Division of Water Resources

Guidance for Preparation of Coliform Sample Site Plans and Other Considerations for the Revised Total Coliform Rule

February 2016

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TN Division of Water Resources

Revised Total Coliform Rule Requirements

The Tennessee Department of Environment and Conservation, Division of Water Resources Revised Total Coliform Rule (RTCR) Regulations, Rule 0400-45-01-.41, become effective and applicable to all Public Water Systems on April 01, 2016. The rule requires bacteriological samples to be collected according to a written sample siting plan. To comply with the RTCR requirements, all Public Water Systems must develop new or revise existing sample siting plans to include the new requirements no later than March 31, 2016. The plans should be kept on site at the water system and be available for review. The plans are subject to review and revision during sanitary survey inspections conducted by TDEC-DWR staff.

Two circumstances exist which require a Public Water System to submit a revised sample siting plan to TDEC-DWR prior to implementation.

1) The system proposes to use alternative repeat sampling locations rather than the default location of within 5 service connection upstream and downstream of the original positive location. The public water system must submit sample site plan to the TDEC-DWR for review.

2) A seasonal system requests a reduction to quarterly monitoring, the public water system must provide justification of the period when monitoring will be conducted to include monitoring during the period of highest demand and or vulnerability to contamination. The public water system must submit the request for reduced monitoring and sample site plan to TDEC-DWR for review and approval.

Other significant RTCR changes pertinent to the bacteriological sample siting plans include;

1) All routine sampling site locations must be identified in the plan.
2) The rule allows for dedicated sampling locations / appurtenances.
3) The rule establishes assessment triggers, system responses and corrective action in lieu of a total coliform MCL.
4) All positive total coliform samples must be tested for E-coli.
5) All systems are required to collect three repeat samples following a positive bacteriological sample result.
6) A system on quarterly monitoring must collect three routine samples the month following a positive bacteriological sample.
7) All seasonal systems must demonstrate completion of a state approved start up procedure.
8) Line repair samples are considered special purpose samples and cannot be used for compliance with RTCR monitoring and compliance requirements.
9) Ground Water Rule dual purpose source samples are not allowed.

Plan Objective

The objective of the plan is to identify routine and repeat bacteriological sampling locations, to ensure that the correct numbers of bacteriological samples are collected each monitoring period at sites which are representative of water throughout the distribution system and to ensure public water systems take appropriate follow up actions in response to positive bacteriological samples.

General Plan Requirements

The plan should be written in such a way that it clearly identifies the number of samples required, the sampling locations, types of samples required, sampling procedures and actions required to be taken in the event of positive sample results. Sample siting plans must be reviewed periodically and updated as needed. A Public Water System should consider review and update of the plan when the customer population has increased sufficiently to require an increase in bacteriological samples, when source classification changes or when the addition of new infrastructure (i.e., wells, storage tanks, extensive distribution system lines, etc.) or major customer water use patterns significantly impacts the hydraulic flow of water in the system.

The plan should provide for community water systems to collect at least 30 % of samples from residential areas. Site considerations should include dead end lines, branch lines, low use areas, commercial areas near large storage tanks, areas of low water pressure and areas with elevated water age. The sample plan should ensure that no portion of the distribution system is neglected during the course of a year. For example, the distribution system can be divided into sectors or hydraulic zones and samples chosen from a variety of sample points in each sector. Sampling site locations should be justifiable from the standpoint that it helps the water purveyor understand the bacteriological quality of the water throughout the system and describes water quality consumed by all of the system's customers. The source(s) of water supplying sample sites should be identified for the purposes of conducting assessments and for compliance with source water sampling provisions of the Ground Water rule, if applicable.

The plan should include the RTCR assessment triggers and describe qualifications and timeframes for completion and submittal of reports. The plan should also include a listing of potential violations under the RTCR and provide example public notices for use by the public water system.

This document is intended to assist public water systems in plan development efforts. Example plans, Assessment Forms and Seasonal Start up Procedures are included as appendices.

Special Purpose Samples

Special purpose samples are collected during repairs, in response to complaints, or for other maintenance reasons. Collection of these types of samples is necessary to ensure that coliform bacteria have not entered the distribution system as a result of events such as installation of mains, main line repair or routine maintenance. Special purpose samples cannot be included in compliance or assessment trigger calculations. Special purpose samples are collected in addition to any samples collected for compliance with the Revised Total Coliform Rule.

Seasonal System Requirements

A seasonal system is a non-community public water system that is not operated on a year round basis and starts up and shuts down at least a portion of the distribution system or otherwise discontinues water service to the public at the beginning and end of each operating season. The RTCR requires that non-community seasonal water systems demonstrate completion of a state-approved start up procedure including coliform sampling. A negative total coliform sample result must be obtained and certification of completion must be submitted to the state prior to serving water to the public. The initial total coliform sample is outside of and in addition to the routine sample requirements of the RTCR, and is considered a special purpose sample. A copy of the seasonal non-community public water system start up procedure and certification form is included as Appendix A. The start-up procedure should be conducted no more than 30 days prior to the start of the season.

Seasonal systems that have been approved to reduce monitoring to quarterly, must state in their sample siting plan the time period when they will take their routine sample. This period is based on site-specific conditions. Considerations for approval of this time period would include, when the demand for water is the highest, when the source water is most vulnerable to contamination (e.g., during the wet/dry season), or when there is a source of contamination that might affect the area surrounding the water source (e.g., spreading of animal waste for fertilizer). The Division must approve the sample siting plan for seasonal systems monitoring other than monthly and the system must monitor during the period identified in the approved sample siting plan. Otherwise all seasonal systems must begin monthly total coliform monitoring beginning April 01, 2016.

Recommended Sample Site Plan Outline

General Information/objective

Number of samples required

Site Selection

Distribution Map

Sampling procedures

Actions to be taken in the event of positive samples

- Repeat sampling requirements
- Ground Water Rule Source Samples if required
- Level 1 Assessments
    - Qualifications/ Forms/Corrective Actions
- Level 2 Assessments
    - Qualifications/Forms/Corrective Actions
- E. coli MCL Violation and public notice requirement
- Treatment Technique violations and public notice requirements
- Monitoring and Reporting Violations and public notice requirements

General System Information

General information should be included in the bacteriological sample siting plan to identify the public water system name and address, the Public Water Supply Identification Number (PWSID #), population served, the person responsible for the plan and date of last revision.

The official name and address for this system is

_____

_____

_____

The PWSID number for this system is
_____.

The population served by this system is _____.

The Person(s) responsible for reporting to the Division of Water resources and keeping the plan updated is _____.

Date of last plan update _____.

The objective of this plan is to identify routine and repeat bacteriological sampling locations, to ensure that the correct numbers of bacteriological samples are collected each monitoring period at sites which are representative of water throughout the distribution system and to ensure public water systems take appropriate follow up actions in response to positive bacteriological samples. The original siting plan should be kept on-site for use by sampling personnel.

Number of Samples Required

Routine Samples- General Monitoring Scheme

The frequency and number of routine samples required is specified in Rule 0400-45-01-.41(5)-(7) Systems must take at least the minimum number of required routine and repeat samples even if the system has had an E. coli MCL violation or has exceeded the coliform treatment technique trigger. System Specific Monitoring Requirements and general monitoring requirements are contained in Appendix B.

Non–Community NCWS using true ground water serving < 1000 Persons

Standard monitoring: one sample per quarter

In the event of a positive sample, three routine samples are required the following month.

Seasonal Non-Com Water Systems NCWS using true ground water serving <1000 Persons*

Standard monitoring: one sample each month the system is in operation
Reduced monitoring : one sample per quarter if criteria is met schedule approved.

Systems standard monitoring is one sample per month beginning April 1, 2016

Community Water Systems using true ground water and Serving <1000 Persons

Standard monitoring frequency: one sample per month

Community and Non-Community Subpart H (surface or GWUDI) Serving <1000 Persons*

Standard monitoring frequency: one sample per month

Community and Non-Community systems serving >1000 Persons *

Standard monitoring frequency: monthly based on population served as specified in Division Rule 0400-45-01-.41(7) (b.) Refer to Appendix B.

*Seasonal systems must complete start up procedure and certification and obtain a negative bacteriological result prior to start up.

Additional Routine Samples

A system may take more than the minimum number of required routine samples. If the system chooses to collect more than the minimum number of required samples, they must include the results in calculating whether the coliform treatment technique trigger has been exceeded, but only if the samples are taken in accordance with the existing sample siting plan and are representative of water throughout the distribution system. For example, a system that is required to collect 30 samples per monitoring period may elect to collect 40 samples but must identify that number of samples in the sampling plan.

Systems monitoring on a quarterly schedule are required to collect at least three routine samples the month following a positive sample result.

Repeat samples

If a routine bacteriological sample is total coliform-positive, the number of repeat samples required is three (3). A set of three (3) repeat samples will be collected for each positive sample. The repeat sampling procedure will continue until all samples are total coliform negative or a treatment technique trigger has been exceeded.

Repeat sampling locations

Systems must identify repeat monitoring locations in the sample siting plan. The system must collect at least one repeat sample from the sampling tap where the original total coliform-positive sample was taken, and at least one repeat sample at a tap within five service connections upstream and at least one repeat sample at a tap within five service connections downstream of the original sampling site. Only the addresses or locations of the routine sampling sites must be included in the plan. It is sufficient to note that repeat samples will be taken within 5 service connections upstream or 5 downstream service connections rather than give the actual address. If a total coliform-positive sample is at the end of the distribution system, or one service connection away from the end of the distribution system, the system must still take all required repeat samples. However, the State may allow an alternative sampling location in lieu of the requirement to collect at least one repeat sample upstream or downstream of the original sampling site.

Alternate Repeat Monitoring Locations

Systems may propose alternate repeat monitoring locations the system believes to be representative of a pathway for contamination of the distribution system. If a system chooses to have alternate repeat monitoring locations, the sampling plan must be approved by the Division of Water Resources prior to implementing the plan. A system may elect to specify either alternative fixed locations or criteria for selecting repeat sampling sites on a situational basis in a standard operating procedure (SOP) included in the sample siting plan. The system must design the SOP to focus the repeat samples at locations that best verify and determine the extent of

potential contamination of the distribution system area based on specific situations. The State may deny the proposal, modify the SOP or require alternative monitoring locations as needed. The use of alternate repeat monitoring locations will likely negate the possibility of sample invalidation due to domestic plumbing.

