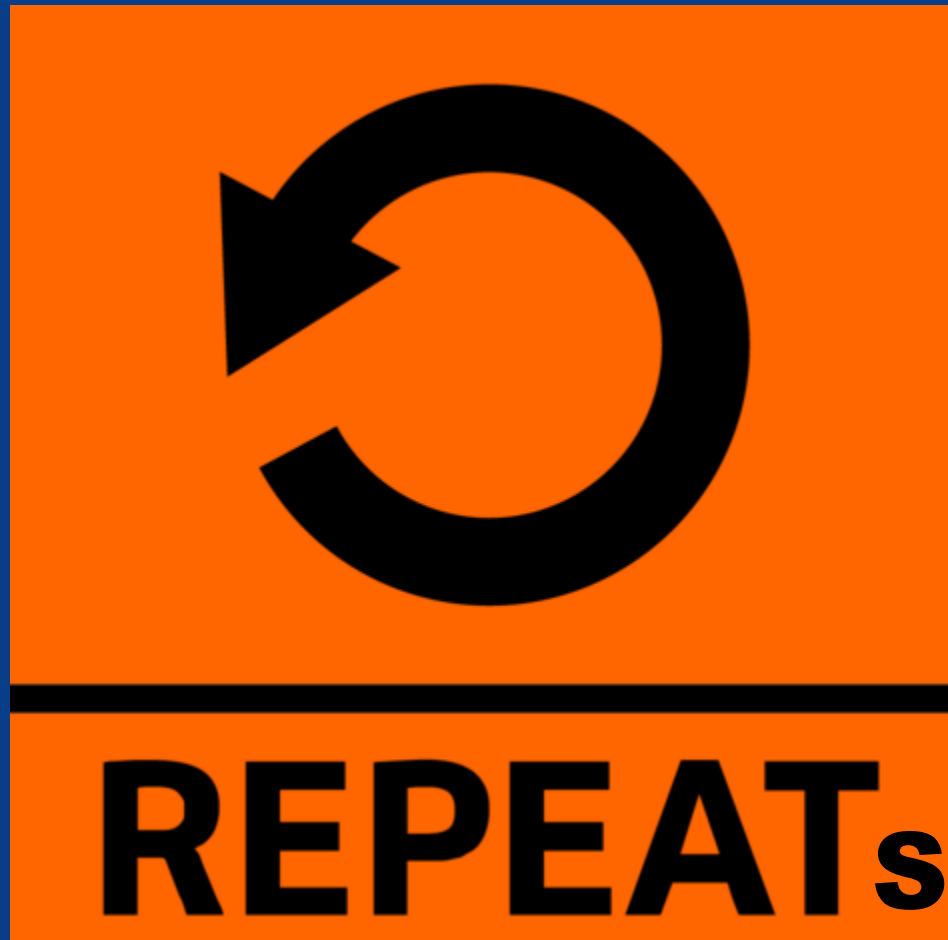
CHECKLIST

<input type="checkbox"/>	_____
<input type="checkbox"/>	_____
<input type="checkbox"/>	_____
<input type="checkbox"/>	_____
<input type="checkbox"/>	_____

All Systems: Repeats



What's Different?



How Many Repeats?



A large, bold black number 3 is shown on the left side of the panel.



A black circle containing the white number 1, representing the first stroke.



A black circle containing the white number 2, representing the second stroke.



A black circle containing the white number 3, representing the third stroke.



Handwriting practice lines showing the word "three" written in a cursive script between a solid top line, a dashed middle line, and a solid bottom line.



FOR EACH RT+ SAMPLE



REPEAT 1

REPEAT 2

REPEAT 3



REPEAT 1

REPEAT 2

REPEAT 3

GW: PLUS SOURCE

What about GWR triggered sampling?

- Same—**all** GW sources must be sampled after TC positive
- Dual purpose samples:
 - GW serving <1,000?
 - Single well?
 - Triggered monitoring?
 - *E.coli* (versus fecal)?



REPEAT 1

REPEAT 2

REPEAT 3 (may count as TG)

If yes to all: one sample can meet both RP and TG

What else is different?

