Revised Total Coliform Rule

Elements of Level 1 & Level 2 Assessment Plans
AWWA Tifft Symposium, Westchester, NY – September 23, 2015
Assessments

- Conducted in order to identify the possible presence of sanitary defects and defects in distribution system coliform monitoring practices
- Find and Fix
- Minimum elements: sample sites, sampling protocol, sample processing, atypical events, distribution system operation/maintenance, source, treatment, storage, water quality
Level 1 Assessment

• Replaces TC MCL
• Systems collecting ≥ 40 samples per month, > 5.0% are total coliform positive
• Systems collecting < 40 samples per month, two or more are total coliform positive
• System fails to take every required repeat sample after any single total coliform positive sample
Level 1 Assessments

• Self assessment by the PWS
• One page form
• Questions: interruptions, sample site, sampling protocol, distribution system, storage tank, treatment, source
• Must be completed and submitted to the LHD within 30 days of triggered event
• Any defects noted must be addressed
• Any corrective actions must be included
General Progression of Assessment

• Location of the positive sample(s)

• Distribution area near positive sample(s)

• Treatment Facilities

• Source Water
Section A – System Evaluation

1. GENERAL
   - Issue Identified: Yes ☑ No ☐
   - Have there been any recent interruptions and/or changes at relevant facilities prior to the collection of total coliform samples?
     - Treatment Process ☐ Loss of Pressure ☐ Operation & Maintenance ☐ Vandalism ☐
     - Unsatisfactory Conditions ☐ Major Fire ☐ Hydrant Flushing ☐ Water Main Break/Repair ☐ Low/No Residuals ☐
   - Other (Specify): _______________

2. SAMPLE SITE and SAMPLE PROTOCOL
   - Issue Identified: Yes ☑ No ☐
   - Outside boxes used to collect sample ☐
   - The aerator or the baffle was not removed prior to collection ☐
   - Sample bottle used to collect sample had a broken seal ☐
   - Auto sifting/strainer type basket used for sample collection ☐
   - Change in condition or location of tap ☐
   - Other (Specify): _______________

3. DISTRIBUTION SYSTEM
   - Issue Identified: Yes ☑ No ☐
   - Were any of these events observed prior to the collection of total coliform samples?
     - Unexpected reductions in pressure < 20 psi ☐
     - Identified cross connection ☐
     - Faulty backflow prevention device ☐
     - Improper operation of air-release/air-vacuum valves ☐
     - Improper operation of a pump station ☐
     - Other (Specify): _______________

4. STORAGE TANKS
   - Issue Identified: Yes ☑ No ☐
   - Overflow or drain screen missing/Improper size ☐
   - Vent screen missing/Improper size ☐
   - Security breach at tank ☐
   - Access hatch left open ☐
   - Sanitary condition of tank ☐
   - Structural condition of tank ☐
   - Other (Specify): _______________

5. TREATMENT PROCESS
   - Issue Identified: Yes ☑ No ☐
   - Chlorinator malfunction ☐
   - Low/no chlorine residual ☐
   - Unmaintained filters ☐
   - Interruption in treatment/disinfection (i.e., power loss) ☐
   - Operation & Maintenance procedures not followed ☐
   - Point of Entry/Point of Use treatment issue ☐
   - Other (Specify): _______________

6. SOURCE
   - Issue Identified: Yes ☑ No ☐
   - This includes Well, Spring, or Surface Water ☐
   - Well cap missing/damaged ☐
   - Sanitary seal damaged or not present ☐
   - Condition of spring box unsatisfactory ☐
   - Source subject to heavy rains/flooding, preceding positive total coliform sample collection ☐
   - Damaged/uncured well ☐
   - Security breach at source ☐
   - Absent air-gap (if required) ☐
   - Cross connection identified ☐
   - Other (Specify): _______________
Level 2
Assessment
Elements
Level 2 Assessment

- E. coli MCL violation
- Failure to collect repeat samples following an E. coli positive routine sample
- Second Level 1 trigger within a rolling 12-month period, unless:
  - State has determined a likely reason that the initial samples were TC positive, and
  - System has corrected the problem
Level 2 Assessment

- Completed by the State/LHD
- More in depth review than Level 1 – similar to sanitary survey
- Same elements as Level 1 but in much greater detail
- Must be completed within 30 days of trigger
- Any sanitary defects identified must be addressed
Level 2 Assessment Questions

1. Have any of the following occurred prior to collection of TC samples?
   • Were there any operation and maintenance activities that could have introduced total coliforms?
   • Have there been any interruptions in the treatment process?
   • Has the system lost pressure to less than 5 psi?
   • Have there been any vandalism and/or unauthorized access to facilities?
   • Any visible indicators of unsanitary conditions?
Water main breaks
Level 2 Assessment Questions