Selecting Sampling Sites

Monitoring required under the RTCR may take place at a customer's premise, dedicated sampling station, or other designated compliance sampling location. Routine and repeat sample sites and any sampling points necessary to meet the requirements of the RTCR and the Ground Water Rule (GWR) must be reflected in the sampling plan.

Systems monitoring quarterly should identify three additional sampling sites to be used in the event the system is triggered into increased monthly monitoring.

Systems should identify at least one backup or secondary sampling location for each designated sampling or pressure zone in the event that a site is unavailable for sampling.

Systems collecting more than one sample per month must collect samples at regular intervals throughout the month. Ground water systems serving 1,001 to 4,900 people may collect all required samples on a single day if they are taken from different sites.

Systems may generally follow the procedure below when selecting sampling sites

1. Coliform samples shall be collected at sites, which are representative of water throughout the distribution system according to the written sample-siting plan.
2. Samples are to be collected from a free flowing outlet of the ultimate user of the public water system, a dedicated sampling station or other designated compliance sampling location.
3. The goal should be to collect at least 30% of the required samples from residential areas. For the purposes of this plan, residential areas are defined as locations in the distribution systems which are served by the smallest distribution lines.
4. The system some of the required samples from dead end lines, low use areas, and areas near large storage tanks.
5. A map of the system with designated sampling zones and sampling site locations should be developed and included in the plan.

Other considerations in site selection when creating sample siting plans include:

- Pressure zones;
- Zones upstream and downstream of storage tanks with dedicated inflow and outflow lines (i.e., tanks that do not "float" on the distribution system);

- The location and type of water sources, treatment facilities, storage tanks, pressure stations, and service connections.
- The location of dead-end pipes, loops, and other areas of the piping system's configuration.
- Cross-connection hazards and shared connections.
- Areas of the distribution system delivering water from different sources;
- Areas of the distribution system with longer hydraulic retention times (if known)
- Areas of the distribution system with lower hydraulic pressures (if known).
- Areas of low water pressure and slow water movement.
- Varying population densities.

When appropriate, the system should be divided into zones, and site selection should be based on the criteria outlined above. Below is an example format that can be used.

The Public Water System will collect _____ routine samples per month. The System has been divided into _____ sampling/hydraulic/source zones. If a primary sampling site is not available, a secondary sampling site will be selected from the same zone for routine monitoring. Sampling will be conducted throughout the month with a goal of sample collection as follows.

_____ sample (s) is (are) to be taken from each sampling zone each month.

Samples will be collected throughout the month as follows.

First Week Number of Samples: _____ Zone(s)_____

Second Week Number of Samples: _____ Zone(s)_____

Third Week Number of Samples: _____ Zone(s)_____

*Fourth Week Number of Samples: _____ Zone(s)_____

*System may elect to collect all samples prior to the fourth week.

(All primary and alternative sites should be selected at least one to five taps from the end of a line to allow for proper repeat sampling)

Primary Routine Total Coliform Sampling Sites: (Should be equal to number of required monthly samples)

Map Site ID	Specific Addresses or GPS Coordinates	Zone	[1]Water Source

Alternative Routine Total Coliform Sampling Sites: (to be used if primary sites are not available or may be used in regular rotation)

Map Site ID	Specific Addresses or GPS Coordinates	Zone	[1]Water Source

[1]Any system subject to the Ground Water Rule or any system with multiple water sources or entry points must correlate each coliform sampling site with the applicable source of water or entry point. This designation and correlation is needed in the event a positive sample(s) trigger a ground water rule source sample or an RTCR assessment

If there is a total coliform or E. coli positive sample, three repeat samples will be collected within 24 hours of notification at the following locations:

- One sample at the site of the original positive sample.
- One sample at a site within five taps downstream of the original positive site.
- One sample at a site within five taps upstream of the original positive site.

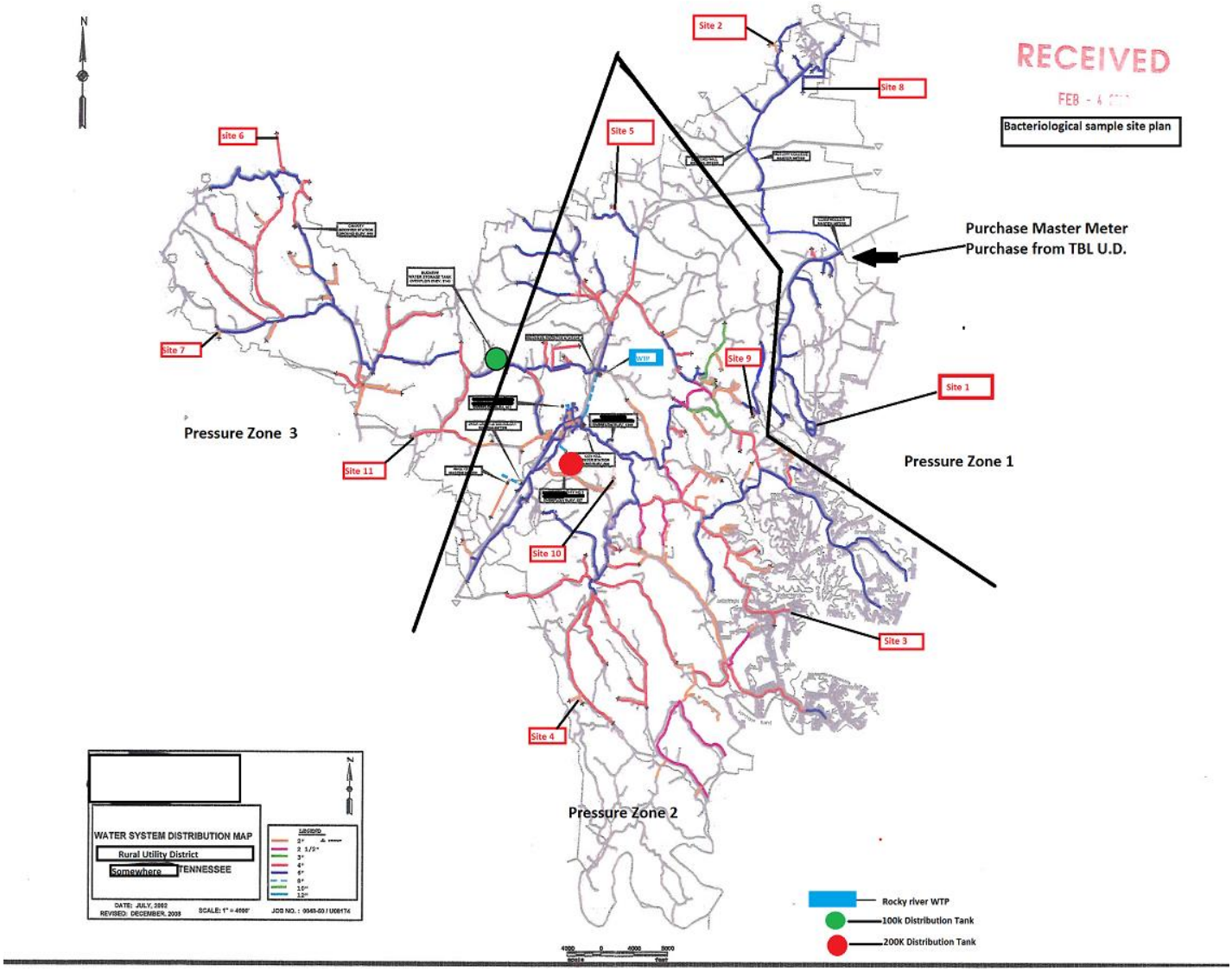
Systems monitoring on a quarterly schedule are required to collect at least three routine samples the month following a positive sample result. Additional monitoring sites should be identified for this purpose.

Seasonal systems that have been approved to reduce monitoring to quarterly, must state in their sample siting plan the time period when they will take their routine sample. Refer to page 3.

System Map

The plan must include a system map which demonstrates that samples site selection is representative of water throughout the system. The sample site locations, pressure or hydraulic zones, distribution storage tanks, and source water entry points must be designated.

Example Map of System



Sampling Procedure

1. Review the sample siting plan to determine where and when samples are to be taken.
2. After arriving at the sampling site, remove any attachments on the faucet.
3. Consider the use of a sodium hypochlorite spray solution or flaming to disinfect the faucet. Flaming should not be used on plastic faucets.
4. Turn the water on and let it run for several minutes or until water temperature stabilizes.
   - Flush out the customer lines, and
   - Ensure that the water being sampled is from the distribution lines, not the plumbing fixture. (A thermometer can be used to determine when water is being drawn from the distribution system and not the plumbing fixture. The water temperature will stabilize once all the water from the fixture has been flushed out and the water flowing from the faucet is coming from the distribution system.)
5. Adjust the flow from the faucet to a slow, steady stream.
6. Take a sample of water flowing from the tap and determine and document the free chlorine residual.
7. Open the laboratory supplied container used to take the bacteriological sample. Consider the use of latex gloves to minimize contamination risk.
8. Do not touch the inside of the bottle or lid.
9. Do not set the lid down.
10. Do not rinse the bottle out.
11. Grasp the container near the bottom and quickly place it under the flowing stream.
12. Fill the bottle to the neck or indicated fill line. Do not overfill. Collect at least 100 mL of water; this is the volume the laboratory must have for testing.
13. Remove the sample container from the flow as soon as it is filled. SEAL THE CONTAINER IMMEDIATELY.
14. Turn off the water and replace any fixtures or attachments that were removed previously.
15. Fill out the bacteriological sample slip. Instructions are included in Appendix E.
16. Place the container and completed forms in the shipping box.
17. Insure that the sample is delivered to the laboratory in a timely manner. Analysis must be initiated within 30 hours from the time sample is collected.
18. Record sampling event and information in the bacteriological sampling log. Refer to Appendix F.

Faucets to Avoid

Avoid taking samples at these faucets if at all possible.

- Unprotected Outdoor Faucets
- Frost-proof Faucets

If you cannot avoid these, be sure to use good sampling techniques. Avoid dust, obvious contamination, splashing rain, snow and other possible sources of contamination, such as:

- An indoor faucet connected to a pressure tank, or water heater.
- A new faucet.
- A hot water faucet.
- A recently repaired faucet.
- Faucets with threaded taps.
- Mixing faucets.
- Sites with a higher-than-usual possibility for bacterial contamination.
- Swing/swivel faucets.
- Faucets positioned close to a sink or the ground. (It must be high enough to keep it from touching the sampling container.
- Leaky faucets or faucets which allow water to seep around the valve stem.
- Faucets that supply areas, such as janitorial or commercial sinks, where bacterial contamination is likely.
- Faucets that have aerators. (If such faucets are to be used, the aerators should be removed before a sample is collected.)