- Systems on monthly
- After TC+

5 Routines the next month



Special Purpose/Construction

- Not used for determining compliance
- Investigative
- Repairs/main breaks/maintenance/new construction
- Complaints
- Cannot change SP/C to RT



Routinely Disinfecting?

- Still required to monitor chlorine residuals at the same time and place as total coliforms
- Cannot be undetectable in more than 5% of the samples for any two consecutive months

Assessments



30 DAYS

Assessments

Identify and correct any pathways of
contamination

Potential Sources & Pathways

- Soil and water surrounding pipes, valves, etc.
- Biofilms
- Corrosion tubercles (NYC main)
- Cross connections
- Pipe intrusion
- Storage tank deficiencies
- Improper main installation or repairs



Considerations

- Weather?
- Failure of a barrier (treatment)?
- Low to negative pressure event?
- Change in flow direction?
- Main breaks?
- Increased pumping rates?
- Recent valve exercise?
- Old water?
- Sampling technique or location?

Level 1 Assessments

– Triggers

- 2+ TC+/month for systems taking <40 samples,
OR
- 5% TC +/month for systems taking 40+ samples
- FTM for repeats

– Approved Parties

- Operator/owner

Level 2 Assessments

- Triggers

- *E.coli* MCL (acute)
 - DEQ/HD
- Two or more Level 1 triggers within 12 months
 - System operator, contractor, etc.
 - State determined likely reason for TC+ for the initial & established (in writing) that the system fully corrected the problem?

- Approved parties

- Distribution or Treatment licensed operators licensed at the level of system or greater
- Licensed professional engineers
- DEQ/HD trained to do ESSs (for *E.coli* triggered events)

Level 1 Form

PWS Number: [REDACTED]		PWS Name: [REDACTED]		Date Completed: [REDACTED]	
Name & Title of Person Completing Assessment: [REDACTED]			Phone Number: [REDACTED]		E-mail: [REDACTED]
Section 1. Sanitary Defects and Potential Issues Review			Check	Section 2. Description (select one & attach additional information if necessary)	
1.	Has anything unusual occurred prior to the total coliform positive result? Loss of pressure, power failure, vandalism, heavy rainfall or snowmelt, main breaks, etc.	Yes <input type="checkbox"/> No <input type="checkbox"/>	<input type="checkbox"/> Reviewed all items in Section 1 and no sanitary defects or issues found. OR <input type="checkbox"/> Sanitary defects or issues were identified in Section 1. Describe the potential sanitary defects or issues found and relevant dates (if known): [REDACTED]		
2.	Have there been any recent changes to the water system prior to the total coliform positive result(s)? Operations, maintenance, repairs, or installation of distribution system, plumbing, pump(s), pressure tank(s), treatment system, etc.	Yes <input type="checkbox"/> No <input type="checkbox"/>			
3.	Sample site and sampling protocol: Were all required repeat samples collected? Is the sample tap damaged, dirty, threaded, or of swivel type? Have improper sampling techniques been used? If any are Yes, check Yes.	Yes <input type="checkbox"/> No <input type="checkbox"/>			
4.	Well and pump(s): Damaged, loose, or missing well cap, vent screen, conduit; other problem with wellhead; evidence of flooding, pump runs more often than normal, etc. (If not applicable, check No.)	Yes <input type="checkbox"/> No <input type="checkbox"/>			
5.	Spring(s): Interruptions in flow, evidence of flooding, spring box is not structurally sound (e.g., does not exclude water, birds, animals, insects, and excessive dirt). (If not applicable, check No.)	Yes <input type="checkbox"/> No <input type="checkbox"/>	Section 3. Corrective Actions (select all that apply & attach additional information if necessary)		
6.	Treatment process: Interruptions in treatment, chemical refill overdue, filter change due, incorrect chemical concentration, dosage adjustment needed, other failures or operations and maintenance issues. (If not applicable, check No.)	Yes <input type="checkbox"/> No <input type="checkbox"/>	<input type="checkbox"/> No sanitary defect(s) were identified. <input type="checkbox"/> Chlorination and/or flushing was conducted. <input type="checkbox"/> Construction samples were taken. <input type="checkbox"/> Repeat samples were collected.		
7.	Storage/pressure tank(s): Storage/pressure tank in poor condition, low turnover in tank (old water), hatch leaking, tank not properly vented/screened. (If not applicable, check No.)	Yes <input type="checkbox"/> No <input type="checkbox"/>	<input type="checkbox"/> A detailed Corrective Action Plan (CAP) proposal and timeline is attached. <input type="checkbox"/> Corrective actions were taken (provide details and dates): [REDACTED]		
8.	Distribution system: Knowledge of leaks, low to no pressure, cross connections, main repair, dead-end mains, frozen pipes, etc.	Yes <input type="checkbox"/> No <input type="checkbox"/>			
9.	Other: Any other identified potential sources of contamination. Describe event or condition in the Section 2 Description box.	Yes <input type="checkbox"/> No <input type="checkbox"/>			
Field Office Use Only <input type="checkbox"/> Field office staff collected assessment information (above) via phone.					
Date of Trigger: [REDACTED]		Date Reviewed: [REDACTED]		Reviewed By: [REDACTED]	