1. Have any of the following occurred prior to collection of TC samples?
   • Any additional TC samples (not for compliance) positive?
   • Any community illness suspected of being waterborne?
   • Did the system receive any TC monitoring violations in the past 12 months?
   • Fire fighting event, flushing operation, sheared hydrant, etc.?
Failing Septic

Fuel oil tanks
Level 2 Assessment Questions

2. Have there been any recent treatment or operational changes?
   • Have any inactive sources recently been introduced into the system?
   • Have there been any new sources introduced into the system?
   • Is there evidence of any potential sources of contamination (Main breaks, low pressure, high turbidity, loss of disinfection, etc.)
Level 2 Assessment Questions

3. Evaluate the sample site
   • Condition of the tap?
   • Location of the tap?
   • Regular use of the connection?
   • Any plumbing changes or construction?
   • Plumbing breaks or failure?
   • Any identified cross connections after the service connection or in premise plumbing?
Sample Site Questionable?
Level 2 Assessment Questions

3. Evaluate the sample site
   • Backflow prevention devices present, operational and maintained?
   • Low pressure events or changes in water pressure after the service connection or in premise plumbing?
   • Any treatment devices after the service connection or in premise?
Level 2 Assessment Questions

4. Sample protocol followed and reviewed
   • Flush Tap
   • Remove aerator
   • No swivel
   • Disinfect
   • Fresh sample bottles
   • Sample storage acceptable
   • Don’t touch inside of cap or set down
   • New operator collecting sample?
Level 2 Assessment Questions

Never touch the inside of a cap!

Never put the cap down!!
Level 2 Assessment Questions

5. Distribution System
   • Evidence the system experienced low/negative pressure?
   • Any identified cross connections?
   • Any sanitary defects in pump station?
   • Air relief vault subject to flooding?
   • Fire hydrant/blow off located in high water table?
   • Distribution system secured to prevent unauthorized access?
Cross Connection?
Level 2 Assessment Questions

5. Distribution System
   • Backflow prevention devices at high risk sites present, operational and maintained?
   • Water main repairs or additions?
   • Water main breaks?
   • Scheduled flushing of the distribution system?
   • Evidence of intentional contamination in distribution system?
Level 2 Assessment Questions

6. Storage Facilities
   • Overflow and vents properly screened?
   • Facility secured to prevent unauthorized access?
   • Access opening have the proper gasket and seal?
   • Physical condition of tank = source of contamination?
   • Vent turned down and maintain an approved air gap at the termination point?
Storage Tank Deficiencies
Storage Tank Deficiencies
New Screening on a finished water reservoir
Reasons to screen your tank
6. Storage Facilities

- Pressure tank maintaining appropriate minimum pressure
- Proper O&M being performed?
- Observed physical deterioration of the tank?
- Observed leaks?
- Evidence of intentional contamination at the storage tank?
- Facility maintenance (painting/coating)?
- Chlorine Residual?
7. Treatment Process

- Treatment devices operational and maintained?
- Any recent installation or repair of treatment equipment?
- Recent changes in the treatment process?
- Interruptions of treatment? (lapses in chemical feed, turbidity excursions, disinfection, etc.)
- Free chlorine residual immediately downstream of injection?
7. Treatment Process
- Review of the filter turbidity profiles reveal any anomalies?
- Any failures to meet CT requirements?
- Flow rates above rated capacity?
- Anomalies on settled water turbidity?
Treatment Issues

- Not FDA approved container
- Opening can allow debris/vermin to enter container
Level 2 Assessment Questions

8. Source – Well
• Is the sanitary seal intact?
• Is the vent screened?
• Vent and pump to waste terminate in an approved air gap?
• Any unprotected cross connections at the well head?
• Casing above grade?
Level 2 Assessment Questions

8. Source – Well
   • Well cap vented?
   • Evidence of standing water near the well head?
   • Well head secured to prevent unauthorized access?
   • Any sewer spills, source water spills or other disturbances?
What sanitary seal?
How many sanitary defects do you see?
More well issues

- Well in pit subject to flooding
- Evidence of flooding
- Not proper cap
9. Source – Spring
   • Condition of the spring?
   • Secured to prevent unauthorized access?
What’s the problem?
Level 2 Assessment Questions

10. Source – Surface Water Supply
   • Sewer spills, source water spills, or other disturbances?
   • Algal blooms?
   • Source water turnover occurred?
Potential Source of Contamination?
Level 2 Assessment Questions

11. Environmental Events

• Heavy rainfall/rapid snowmelt/flooding?
• Changes in available source water? (significant drop in water table, well levels, well capacity, etc.)
• Interruptions to electrical power?
• Extremes in hot or cold?
Additional information on Assessments from EPA

Thank You - Questions

Kevin J. Kenyon
Public Health Engineer II
New York State Department of Health
Bureau of Water Supply Protection
Empire State Plaza – Corning Tower Room 1119
Albany, NY 12237
(518) 402-7682; Fax: (518) 402-7599
kevin.kenyon@health.ny.gov