What does this all mean? Avoid any faucet that will threaten to contaminate a sample. The idea is to sample the water in the distribution system, not necessarily the condition of the plumbing fixture. You may not always be able to avoid all these types of faucets. If you have to take a sample from one of these faucets, you should exercise extreme care and use good sampling techniques including spray disinfection or flaming of the faucet where appropriate.

Actions to be taken if a Sample is Total Coliform-Positive

Should one of the routine samples be total coliform-positive, public water systems are required to take a set of three (3) repeat samples for each total coliform positive sample result. Each set of repeat samples will be taken as follows:

- at least one of the repeat samples must be taken from the sampling tap where the original total coliform-positive samples was taken;
- at least one of the repeat samples must be taken at a tap within 5 service connections downstream from the original sampling site;
- at least one of the repeat samples must be taken at a tap within 5 service connections upstream from the original sampling site;
- the complete set of repeat samples must be taken within 24 hours of the system being notified of a positive coliform result, or when instructed to sample by the Division of Water Resources;
- the entire set of repeat samples must be taken on the same day.
- alternate repeat sample locations are allowed but only if the locations and or SOP for determining locations has been included as part of the sampling plan and has been approved by the Division of Water Resources

Repeat samples must be taken for each positive result until:

- total coliforms are not detected in one complete set of repeat samples, or
- the system exceeds the total coliform treatment technique trigger during the month and notifies the State Department of Environment and Conservation, Division of Water Resources.
- If a total coliform-positive sample is at the end of the distribution system, or one service connection away from the end of the distribution system, the system must still take all required repeat samples. However, the State may allow an alternative sampling location in lieu of the requirement to collect at least one repeat sample upstream or downstream of the original sampling site. The State will be contacted in the event this scenario occurs.

Systems on a quarterly monitoring schedule are required to collect three additional routine samples the month following a total coliform positive sample result.

Systems subject to the ground water rule source water monitoring requirements (do not provide 4 log virus removal) must also collect a source water sample within 24 hours.

Sampling During Weekends and Holidays

Should repeat samples be required on a weekend or holiday, follow this procedure:

Routine should be taken on Mondays and Tuesdays to avoid a problem with repeat samples. This should allow ample time for repeat samples to be collected before the weekend if they are required. If a holiday should occur, which could cause a problem with either routine or repeat sampling being submitted to the state laboratory, samples must be taken to a private certified laboratory for analysis. Planning ahead, and following these guidelines, should avoid any sampling problems associated with weekends or holidays.

Should it not be possible to collect repeat samples and submit them for analysis within the required 24-hour period because of a holiday or weekend, the system will provide for a "boil water notice" to be issued until sufficient samples can be collected and analyzed to verify that the contamination has been eliminated. Refer to page 18 for an example of a "boil water notice".

Treatment Technique Triggers and Assessments

Level 1 Assessments

A level 1 assessment is required to be conducted as soon as practical but no later than 30 days of the following events. A Division of Water Resources Level 1 Assessment form must be completed and submitted to the Division of Water Resources. Refer to Appendix C for Level 1 Assessment forms.

- For systems, which take less than 40 samples during a month**,** the system has exceeded the Level 1 treatment technique trigger if the system has more than one total coliform-positive sample, including repeat samples during a month.

- For systems, which take 40 or more samples during a month, the system exceeded the Level 1 treatment technique trigger if the number of total coliform positive samples, including repeats, exceeds 5.0% of the samples collected during a month.

- The system fails to collect every required repeat sample after any single total coliform positive sample.

- Level 1 assessments for a CWS must be conducted by a licensed certified operator. Level 1 assessments for a NCWS may be conducted by a system owner or operator. A State approved Level 1 Assessment form must be completed and submitted to the Division of Water Resources within 30 days of the trigger exceedance. Any sanitary defects or deficiencies must be corrected within 30 days of the trigger exceedance or in accordance with an approved schedule from the Division of Water Resources.

Level 2 Assessments

A level 2 assessment is required to be conducted as soon as practical but no later than 30 days of any of the following events. Refer to Appendix D for Level 2 Assessment forms.

- An E. coli Maximum Contaminant Level (MCL) violation
- A second Level 1 assessment trigger within a rolling 12 month period.
- Level 2 assessments for all systems must be conducted by a certified operator licensed to at least the same level as the public water system being assessed and who has completed an approved level 2 training course from the Division of Water Resources or by a Division of Water Resources staff member. A system serving a population of less than 50,000 must use a 3rd party assessor. A Division of Water Resources Level 2 Assessment form must be completed and submitted to the Division of Water Resources within 30 days of the trigger exceedance. Any sanitary defects or deficiencies must be corrected within 30 days of the trigger exceedance or in accordance with an approved schedule from the Division of Water Resources.

E. coli Maximum Contaminant Level (MCL) Violations

An E. coli MCL violation occurs when any of the following conditions exist.

- An E. coli positive repeat sample follows a Total Coliform positive routine sample.
- A Total Coliform positive repeat sample follows an E. coli positive routine sample.
- A system fails to take all required repeat samples (3) following an E. coli positive routine sample.
- A system fails to test for E. coli when any repeat sample tests positive for total coliform.

Actions to be taken if an E. coli-Positive Sample is involved in the Violation (A Violation Requiring a Tier 1 Public Notification)

If any repeat sample is E. coli -positive or any repeat sample following an E. coli-positive routine sample is total coliform-positive:

- Report the violation to the State no later than the end of the day when the system was notified of the results, unless the system is notified after the Department office is closed, in which case it must notify the State before the end of the next business day.
  Person to Contact: _____ at the _____ Environmental Field Office
  Telephone: _____ or 1-888-891-8332
- Notify the public using this procedure:
  - Furnish a copy of the notice to customers by direct delivery and or to the local radio and television stations served by the public water system as soon as possible, **but no later than 24 hours after the violation;**
- Refer to the EPA Public Notification Handbook for specific content and delivery requirements. An example is contained on following page.
  - The notice should contain the language shown in the example notice on the following page;
  - The system may want to describe what is being done to correct the problem:
    - Total number of samples taken,
    - Total number of positive samples,
    - Problem areas,
    - Mains are being flushed, etc.
- A Level Two Assessment must be conducted within 30 days of the E. coli positive sample. This assessment must be conducted by personnel approved by the Division of Water Resources.

Example Tier 1 PN for Violating the *E. coli* MCL

DRINKING WATER WARNING

E. coli is Present in System A's Water

BOIL YOUR WATER BEFORE DRINKING OR USING

Our water system detected *E. coli* bacteria in our distribution system. As our customers, you have a right to know what happened and what we are doing to correct this situation. On April 4, 2016, we learned that coliform bacteria were present and one of our routine samples collected on April 2, 2016, was total coliform-positive (TC+). As required by the Revised Total Coliform Rule, one of our follow-up steps was to collect repeat samples at and near the location where the TC+ sample was originally taken. One of these repeat samples collected on April 5 tested positive for *E. coli*. We are now conducting additional sampling to determine the extent of the problem and are conducting a thorough investigation to determine the source of the contamination.

What should I do?

DO NOT DRINK THE WATER WITHOUT BOILING IT FIRST. Bring all water to a rolling boil, let it boil for one minute, and let it cool before using it. Boiling kills bacteria and other organisms in the water. You may also use bottled water. Use boiled or bottled water for drinking, making ice, preparing food and washing dishes until further notice.

Also, if you have a severely compromised immune system, have an infant, or are elderly, you may be at increased risk and should seek advice about drinking water from your health care providers. General guidelines on ways to lessen the risk of infection by microbes are available from EPA's Safe Drinking Water Hotline at (800) 426-4791. If you have specific health concerns, consult your doctor. We are also providing regular updates on this situation on Channel 22 or Radio Station KMMM (97.3 FM).

What does this mean?

Inadequately treated or inadequately protected water may contain disease-causing organisms. These organisms can cause symptoms such as diarrhea, nausea, cramps and associated headaches. *E. coli are bacteria whose presence indicates that the water may be contaminated with human or animal wastes. Human pathogens in these wastes can cause short-term effects, such as diarrhea, cramps, nausea, headaches, or other symptoms. They may pose a greater health risk for infants, young children, some of the elderly, and people with severely-compromised immune systems.* These symptoms are not caused only by organisms in drinking water. If you experience any of these symptoms and they persist, you may want to seek medical advice.

What is being done?

We are conducting a thorough investigation to determine the source of the contamination and will be working with the State to implement corrective actions to ensure that our water supplies are protected against contamination. We will keep you informed of the steps we are taking to protect your drinking water and will provide information on any steps you should be taking. We will inform you when tests show no bacteria and you no longer need to boil your water. We are also providing regular updates on this situation on Channel 22 or Radio Station KMMM (97.3 FM).

For more information, please contact John Johnson, manager of System A, at (555) 555-1234 or write to 2600 Winding Rd., Townsville, TM 12345.

Please share this information with all the other people who drink this water, especially those who may not have received this notice directly (for example, people in apartments, nursing homes, schools and businesses). You can do this by posting this notice in a public place or distributing copies by hand or mail.

This notice is being sent to you by System A. State Water System ID# TN 1234582. Sent: 4/7/15

Treatment Technique Violations

A treatment technique violation occurs when any of the following conditions occur.

- A system exceeds a treatment technique trigger and then fails to conduct an assessment or complete corrective actions within required timeframes.

- A seasonal system fails to complete a Department-approved start up procedure prior to serving water to the public.