LEVEL 1 SITE ASSESSMENT INFORMATION AND INSTRUCTIONS

Conducting this Level 1 Assessment is intended to protect public health by identifying and correcting sanitary defects or potential issues that could lead to bacterial contamination. A sanitary defect could provide a pathway of entry for microbial contamination into the distribution system or indicate a failure or imminent failure in a protective barrier that is already in place. The Level 1 Assessment examines structures and components of the public water system and operational practices.

Triggers for a Level 1 Assessment:

A Level 1 Assessment must be completed and submitted to the local regulating agency **within 30 days** of the following triggers:

- Two or more samples are total coliform positive (and not *E. coli* positive) for any system taking fewer than 40 total coliform samples per month or on quarterly monitoring.
- Five percent (5%) of the samples are total coliform positive (and not *E. coli* positive) for any system taking 40 or more total coliform samples per month.
- The failure to take all required repeat samples following a total coliform positive result. Please note that if the public water system owner or operator failed to collect all repeat samples after any single routine total coliform positive sample, samples need to be collected immediately.

Instructions:

Consult with your local field office at any time in the assessment process.

Section 1: Review all facilities, components, and operations identified in this section or add a description in "other" that may have contributed to the total coliform positive result. Select "No" if the item in this section is either not applicable or no sanitary defect was discovered.

Section 2: Clearly describe any sanitary defects found in Section 1 or, if none found, check the appropriate statement that no sanitary defects were found. Please attach additional information as necessary to describe the sanitary defects found.

Section 3: Select all corrective action items that apply. Corrective action(s) are required for all sanitary defects identified in Section 1.

- If no sanitary defects were found, please make the appropriate selection as well as any other actions that were taken.
- Public water systems required to perform a Level 1 Assessment due to the failure to take all required repeat samples must submit repeat samples as soon as possible.
- Identify all corrective actions, which must include the date the action was taken or the date the corrective action will be taken.
- Attach and submit additional information as needed.

Please note some common sanitary defects or issues that could cause bacterial contamination:

- Maintenance performed on the distribution system (e.g., replace broken pipe and fail to disinfect afterwards)
- Improper sample collection protocol/procedures
- Loose-fitting well cap and electrical conduit
- Water ponding near the wellhead
- Plumbing leaks
- Cross connections (connection between the drinking water supply and a potential source of contamination)
- Biofilm buildup
- Dead-end mains (places where water could stagnate)
- Loss of pressure

To assist with performing an assessment, please reference EPA's Revised Total Coliform Assessments and Corrective Actions Guidance Manual: www.epa.gov/dwreginfo/revised-total-coliform-rule-assessments-and-corrective-actions.