Actions to be taken in the event of a Treatment Technique Violation
(A Violation Requiring a Tier 2 Public Notification)

A public water system that has violated the treatment technique for total coliforms by failing to conduct an assessment, complete corrective actions or fails to complete the approved seasonal start up procedure must;

- Report the violation to the State no later than the end of the next business day after system learns of the violation.
  Person to Contact: _____ at the _____ Environmental Field Office
  Telephone: _____ or 1-888-891-8332
- A Tier 2 Public Notice must be issued:
  Tier 2 notices must be issued within 30 days of learning of the violation.
- Refer to the EPA Public Notification Handbook for specific content and delivery requirements. Examples are contained in the next three pages

- Notify the public using this procedure:
  - Furnish a copy of the notice to the customers served by the public water system via mail or other direct delivery as soon as possible, **but no later than 30 days after the violation;**
    - The notice should contain the language shown in the example notices on the next pages;
    - The system may want to describe what is being done to correct the problem:

Example of a Tier 2 PN for Failure to Perform a Level 1 or 2 Assessment

DRINKING WATER NOTICE

System B Failed to Conduct an Assessment of the Facility and Distribution System

Coliforms are bacteria that are naturally present in the environment and are used as an indicator that other, potentially harmful, waterborne pathogens may be present or that a potential pathway exists through which contamination may enter the distribution system. In one sample we collected on June 12, 2016, and one sample collected on June 16, 2016, we found coliforms, indicating the need to look for potential problems in water treatment or distribution. When this occurs, we are required to conduct an assessment to identify problems and to correct any problems that are found. We were required to conduct a Level 1 assessment within 30 days of learning of the second total coliform-positive (TC+) sample. A Level 1 assessment is a study of the water system to identify potential problems and determine (if possible) why total coliform bacteria have been found in our water system. As our customers, you have a right to know what happened and what we are doing to correct this situation. As required by the Revised Total Coliform Rule, *we failed to conduct the required Level 1 or 2 assessment* within 30 days, and have therefore, violated a requirement of the Revised Total Coliform Rule.

What does this mean?

This is not an emergency. If it had been an emergency, you would have been notified within 24 hours.

Failure to conduct an assessment to identify the sanitary defect that triggered the assessment has the potential to cause distribution system contamination. *Inadequately treated or inadequately protected water may contain disease-causing organisms. These organisms can cause symptoms such as diarrhea, nausea, cramps, and associated headaches.* Failure to perform the assessment prolonged the risk of fecal contamination of our distribution system water. While we have not detected any evidence of fecal contamination in our distribution system, we are committed to correcting the deficiency to eliminate the potential threat of contamination.

What should I do?

You do not need to boil your water or take other corrective actions. However, if you have specific health concerns, consult your doctor.

If you have a severely compromised immune system, have an infant, are pregnant, or are elderly, you may be at increased risk and should seek advice from their health care providers about drinking this water. General guidelines on ways to lessen the risk of infection by microbes are available from EPA's Safe Drinking Water Hotline at (800) 426-4791.

You do not need to boil your water or take other corrective actions. If a situation arises where the water is no longer safe to drink, you will be notified within 24 hours. We will announce any emergencies on Channel 22 or Radio Station KMMM (97.3 FM).

What is being done?

We have since completed the Level 1 assessment and identified the cause of the sanitary defect; damage to the storage tank. We are implementing the corrective action plan established by the State. Under this plan, the damage will be repaired and the tank will be disinfected by August 31, 2016.

For more information, please contact John Johnson, manager of System B, at (555) 555-1234 or write to 2600 Winding Rd., Townsville, TM 12345.

Please share this information with all the other people who drink this water, especially those who may not have received this notice directly (for example, people in apartments, nursing homes, schools and businesses). You can do this by posting this notice in a public place or distributing copies by hand or mail.

This notice is being posted by System B. State Water System ID# TN 1234583. Sent: 8/10/2016

Example of a Tier 2 PN for Failure to Perform Corrective Action
DRINKING WATER NOTICE
System B Failed to Perform Corrective Action Following an Assessment of the Facility and Distribution System

Coliforms are bacteria that are naturally present in the environment and are used as an indicator that other, potentially harmful, waterborne pathogens may be present or that a potential pathway exists through which contamination may enter the distribution system. We found coliforms, indicating the need to look for potential problems in water treatment or distribution. When this occurs, we are required to conduct assessment(s) to identify problems and to correct any problems that are found. This past summer, we were required to conduct a Level 1 assessment. We completed the required Level 1 assessment and identified the cause of the sanitary defect to be damage to the storage tank. *While we failed to correct the sanitary defect within the required timeframe,* we are implementing the corrective action plan established by the State. As our customers, you have a right to know what happened and what we are doing to correct this situation. As required by the Revised Total Coliform Rule, we failed to complete the corrective action within the required timeframe, and have therefore, violated a requirement of the Revised Total Coliform Rule.

What does this mean?
This is not an emergency. If it had been an emergency, you would have been notified within 24 hours.
Failure to correct the identified defect that was found during the assessment has the potential to cause distribution system contamination. *Inadequately treated or inadequately protected water may contain disease-causing organisms. These organisms can cause symptoms such as diarrhea, nausea, cramps, and associated headaches.*

What should I do?

- You do not need to boil your water or take other corrective actions. However, if you have specific health concerns, consult your doctor.
- If you have a severely compromised immune system, have an infant, are pregnant, or are elderly, you may be at increased risk and should seek advice from their health care providers about drinking this water. General guidelines on ways to lessen the risk of infection by microbes are available from EPA's Safe Drinking Water Hotline at (800) 426-4791.

You do not need to boil your water or take other corrective actions. If a situation arises where the water is no longer safe to drink, you will be notified within 24 hours. We will announce any emergencies on Channel 22 or Radio Station KMMM (97.3 FM).

What is being done?
Since being informed of the failure, we have begun to correct the sanitary defect identified during the Level 1 assessment. During the assessment, the sanitary defect was determined to be damage to the storage tank. We are in communication with the State and have modified the corrective action plan's schedule to repair and disinfect the storage tank.

For more information, please contact John Johnson, manager of System B, at (555) 555-1234 or write to 2600 Winding Rd., Townsville, TM 12345.

Please share this information with all the other people who drink this water, especially those who may not have received this notice directly (for example, people in apartments, nursing homes, schools and businesses). You can do this by posting this notice in a public place or distributing copies by hand or mail.
This notice is being posted by System B. State Water System ID# TN1234583. Sent: 9/20/2016

Example of a Tier 2 PN for Failure of a Non-community Seasonal System to Perform State-Approved Start-up Procedures Prior to Serving Water to the Public

DRINKING WATER NOTICE

System E Failed to Perform State-Approved Start-up Procedures Prior to Serving Water to the Public

Prior to serving water to the public in October, we failed to perform the state-approved start-up procedures for our water system. As our customers, you have a right to know what happened and what we are doing to correct this situation. Because we failed to implement these procedures, we have violated a requirement of the Revised Total Coliform Rule.

What does this mean?

This is not an emergency. If it had been an emergency, you would have been notified within 24 hours.
Failure to perform state-approved start-up procedures prior to serving water to the public has the potential to cause source water contamination. *Inadequately treated or inadequately protected water may contain disease-causing organisms. These organisms can cause symptoms such as diarrhea, nausea, cramps, and associated headaches.* Failure to perform the start-up procedures prolonged the risk of fecal contamination of our source water. While we have not detected any evidence of fecal contamination in our source water, we are committed to correcting the deficiency to eliminate the threat of contamination.

What should I do?

- If you have specific health concerns, consult your doctor.
- If you have a severely compromised immune system, have an infant, are pregnant, or are elderly, you may be at increased risk and should seek advice from their health care providers about drinking this water. General guidelines on ways to lessen the risk of infection by microbes are available from EPA's Safe Drinking Water Hotline at (800) 426-4791.

What is being done?

Since being informed of the failure, we have completed the required start-up procedures and have provided certification to the state. We have also collected three coliform samples and all three samples were coliform-negative.

If a situation arises where the water is no longer safe to drink, you will be notified within 24 hours.

For more information, please contact John Johnson, manager of System E, at (555) 555-1234 or write to 2600 Winding Rd., Townsville, TM 12345.

Please share this information with all the other people who drink this water, especially those who may not have received this notice directly. You can do this by posting this notice in a public place.

This notice is being posted by System E. State Water System ID# TN1234583. Sent: 11/27/2016

Monitoring and Reporting Violations

A Monitoring or Reporting violation occurs when any of the following conditions exist.

- A system fails to collect all routine or additional routine samples
- A system fails to take/analyze for E. coli after a total coliform positive routine.
- A system fails to submit a monitoring report, assessment report or certification of start-up procedure completion.
- A system fails to notify the State of an E. coli positive sample.

Actions to be taken in the event of a Monitoring/ Reporting Violation
(A Violation Requiring a Tier 3 Public Notification)

A public water system that has violated the Monitoring and or Reporting requirements must;

- Report the violation to the State no later than the end of the next business day after system learns of the violation.
  Person to Contact: _____ at the _____ Environmental Field Office
  Telephone: _____ or 1-888-891-8332
- A Tier 3 Public Notice must be provided to customers:
  Tier 3 notices must be issued within 365 days of learning of the violation.
- Refer to the EPA Public Notification Handbook for specific content and delivery requirements. Examples are contained in the next two pages
- Notify the public using this procedure:
  - Furnish a copy of the notice to the customers served by the public water system via mail or other direct delivery as soon as possible, **but no later than 365 days after the violation;**
    - The notice should contain the language shown in the example notices on the next pages;
    - The system may want to describe what is being done to correct the problem:

Example Tier 3 PN for Failure to Take All Routine Total Coliform Samples in the Required Compliance Period

IMPORTANT INFORMATION ABOUT YOUR DRINKING WATER
Monitoring Requirements Not Met for System D

We are required to monitor your drinking water for specific contaminants on a regular basis. Results of regular monitoring are an indicator of whether or not your drinking water meets health standards. During December 2016, we did not complete all monitoring or testing for total coliform, and therefore, cannot be sure of the quality of your drinking water during that time.

On January 11, 2017, we became aware that our water system failed to collect all of the required monthly routine total coliform distribution system samples in December 2016. Although this incident was not an emergency, as our customers, you have a right to know what happened and what we did to correct the situation. None of the 12 samples that we did collect was positive for total coliform or *E. coli* bacteria.

What should I do?
There is nothing you need to do. You do not need to boil your water or take other corrective actions. You may continue to drink the water. If a situation arises where the water is no longer safe to drink, you will be notified within 24 hours. We will also announce any emergencies on Channel 22 and Radio Station KMMM (97.3 FM).

What was done?
We collected all 15 of the required routine total coliform samples in January and tested them for *E. coli*. None of the samples collected in January was positive for *E. coli*.

For more information, please contact John Johnson, manager of System D, at (555) 555-1234 or write to 2600 Winding Rd., Townsville, TM 12345.

Please share this information with all the other people who drink this water, especially those who may not have received this notice directly (for example, people in apartments, nursing homes, schools and businesses). You can do this by posting this notice in a public place or distributing copies by hand or mail.

This notice is being sent to you by System D. State Water System ID# TM1234585. Sent: 1/10/2018

Example Tier 3 PN for Failure to Notify the State Following an *EC*+ Sample Result

IMPORTANT INFORMATION ABOUT YOUR DRINKING WATER
Reporting Requirements Not Met for System F

Our system failed to notify the state of an *E. coli*-positive (*EC+*) routine sample by the end of the day that we learned of the violation. The water system has not exceeded the *E. coli* MCL standard set by the Revised Total Coliform Rule. Although this incident was not an emergency, as our customers, you have a right to know what happened and what we did to correct the situation.

What should I do?
There is nothing you need to do. You do not need to boil your water or take other corrective actions. You may continue to drink the water. If a situation arises where the water is no longer safe to drink, you will be notified within 24 hours. We will also announce any emergencies on Channel 22 and Radio Station KMMM (97.3 FM).

What was done?
We notified the state of the routine monitoring sample that was *EC+*.

For more information, please contact John Johnson, manager of System F, at (555) 555-1234 or write to 2600 Winding Rd., Townsville, TM 12345.

Please share this information with all the other people who drink this water, especially those who may not have received this notice directly (for example, people in apartments, nursing homes, schools and businesses). You can do this by posting this notice in a public place or distributing copies by hand or mail.

This notice is being sent to you by System F. State Water System ID# TN1234585. Sent: 3/11/2017

Appendix A– Seasonal System Start up Certification Form

TENNESSEE DEPARTMENT OF ENVIRONMENT & CONSERVATION
DIVISION OF WATER RESOURCES - DRINKING WATER UNIT
William R. Snodgrass Tennessee Tower
312 Rosa L. Parks Ave., 11th Floor
Nashville, TN 37243-1102
615-532-0191

SEASONAL NON-COMMUNITY PUBLIC WATER SYSTEMS

State Approved Start-up Checklist for PWSID # and Name _____

Under the Revised Total Coliform Rule (RTCR), systems that are only opened part of the year or seasonal are required to follow the steps below and submit this form to the regional Environmental Field Office prior to serving water to the public for the season. To locate the Environmental Field Office for your area copy and paste the link below into your browser: http://www.tn.gov/environment/field-offices.shtml

Draft

(1.)	**Well Source and Pump House Start-up Shut-down**			
(a.)	Is pump house protected from trespassers (locked and completely secure)	YES	NO	N/A
(b.)	Well casing is structurally sound	YES	NO	N/A
(c.)	Chemicals (i.e. gas, solvents, pesticides) are stored outside isolation radius or at least more than 100 feet from well	YES	NO	N/A
(d.)	Is backup generator stored to capture any leaks in secondary containment area	YES	NO	N/A
(e.)	Well cap is tight with no openings that would allow insect infiltration	YES	NO	N/A
(f.)	Well vent is turned downward and the screen is intact	YES	NO	N/A
(g.)	Rodents and insects are kept out of the pump house and away from the well (keep area mowed)	YES	NO	N/A
(h.)	Sample tap does not leak and flows freely when open	YES	NO	N/A
(i.)	A water meter is working properly and water usage records are maintained	YES	NO	N/A
	COMMENTS:			

(2.)	**Chlorination and Other Treatment (softening, filters, phosphate, etc.)**			
(a.)	Are all treatment systems installed and operating properly	YES	NO	N/A
(b.)	Chlorine is pumping at an adequate dose throughout distribution system including distal ends	YES	NO	N/A
(c.)	The chlorine residual test kit is working, reagents are not expired and is properly calibrated at the beginning of the season.	YES	NO	N/A
(d.)	Chlorinator inspected and declared to be operating properly	YES	NO	N/A
(e.)	The chemical injection point has been cleaned and chemical feed pump is working properly	YES	NO	N/A
(f.)	Unless otherwise approved by the Division, system must ensure measureable disinfectant residual of 0.2 ppm at all distal ends of distribution system	YES	NO	N/A
	COMMENTS:			

(3.)	**Monitoring and Reporting**			
(a.)	All required total coliform bacteria samples were collected prior to serving water to the public with a negative result	YES	NO	N/A
	COMMENTS:			

(4.)	**Storage Tanks**			
(a.)	Flush the interior of the tank	YES	NO	N/A
(b.)	The tank overflow pipe is screened and air gap is maintained above ground	YES	NO	N/A
(c.)	Tank has been visually inspected for damage or repairs	YES	NO	N/A
	COMMENTS:			

(5.)	**Pressure Tanks**			
(a.)	Pressure tank is checked to ensure pressure is being maintained and tank is not waterlogged	YES	NO	N/A
(b.)	All valves, gauges, controls, etc. are properly operating	YES	NO	N/A
(c.)	Pressure tanks thoroughly flushed	YES	NO	N/A
	COMMENTS:			

(6.)	**Distribution Lines**			
(a.)	Lines walked to ensure none are exposed or leaking	YES	NO	N/A
(b.)	Each valve located and are working properly	YES	NO	N/A
(c.)	Flush distribution lines and check chlorine residual at 2 locations on 2 separate days	YES	NO	N/A
(d.)	Ensure RV dump station maintains air gap	YES	NO	N/A
	COMMENTS:			

(7.)	**Additional Comments:**

***** Note: Remember to update your Wellhead Protection Plan**

If you have any questions, contact your local Environmental Field Office at (888) 891-TDEC (8332)

Sample

Certification Statement

I certify, under penalty of law, including but not limited to penalties for perjury, that this document and all attachments were prepared by me, or under my direction or supervision; that all of the submitted information is to the best of my knowledge and belief true, accurate, and complete; and that I am lawfully present in the United States as a U.S. citizen or a qualified alien as defined in 8 U.S.C §164(b). As specified in Tennessee Code Annotated §39-16-702(a)(4), this declaration is made under penalty of perjury. I understand that the penalties for providing false information and making false or fraudulent statements or representations include revocation in a fine, permit or license, civil penalties, and/or criminal prosecution resulting in a fine, imprisonment or both.

Owner/Operator Signature _____ Date _____

Sample

Appendix B– Monitoring Requirements

RTCR Monitoring Scheme

Standard and Reduced Monitoring Provisions

General

- All public water systems must have a bacteriological sampling plan reflecting RTCR sampling requirements on March 31, 2016. All system bacteriological sample siting plans are subject to review and revision by the state and will at a minimum frequency be reviewed by State of TN staff during each sanitary survey.
- Any bacteriological sample siting plan with alternative repeat monitoring locations, (other than +- 5 service connections up and down) requires prior state bacteriological plan review and approval.
- All seasonal systems must complete a state of TN specified start up procedure, obtain a negative bacteriological result and submit certification of completion of the requirements prior to start up.
- Seasonal systems may be allowed a reduction to quarterly monitoring which must be reflected in the bacteriological sampling plan and requires prior state review and approval. Otherwise they begin monthly sampling upon start up effective April 1, 2016.
- All systems are required to collect three repeat samples within 24 hours of notification of a positive routine sample result.
- Any system that is on a quarterly sampling schedule is required to collect three routine samples in the month following a total coliform positive sample.

System Type Specific Requirements

Non–Community NCWS using true ground water serving <1000 Persons

Standard monitoring: One sample per quarter

Reduced monitoring: Not allowed

Increased monitoring: One sample per month

- During standard monitoring and In the event of a positive sample, three routine samples are required the following month.
- Increased monitoring to monthly is required if:
  - A level 2 assessment or two level 1 assessments are triggered in a rolling 12 month period
  - An E. coli MCL violation
  - A coliform treatment technique violation
  - Two RTCR monitoring violations in a rolling 12- month period
  - One RTCR monitoring violation and one level 1 assessment in a rolling 12 month period.

State may approve return to quarterly sampling if:

- Within the last 12 months, a sanitary survey or site visit by the state or a voluntary level 2 assessment is conducted by a party approved by the state.

  1. The system is free of sanitary defects and has a protected source.
  2. System has a clean compliance history for a minimum of 12 months.

Seasonal Non-Community Water Systems NCWS using true ground water serving <1000 Persons*

Standard monitoring: One sample each month the system is in operation

Reduced monitoring: One sample per quarter

Increased monitoring: One sample per month

- Systems standard monitoring is one sample per month beginning April 1, 2016.
- Reduced monitoring- The State may grant a reduction of systems monitoring frequency to quarterly if:

    1. The state approves a sample siting plan that designates the time period for monitoring based on site-specific considerations such as monitoring during periods of highest demand or highest vulnerability to contamination. The compliance samples must be collected during this time.
    2. Within the last 12 months, a sanitary survey or site visit by the state or a voluntary level 2 assessment is conducted by a party approved by the state.
    3. The system is free of sanitary defects and has a protected source
    4. System has a clean compliance history for a minimum of 12 months.

- If on reduced quarterly sampling and in the event of a TC positive sample, three routine samples are required the following month.

- Increased monitoring to monthly is required if:
    - A level 2 assessment or two level 1 assessments are triggered in a rolling 12 month period.
    - An E. coli MCL violation.
    - A coliform treatment technique violation.
    - Two RTCR monitoring violations in a rolling 12- month period.
    - One RTCR monitoring violation and one level 1 assessment in a rolling 12 month period.

State may approve a return to quarterly sampling if:

1. Within the last 12 months, a sanitary survey or site visit by the state or a voluntary level 2 assessment is conducted by a party approved by the state.
2. The system is free of sanitary defects and has a protected source
3. System has a clean compliance history for a minimum of 12 months.

*All seasonal systems must complete a state of Tennessee specified start up procedure, obtain a negative bacteriological result and submit certification of completion of the requirements prior to start up.

Community Water Systems using true ground water and Serving <1000 Persons

Standard monitoring: One sample per month

Reduced monitoring: Not allowed

Increased monitoring: NA

Community and Non-Community Subpart H (surface or GWUDI) Serving <1000 Persons*

Standard monitoring: One sample per month

Reduced monitoring: Not allowed

Increased monitoring: NA

*Seasonal systems must complete start up procedure and certification and obtain a negative bacteriological result prior to start up.

Community and Non-Community systems serving >1000 Persons*

Standard monitoring: Monthly based on population served
Range is 2-480 samples/month

Reduced monitoring: Not allowed

Increased monitoring: NA

*Seasonal systems must complete start up procedure and certification and obtain a negative bacteriological result prior to start up.