Level 2 Form

PWS Number: [REDACTED]		PWS Name: [REDACTED]		Date Completed: [REDACTED]
Name & Title of Person Completing Assessment: [REDACTED]			Phone Number: [REDACTED]	E-mail: [REDACTED]
Section 1: Inspection and Review for Sanitary Defects or Potential Issues		Check	Section 2: Description of Sanitary Defects or Issues (attach additional sheets if necessary)	
1. Review of records and interviews	Check for reviewed	[REDACTED]		
a. Sample results for the past 12 months (look for any patterns)	a. Yes <input type="checkbox"/> No <input type="checkbox"/>			
b. Cross connection control/backflow assembly testing records for locations in the vicinity of the positive sample(s)	b. Yes <input type="checkbox"/> No <input type="checkbox"/>			
c. Storage tank inspection records (if not applicable, check No)	c. Yes <input type="checkbox"/> No <input type="checkbox"/>			
d. Recent repair and maintenance records	d. Yes <input type="checkbox"/> No <input type="checkbox"/>			
e. Disinfection residual levels were low around time of positive sample; check if not applicable <input type="checkbox"/>	e. Yes <input type="checkbox"/> No <input type="checkbox"/>			
f. Most recent sanitary survey for deficiencies or significant deficiencies	f. Yes <input type="checkbox"/> No <input type="checkbox"/>			
g. Interview sample collector(s) for problems with sample technique	g. Yes <input type="checkbox"/> No <input type="checkbox"/>			
h. Review records for any recent complaints	h. Yes <input type="checkbox"/> No <input type="checkbox"/>			
2. Review for any unusual events prior to the positive sample result (within 3-4 days)	Check all that apply	[REDACTED]		
a. Loss of pressure	a. Yes <input type="checkbox"/> No <input type="checkbox"/>			
b. Power failure	b. Yes <input type="checkbox"/> No <input type="checkbox"/>			
c. Operation & maintenance activities in the area (check No, if unknown)	c. Yes <input type="checkbox"/> No <input type="checkbox"/>			
d. Evidence of potential vandalism	d. Yes <input type="checkbox"/> No <input type="checkbox"/>			
e. Heavy rainfall or snowmelt	e. Yes <input type="checkbox"/> No <input type="checkbox"/>			
f. Other (if Yes, identify in Section 2)	f. Yes <input type="checkbox"/> No <input type="checkbox"/>			
3. Review for any recent changes to the water system	Check all that apply	[REDACTED]		
a. New construction or repair of mains	a. Yes <input type="checkbox"/> No <input type="checkbox"/>			
b. Pump repair or replacement	b. Yes <input type="checkbox"/> No <input type="checkbox"/>			
c. Pressure tank repair or replacement	c. Yes <input type="checkbox"/> No <input type="checkbox"/>			
d. Treatment system installed, maintained, or adjusted	d. Yes <input type="checkbox"/> No <input type="checkbox"/>			
e. Operational changes (e.g., valve exercising, flow changes)	e. Yes <input type="checkbox"/> No <input type="checkbox"/>			
f. Any other physical changes to the system (describe in Section 2)	f. Yes <input type="checkbox"/> No <input type="checkbox"/>			
4. Inspect sample site(s) and review sampling protocol	Check all that apply	[REDACTED]		
a. Trigger was the failure to take all required repeats	a. Yes <input type="checkbox"/> No <input type="checkbox"/>			
b. Sample tap is damaged, dirty, threaded, or of swivel type	b. Yes <input type="checkbox"/> No <input type="checkbox"/>			
c. Improper sampling technique or protocol suspected	c. Yes <input type="checkbox"/> No <input type="checkbox"/>			
d. Sample location could be an issue (e.g., janitorial sink, point of use treatment unit at sample tap, etc.)	d. Yes <input type="checkbox"/> No <input type="checkbox"/>			