Total Coliform Monitoring Frequency for Public Water Systems Serving More than 1000 people

Population Served	Minimum number of samples per month
1,001 to 2,500	2
2,501 to 3,300	3
3,301 to 4,100	4
4,101 to 4,900	5
4,901 to 5,800	6
5,801 to 6,700	7
6,701 to 7,600	8
7,601 to 8,500	9
8,501 to 12,900	10
12,901 to 17,200	15
17,201 to 21,500	20
21,501 to 25,000	25
25,001 to 33,000	30
33,001 to 41,000	40
41,001 to 50,000	50
50,001 to 59,000	60
59,001 to 70,000	70
70,001 to 83,000	80
83,001 to 96,000	90
96,001 to 130,000	100
130,001 to 220,000	120
220,001 to 320,000	150
320,001 to 450,000	180
450,001 to 600,000	210
600,001 to 780,000	240
780,001 to 970,000	270
970,001 to 1,230,000	300
1,230,001 to 1,520,000	330
1,520,001 to 1,850,000	360
1,850,001 to 2,270,000	390
2,270,001 to 3,020,000	420
3,020,001 to 3,960,000	450
3,960,000 or more	480

Appendix C – Level 1 ASSESSMENT FORM

TENNESSEE DEPARTMENT OF ENVIRONMENT & CONSERVATION
DIVISION OF WATER RESOURCES – DRINKING WATER UNIT
William R. Snodgrass Tennessee Tower
312 Rosa L. Parks Ave., 11th Floor
Nashville, TN 37243-1102
615-532-0191

REVISED TOTAL COLIFORM RULE LEVEL 1 ASSESSMENT

Water System Name:	_____
PWSID #:	_____
Assessment Performed By:	_____
Date of Assessment:	_____
	(1.) Sampling
☐Yes ☐No If Yes, explain	**(a.) Review total coliform sample results and chlorine residuals for the past three months (six months, if sampling quarterly). Are there any trends in bacteria samples or chlorine residuals?**
	_____ _____ _____ _____ _____ _____
	(b.) Sampling Guidance
	• The water should be allowed to run for a few minutes to ensure it was from the distribution system and not household plumbing. • The faucet should be disinfected. • The chlorine residual should be taken but not using the bacteria sample bottle. • Care should be taken not to touch the inside of the bottle or lid, not to set the lid down and not rinse the bottle out. Container should not touch faucet. • The water should be flowing in a slow, steady stream. • Container should not be overfilled and should be sealed immediately. • Outdoor faucets, frost-proof faucets should be avoided. • If possible, avoid faucet connected to water heater, pressure tank; hot water faucet, new faucet, swing/swivel faucets, janitor sink faucets or other potentially contaminated faucets.
	(c.) Describe below the sampling technique used for bacteria sampling:
	_____ _____ _____ _____ _____
	(d.) Name of Sampler
	_____

Sample

□Yes □No If Yes, explain	(e.) Are conditions at the sample tap unsanitary and prone to external contamination?
	_____ _____ _____ _____
□Yes □No Explain setting/use of tap	(f.) Has the sample site been in regular use? Would the typical use of the tap be prone to contamination (food preparation, utility sink, etc.)?
	_____ _____ _____ _____
	(g.) Describe how the samples were processed:
	I. Samples shipped or delivered? _____ _____ II. Time between sample collection and delivery to lab? _____ _____ III. Samples cooled or ambient temperature? _____ _____ IV. Fresh sample bottles? _____ _____ V. Properly stored sample bottles? _____ _____
	(h.) If the system has a certified bacteriological lab, review their lab procedures, QA/QC and the cleanliness of the lab. Provide observations below:
	_____ _____ _____ _____
	(2.) General – File Review
	(a.) Review last sanitary survey and survey letter for identified problems affecting water quality, particularly repeat issues. Provide observations below:
	_____ _____ _____ _____ _____ _____ _____
	(b.) Review Monthly Operating Reports (MORs) for past 6 months paying special attention to chlorine residual leaving plant and turbidity levels.

Sample

	Provide observations below:
	_____
	(c.) Review files for filter exceedance reports, filter performance reports, identify filter run times. Provide observations below:
	_____
□Yes □No If Yes, explain	(d.) Has there been a loss of service due to a failure of water transmission or distribution facilities?
	_____
□Yes □No If Yes, explain	(e.) Could any operation or maintenance activities have introduced contamination?
	_____
□Yes □No If Yes, explain	(f.) Has there been recent delivery of new treatment chemicals? Were they confirmed to be the correct chemical and strength?
	_____
□Yes □No If Yes, explain	(g.) Has there been vandalism or unauthorized access to facilities identified?
	_____
	(3.) Distribution System
□Yes □No	(a.) Have all issues identified in the last professional tank inspection and sanitary survey been addressed? Describe below:
	_____
□Yes □No	(b.) Have there been line replacements, water line breaks or repairs or new construction within the past 3 months? Describe disinfection techniques employed below:
	_____

Sample

□Yes □No	(c.) If the tank or clearwell inspection or repair was within the past 3 months, was proper disinfection employed afterward? When were the tanks last cleaned out? Describe disinfection technique below:
□Yes □No	(d.) Is there an ongoing flushing program and when was the last flushing performed? Describe below:
□Yes □No If yes, explain	(e.) Are there any areas where it is difficult to maintain chlorine residual without flushing?
□Yes □No If Yes, explain	(f.) Has there been any firefighting in the area within the past 3 months that would have dropped water pressure or other low pressure events such as line breaks?
	(4) Cross Connections
□Yes □No	(a.) Are backflow prevention devices being tested annually?
□Yes □No If Yes, explain	(b.) Are there backflow prevention devices in the vicinity of the total coliform positive site or places that should have backflow prevention devices?
□Yes □No If Yes, explain	(c.) Have any failed backflow prevention devices missed being repaired/replaced and retested within the previous 12 months?
□Yes □No	(d.) Within the area of concern, have there been surveys conducted for the detection and elimination of hazards associated with cross-connections? Describe the area (e.g., residential, commercial, sparsely populated rural, etc.) and any known backflow prevention devices and potential risks.

Sample

	(5.) Plant Operation/Treatment
□Yes □No If No, explain	(a.) Are all of the facilities secure to prevent unauthorized access?
□Yes □No	(b.) Is the treatment facility operated and manned 24 hours a day? Explain below:
	(c.) If unmanned while in operation, what monitoring/shutdown alarms are in place at the treatment facility (turbidity, chlorine residual, etc.) and are they operational? Describe below:
□Yes □No If Yes, explain	(d.) Has there been any unusual filter performance within the past 3 months?
□Yes □No If Yes, explain	(e.) Review turbidity records for the past three months. Have there been any turbidity exceedances of more than 1 NTU in either the individual filters or combined?
	(f.) Have there been any other parameters out of normal range within the past 3 months? Describe below:
□Yes □No If Yes, explain	(g.) Have there been any disruptions within the past 3 months that could have affected turbidity or disinfection (chlorine feed or UV disinfection)?

Sample

□Yes □No If Yes, explain	(h.) Are there any unsanitary conditions, rodents, birds, general housekeeping problems at any of the facilities?
	_____ _____
□Yes □No If Yes, explain	(i.) Were there any observed leaks or other signs of poor maintenance within the facilities? :
□Yes □No	_____ _____ _____ _____
□Yes □No	(j.) If there is a pressure tank present, is it maintaining appropriate pressure?
□Yes □No	(k.) If the system is using a cartridge filter, is the filter the correct absolute 1 micron cartridge and is it changed according to manufacturer's recommendation? Provide comments below:
	_____ _____ _____ _____ _____
	(6.) Chlorine Residual
□Yes □No	(a.) Has the system been achieving the proper contact time, if required (minimum of 15 minutes)? Indicate below if system is not chlorinating and discuss system's contact time below:
	_____ _____ _____ _____
□Yes □No	(b.) Is there consistent chlorine residual in the water leaving the plant? Describe below: Indicate below if system is not chlorinating. Describe below:
	_____ _____ _____ _____
	(7.) UV Disinfection – If applicable
□Yes □No	(a.) Is the unit operational?
□Yes □No	(b.) Is the turbidity low enough for it to work properly?
□Yes □No	(c.) Does the unit have the proper UV lamp?
□Yes □No	(d.) Does the lamp need replaced?
□Yes □No	(e.) Is the lamp sleeve clean?
	(8.) Source
□Yes □No If Yes, explain	(a.) Have there been any new or auxiliary sources brought online?
	_____ _____ _____

Sample

□Yes □No If Yes, explain	If seasonal, were there any problems with the startup procedure?
	(9.) Well/Spring
□Yes □No	(a.) Is springbox in good condition? Describe springbox below:
□Yes □No	(b.) Is springbox/well head protected from surface water drainage/infiltration? Describe below:
□Yes □No	(c.) Is well casing above grade/flood zone? Describe setting below:
□Yes □No	(d.) Is the sanitary seal on the well casing is intact?
□Yes □No	(e.) Is well vent screened?
□Yes □No If Yes, explain	(f.) Was there any heavy precipitation or flooding within the 30 days prior to the total coliform positive event?
	(10.) Intake
□Yes □No If Yes, explain	(a.) Any conditions that might increase turbidity or introduce contamination?
□Yes □No If Yes, explain	(b.) Is the intake or equipment in need of repair?
□Yes □No	(c.) Was there any heavy precipitation or flooding within the 30 days prior to the

Sample

If Yes, explain	total coliform positive event?
	_____ _____ _____ _____
□Yes □No If Yes, explain	(d.) Have there been any changes in sources of potential contamination in proximity of the water source?
	_____ _____ _____ _____
	(11.) Assessment Statement and Proposed Remedy
	_____ _____ _____ _____

Attach additional sheets if necessary

Certification Statement

I certify, under penalty of law, including but not limited to penalties for perjury, that this document and all attachments were prepared by me or under my direction or supervision; that all of the submitted information is to the best of my knowledge and belief true, accurate, and complete; and that I am lawfully present in the United States as a U.S. citizen or a qualified alien as defined in 8 U.S.C. §1641(b). As specified in Tennessee Code Annotated Section 39-16-702(a)(4), this declaration is made under penalty of perjury. I understand that the penalties for providing false information and making false or fraudulent statements or representations include revocation in a fine, permit or license, civil penalties, and/or criminal prosecution resulting in a fine, imprisonment or both.

_____ _____

Signature Date

Sample

Appendix D – Level 2 ASSESSMENT FORM

TENNESSEE DEPARTMENT OF ENVIRONMENT & CONSERVATION
DIVISION OF WATER RESOURCES – DRINKING WATER UNIT
William R. Snodgrass - Tennessee Tower
312 Rosa L. Parks Ave., 11th Floor
Nashville, TN 37243-1102
615-532-0191

REVISED TOTAL COLIFORM RULE LEVEL 2 ASSESSMENT

Water System Name	
PWSID#	
Operator in Direct Charge	
Assessment Performed By:	
Assessor's Operator Certification Number:	
Certification Grade Treatment & Distribution	
Expiration Date of Certificate of Completion for Assessment Training	
Date of Assessment:	
	(1.) Sampling
□Yes □No	(a.) Review total coliform sample results and chlorine residuals for the past 3 months (6 months if sampling quarterly). Are there any trends in bacteria samples or chlorine residuals? Discuss below:
	(b.) Sampling Guidance
	• The water should be allowed to run for a few minutes to ensure it was from the distribution system and not household plumbing. • The faucet should be disinfected. • The chlorine residual should be taken but not using the bacteria sample bottle. • Care should be taken not to touch the inside of the bottle or lid, not to set the lid down and not rinse the bottle out. Container should not touch faucet. • The water should be flowing in a slow, steady stream. • Container should not be overfilled and should be sealed immediately. • Outdoor faucets, frost-proof faucets should be avoided. • If possible, avoid faucet connected to water heater, pressure tank; hot water faucet, new faucet, swing/swivel faucets, janitor sink faucets or other potentially contaminated faucets.

Sample

CN-1473 Page 1 of 16 RDA 2410

	(c.) Describe below the sampling technique used for bacteria sampling:
	_____ _____ _____ _____
	(d.) Name of Sampler
	_____
☐Yes ☐No If Yes, explain	(e.) Are conditions at the sample tap unsanitary and prone to external contamination?
	_____ _____ _____ _____
	(f.) Has the sample site been in regular use? Would the typical use of the tap be prone to contamination (food preparation, utility sink, etc.)? Explain setting/use of tap below:
	_____ _____ _____ _____
	(g.) Describe how the samples were processed:
	I. Samples shipped or delivered? _____ II. Time between sample collection and delivery to lab _____ III. Samples cooled or ambient temperature _____ IV. Fresh sample bottles? _____ V. Properly stored sample bottles? _____
	(h.) QA/QC and the cleanliness If the system has a certified bacteriological lab, review their lab procedures, provide observations below:
	_____ _____ _____ _____
	(2.) General – File Review
	(a.) Review last sanitary survey and survey letter for identified problems affecting water quality, particularly repeat issues. Provide observations below:
	_____ _____ _____ _____

Sample

	(b.) Review Monthly Operating Reports (MORs) for past 6 months paying special attention to chlorine residual leaving plant and turbidity levels. Provide observations below:
	_____ _____ _____ _____
	(c.) Review files for filter exceedance reports, filter performance reports, identify filter run times. Provide observations below:
	_____ _____ _____ _____
□Yes □No If Yes, explain	(d.) Have there been any other total coliform violations within the past 6 months?
	_____ _____ _____ _____
□Yes □No If Yes, explain	(e.) Has there been a loss of pressure or a drop in pressure below 20 psi within the past 6 months due to failure of water transmission or distribution facilities?
	_____ _____ _____ _____
□Yes □No If Yes, explain	(f.) Has there been any major breakdown, failure of equipment or loss of service within the past 6 months that could have affected water quality?
	_____ _____ _____ _____
□Yes □No If Yes, explain	(g.) Could any operation or maintenance activities have introduced contamination?
	_____ _____ _____ _____
□Yes □No If Yes, explain	(h.) Are there standardized/fixed operation and maintenance schedules for the treatment system processes and storage facilities?
	_____ _____ _____ _____

Sample

	(3.) Distribution System
□Yes □No If Yes, explain	(a.) Have there been any complaints within the past 6 months regarding water quality (taste, odor, color, air in lines, etc)?
□Yes □No	(b.) Have there been line replacements, water line breaks or repairs or new construction within the past 6 months? Describe disinfection techniques employed below:
□Yes □No	(c.) Were all materials used to transport potable water stored properly prior to installation? Explain below:
□Yes □No	(d.) If a tank or clearwell inspection or repair was within the past 6 months, was proper disinfection employed afterward? Describe disinfection technique below:
□Yes □No	(e.) Is there an ongoing flushing program and when was the last flushing performed within the area of concern? Describe below:
□Yes □No If Yes, explain	(f.) Are there any areas where it is difficult to maintain free chlorine residual?
□Yes □No If Yes, explain	(g.) If the assessment was triggered by a microbiological violation, was the violation in a low use area or an area with fluctuating water demand? (additional flushing and testing may be necessary)

Sample

□ Yes □ No If No, explain	(h.) Are blow offs or flush hydrants in good working order?
□ Yes □ No If No, explain	(i.) Do all dead-end lines have blow-offs or flush hydrants?
□ Yes □ No If No, explain	(j.) Has there been a minimum of 0.2 ppm free chlorine residual after flushing?
□ Yes □ No If No, explain	(k.) Has the free chlorine residual been maintained at a minimum of 0.2 ppm throughout the distribution system (additional testing may be necessary)
□ Yes □ No If Yes, explain	(l.) Are there any recurring failures within the treatment or distribution system?
□ Yes □ No If Yes, explain	(m.) Are there any broken or damaged hydrants or blow offs?
□ Yes □ No If Yes, explain	(n.) Has there been any firefighting in the area within the past 6 months that would have dropped water pressure, low pressure complaints or other low pressure events such as line breaks?

Sample

□Yes □No If No, explain	(o.) Are the pump stations and chlorine booster stations in good working order?
	_____ _____ _____ _____
□Yes □No	(p.) Does the system have an active leak detection program? Describe below:
	_____ _____ _____ _____
	(4.) Tanks
□Yes □No	(a.) Review the latest professional tank inspection reports. Were the recommended repairs made? Are the tanks due for another inspection? Was there disinfection and follow-up sampling after the inspection? (Additional sampling maybe required). Explain below:
	_____ _____ _____ _____
	(b.) When were the tanks last cleaned? _____/_____ Month Year
□Yes □No If Yes, explain	(c.) Visually inspect the tanks – do they have any of the following conditions: I. Poor maintenance/needs repair II. Holes in tank III. Missing screens or flappers on overflow and vents IV. Overflow drain is under water or below grade (needs minimum of a 12 inch air gap) V. Hatch does not seal properly VI. Evidence of unsanitary conditions (animals, birds, insects, debris, openings, discoloration or other unfit condition) VII. Evidence of vandalism
	_____ _____ _____ _____ _____ _____ _____
□Yes □No	(d.) Is the water in the tanks being turned over (age of water in each tank)? Only one inlet/outlet? Mixing device? Explain below:
	_____ _____ _____ _____

Sample

	(5.) Cross Connections
□Yes □No If No, explain	(a.) Are backflow prevention devices being tested annually?
□Yes □No If Yes, explain	(b.) Are there backflow prevention devices in the vicinity of the total coliform positive site or places that should have backflow prevention devices?
□Yes □No If No, explain	(c.) Have all failed backflow prevention devices been repaired/replaced and retested within the previous 12 months?
□Yes □No	(d.) Have there been any surveys for potential cross connections in the area of concern? Describe the area (e.g., residential, commercial, sparsely populated rural, etc.) and any known backflow prevention devices and potential risks.
	6. Plant Operation/Treatment
□Yes □No if Yes, explain	(a.) Has there been any unusual filter performance within the past 6 months?
□Yes □No If Yes, explain	(b.) Review turbidity records for the past 6 months. Have there been any turbidity exceedances of more than 1 NTU in either the individual filters or combined filter effluent?
□Yes □No If Yes, explain	(c.) Is there any evidence of short circuiting in the filters?

Sample

□Yes □No If Yes, explain	(d.) Are the filters exceeding their approved filtration rate of flow?
□Yes □No If Yes, explain	(e.) Is the plant approaching or exceeding its design capacity?
□Yes □No If Yes, explain	(f.) Have there been any recent changes to the treatment process?
□Yes □No If No, explain	(g.) Are the filters being properly backwashed?
□Yes □No If Yes, explain	(h.) Does the filter media need to be replaced?
□Yes □No If Yes, explain	(i.) Are there structural issues with the filter beds or the building (leaking roof, etc)?
□Yes □No	(j.) Is proper mechanical integrity testing being done if system is using membrane filtration? Describe method below:

Sample

□Yes □No If Yes, explain	(k.) Have there been any interruptions in the treatment process (failures in chemical feed, turbidity exceedances, disinfection)?
□Yes □No If Yes, explain	(l.) Have there been any disruptions within the past 6 months that could have affected turbidity or disinfection (chlorine feed or UV disinfection)?
□Yes □No If Yes, explain	(m.) Is the chlorine feed or UV operational/functioning properly (if applicable)?
□Yes □No If Yes, explain	(n.) Are there any unsanitary conditions, rodents, birds, general housekeeping problems at any of the facilities?
□Yes □No If Yes, explain	(o.) Were there any observed leaks or other signs of poor maintenance within the facilities?
□Yes □No If No, explain	(p.) Are all gauges and meters in good working order and properly calibrated? (loss of head gauges, rate of flow controllers, etc.)
□Yes □No If No, explain	(q.) If there is a pressure tank present, is it maintaining appropriate pressure?