5. Inspect well(s) and well site(s) a. Wellhead is less than 18 inches above the final ground surface and has the potential for flooding/ponding of water b. Damaged, loose, or missing well cap or seal is not water tight c. Vent screen missing or damaged d. Electrical conduit is damaged or not sealed e. Evidence of flooding/standing water around wellhead f. Well lot has potential sources of contamination (animals, chemicals, etc.) or there has been a change in land use around the well g. Pump for well is cycling more often than usual	No well sources <input type="checkbox"/> or check all that apply a. Yes <input type="checkbox"/> No <input type="checkbox"/> b. Yes <input type="checkbox"/> No <input type="checkbox"/> c. Yes <input type="checkbox"/> No <input type="checkbox"/> d. Yes <input type="checkbox"/> No <input type="checkbox"/> e. Yes <input type="checkbox"/> No <input type="checkbox"/> f. Yes <input type="checkbox"/> No <input type="checkbox"/> g. Yes <input type="checkbox"/> No <input type="checkbox"/>	<input type="checkbox"/>
6. Inspect spring source(s) a. There were interruptions in flow or spring ran dry b. Spring collection area has potential sources of contamination c. Overflow blocked or clogged (may cause backflow to reservoir) d. Overflow screen is missing or not intact e. Spring box may allow entry of birds, animals, insects, or dirt f. Spring box roof allows ponding or standing water (not sloped to facilitate drainage) g. Area surrounding spring box has evidence of standing water within 50 feet (area may not be graded properly)	No springs <input type="checkbox"/> or check all that apply a. Yes <input type="checkbox"/> No <input type="checkbox"/> b. Yes <input type="checkbox"/> No <input type="checkbox"/> c. Yes <input type="checkbox"/> No <input type="checkbox"/> d. Yes <input type="checkbox"/> No <input type="checkbox"/> e. Yes <input type="checkbox"/> No <input type="checkbox"/> f. Yes <input type="checkbox"/> No <input type="checkbox"/> g. Yes <input type="checkbox"/> No <input type="checkbox"/>	<input type="checkbox"/>
7. Inspect and review treatment processes a. There was an interruption or failure in treatment b. Chemical refill overdue or changed types of chemical(s) used c. Filter/cartridge change or cleaning is past due d. Possible incorrect chemical solution concentration e. Dosage or flow adjustment needed	No treatment <input type="checkbox"/> or check all that apply a. Yes <input type="checkbox"/> No <input type="checkbox"/> b. Yes <input type="checkbox"/> No <input type="checkbox"/> c. Yes <input type="checkbox"/> No <input type="checkbox"/> d. Yes <input type="checkbox"/> No <input type="checkbox"/> e. Yes <input type="checkbox"/> No <input type="checkbox"/>	<input type="checkbox"/>
8. Inspect finished water storage reservoir(s) a. Recent work performed in or around storage reservoir b. Leaks, holes, or cracks identified in storage reservoir c. Overflow, vents, and/or hatches on storage reservoir are not screened or sealed d. Age of water in storage reservoir may be an issue e. Storage reservoir may need inspection. Last inspection date: <input type="text"/>	No reservoirs <input type="checkbox"/> or check all that apply a. Yes <input type="checkbox"/> No <input type="checkbox"/> b. Yes <input type="checkbox"/> No <input type="checkbox"/> c. Yes <input type="checkbox"/> No <input type="checkbox"/> d. Yes <input type="checkbox"/> No <input type="checkbox"/> e. Yes <input type="checkbox"/> No <input type="checkbox"/>	<input type="checkbox"/>
9. Inspect distribution system a. Evidence or knowledge of leaks in distribution system b. Pressure loss in all or part of the distribution system (also item 1a.) c. Cross connection control program needs to be reviewed or enforced d. Cross connections identified e. Dead-end mains exist without ability to flush f. Recent flushing or valve exercising (also item 2e)	Check all that apply a. Yes <input type="checkbox"/> No <input type="checkbox"/> b. Yes <input type="checkbox"/> No <input type="checkbox"/> c. Yes <input type="checkbox"/> No <input type="checkbox"/> d. Yes <input type="checkbox"/> No <input type="checkbox"/> e. Yes <input type="checkbox"/> No <input type="checkbox"/> f. Yes <input type="checkbox"/> No <input type="checkbox"/>	<input type="checkbox"/>
10. Other potential issues discovered		<input type="checkbox"/>

Corrective Actions

- Well maintenance/repair
- Disinfecting
- Flushing
- Repairing distribution lines or storage tanks
- Developing and implementing an operations plan
- Training on proper sampling technique

Corrective Action Timing

30 days from trigger (when report is due)

OR

State approved timeframe (written)

- Notify state when each corrective action completed (send an e-mail/photos)
- Can consult with state any time to discuss

What if?

- PWS conducts an assessment, has an approved timeline, and triggers an additional assessment before completion of corrective action?
- Still incurs assessment
- Can perform interim measures?

Resources

- PWS Switchboard:
<http://www.deq.idaho.gov/pws-switchboard.aspx>
- EPA guidance & rule information:
<http://www.epa.gov/dwreginfo/total-coliform-rule-compliance-help-public-water-systems>
- AWWA RTCR training on Switchboard