Sample

□Yes □No	(r.) If the system is using a cartridge filter, is the filter the correct absolute 1 micron cartridge and is it changed according to manufacturer's recommendation? Provide comments below:
	7. Turbidity
□Yes □No	(a.) Are the turbidimeters being calibrated every 90 days or by manufacturer's recommendation? Describe frequency below:
	(b.) Review strip charts for individual filters and combined filter effluent for spikes and abnormalities for the past 6 months. Provide observations below:
□Yes □No If Yes, explain	(c.) Did turbidity spike above 1 NTU? Check to see if there is a filter profile due to any spikes?
□Yes □No If Yes, explain	(d.) Did turbidity spike above 2 NTU? Check to see if there is a comprehensive performance evaluation and discuss below:
□Yes □No If Yes, explain	(e.) Have there been any other parameters out of normal range within the past 6 months?
	8. Chlorine Residual
□Yes □No	(a.) Has the system been achieving the proper contact time, if required (minimum of 15 minutes)? Indicate below if system is not chlorinating. Discuss system's contact time below:

Sample

□Yes □No	(b.) Has there been consistent free chlorine residual in the water leaving the plant within the past 6 months? Describe below: Indicate below if system is not chlorinating.
	(c.) Check the current free chlorine residual directly after the injection point and as it leaves the plant. Indicate the values below:
□Yes □No If Yes, explain	(d.) Has there been a disinfection profile performed for exceeding the MCL for disinfection by-products within the past 12 months?
	9. UV Disinfection, if applicable
□Yes □No	(a.) Is the unit operational?
□Yes □No	(b.) Is the turbidity low enough for it to work properly?
□Yes □No	(c.) Does the unit have the proper UV lamp?
□Yes □No	(d.) Does the lamp need replaced?
□Yes □No	(e.) Is the lamp sleeve clean?
	10. UV Disinfection Discussion, if applicable
	11. Other Plant Infrastructure and Operation
□Yes □No	(a.) Is the coagulation process functioning properly?
□Yes □No	(b.) Are the mechanical flocculators in good working order?
□Yes □No	(c.) Are the tube settlers clean and not loaded with sludge?
□Yes □No	(d.) Are the tube settlers in need of repair?
□Yes □No	(e.) Do the basins need cleaning? When were they last cleaned? Explain below:
	12. Coagulation/Sedimentation Process Discussion

Sample

	13. General Maintenance and Operation
☐Yes ☐No If No, explain	(a.) Is the treatment plant well maintained?
☐Yes ☐No If yes, explain	(b.) Are there issues with the structural integrity of the plant and interior structures?
☐Yes ☐No If yes, explain	(c.) Are pumps or piping leaking within the plant?
☐Yes ☐No	(d.) When was the clearwell last inspected? Is it structurally sound? Describe below:
☐Yes ☐No	(e.) Is the aerator (if applicable) running properly?
☐Yes ☐No If Yes, explain	(f.) Have there been unapproved changes or modifications to the water plant or distribution system?
☐Yes ☐No If Yes, explain	(g.) Has there been delivery of new treatment chemicals within the past 6 months? Were they confirmed to be the correct chemical and strength?

Sample

□Yes □No If Yes, explain	(h.) Has there been vandalism or unauthorized access to facilities identified within the past 6 months?
□Yes □No	(i.) Are the facilities secure to prevent unauthorized access? Explain below:
□Yes □No	(j.) Is the treatment facility operated and manned 24 hours a day? Explain below:
	(k.) If unmanned while in operation, what monitoring/shutdown alarms are in place for the treatment facility (turbidity, chlorine residual, etc) and are they operational? Describe below:
	14. Source
□Yes □No If Yes, explain	(a.) Have any new or auxiliary water sources or emergency sources been brought online within the past 6 months?
□Yes □No If Yes, explain	(b.) If seasonal, were there any problems with the startup procedure?
	15. Well/Spring
□Yes □No	(a.) Is springbox in good condition? Describe springbox below:

Sample

□Yes □No	(b.) Is the springbox/well head protected from surface water drainage/infiltration? Describe below:
□Yes □No	(c.) Is the well casing above grade/flood zone? Describe setting below:
□Yes □No If No, explain	(d.) Is the sanitary seal on the well casing intact?
□Yes □No If No, explain	(e.) Is the well vent screened?
□Yes □No If Yes, explain	(f.) Was there any heavy precipitation or flooding within the 30 days prior to the total coliform positive event?
□Yes □No If Yes, explain	(g.) Have there been any changes in sources of potential contamination in proximity of the water source?
	16. Intake
□Yes □No If Yes, explain	(a.) Have there been any pollutant releases upstream or other conditions that might have increased turbidity or introduced contamination?

Sample

☐Yes ☐No If Yes, explain	(b.) Is the intake or equipment in need of repair?
☐Yes ☐No If Yes, explain	(c.) Was there any heavy precipitation or flooding within the 30 days prior to the total coliform positive event?
☐Yes ☐No If Yes, explain	(d.) Have there been any changes in sources of potential contamination in proximity of the water source?
	17. Potential Waterborne Illness
☐Yes ☐No If Yes, explain	(a.) Any suspected community illness outbreak that could be waterborne?
	18. Assessment Statement and Proposed Remedy

Attach additional sheets if necessary

Sample

Certification Statement

I certify, under penalty of law, including but not limited to penalties for perjury, that this document and all attachments were prepared by me, or under my direction or supervision; that all of the submitted information is to the best of my knowledge and belief true, accurate, and complete; and that I am lawfully present in the United States as a U.S. citizen or a qualified alien as defined in 8 U.S.C. §1641(b). As specified in Tennessee Code Annotated Section 39-16-702(a)(4), this declaration is made under penalty of perjury. I understand that the penalties for providing false information and making false or fraudulent statements or representations include revocation in a fine, permit or license, civil penalties, and/or criminal prosecution resulting in a fine, imprisonment or both.

_____ _____

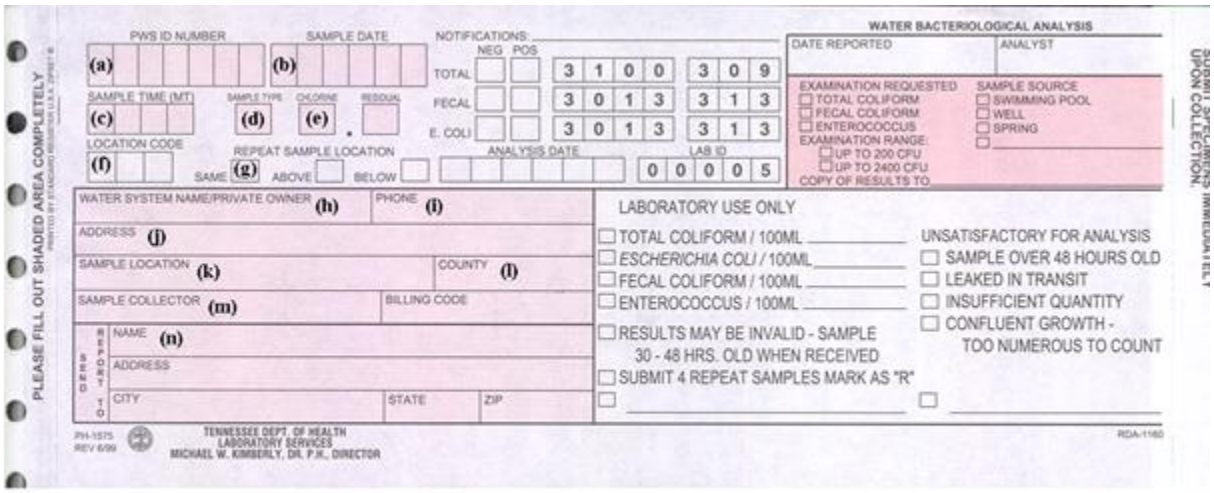
Signature **Date**

Sample

*****Include a copy of your Assessment Training Completion Certificate with this Assessment*****

Appendix E – Bacteriological Sample Slip Information

Sample Information Slip


PLEASE FILL OUT SHADED AREA COMPLETELY

PWS ID NUMBER (a) SAMPLE DATE (b)

SAMPLE TIME (MT) (c) SAMPLE TYPE (d) CHLORINE RESIDUAL (e)

LOCATION CODE (f) REPEAT SAMPLE LOCATION SAME (g) ABOVE BELOW

NOTIFICATIONS: NEG POS

TOTAL 3100 309

FECAL 3013 313

E. COLI 3013 313

ANALYSIS DATE LAB ID 00005

WATER BACTERIOLOGICAL ANALYSIS

DATE REPORTED ANALYST

EXAMINATION REQUESTED: TOTAL COLIFORM, FECAL COLIFORM, ENTEROCOCCUS

EXAMINATION RANGE: UP TO 200 CFU, UP TO 2400 CFU

COPY OF RESULTS TO

SAMPLE SOURCE: SWIMMING POOL, WELL, SPRING

WATER SYSTEM NAME/PRIVATE OWNER (h) PHONE (i)

ADDRESS (j)

SAMPLE LOCATION (k) COUNTY (l)

SAMPLE COLLECTOR (m) BILLING CODE

SEND REPORT TO: NAME (n) ADDRESS CITY STATE ZIP

LABORATORY USE ONLY

TOTAL COLIFORM / 100ML

ESCHERICHIA COLI / 100ML

FECAL COLIFORM / 100ML

ENTEROCOCCUS / 100ML

RESULTS MAY BE INVALID - SAMPLE 30 - 48 HRS. OLD WHEN RECEIVED

SUBMIT 4 REPEAT SAMPLES MARK AS "R"

UNSATISFACTORY FOR ANALYSIS

SAMPLE OVER 48 HOURS OLD

LEAKED IN TRANSIT

INSUFFICIENT QUANTITY

CONFLUENT GROWTH - TOO NUMEROUS TO COUNT

TENNESSEE DEPT. OF HEALTH LABORATORY SERVICES MICHAEL W. KIMBERLY, DR. P.H., DIRECTOR

SUBMIT SPECIMEN IMMEDIATELY UPON COLLECTION.

a. **PWSID number**. XXXX Water System's PWSID # is 0000XXX. In order to get credit for the sample, the PWSID number must be correct.

b. **Sample date**. Record the date the sample is collected. Example: August 22, 2002 would read 082202.

c. **Sample time**. Record the time of day in military time. 8:30 a.m. would be recorded as 0830. 1:30 p.m. would be recorded as 1330.

d. **Sample type**. Sample types are recorded as follows:

D – Routine	S – Special
R – Repeat	Q – Quality Control
N – New lines	F– Fix or Repair

Failure to record the correct sample type can result in a monitoring requirement violation. Most samples will be coded as a "D" for a routine sample. Follow-up samples immediately following a positive routine sample are repeat samples and are coded as "R".

e. **Chlorine Residual**. All systems that disinfect their water must record the chlorine residual when coliform samples are collected. Chlorine residuals should be reported to the nearest one tenth of a milligram per liter or one tenth of a part per million.

f. **Location code**. This 3-digit block would only be used when repeat samples are collected. The laboratory will furnish the numbers to be put in these blocks.

g. **Repeat Sample Location**. Same ☐ Above ☐ Below ☐
Only used when collecting repeat "R" samples.

h. **Water System Name/Private Owner**. Provide the name of the Water System or Utility District where the sample was collected.

i. **Phone**. Provide a daytime telephone number to be called by the laboratory if they need to contact you about the sample.

j. **Address**. Provide the complete mailing address of the Water System from which the sample was collected.

k. **Sample Location**. Provide sufficient information so that you can return to the sample site for repeat samples if necessary and sufficient information that the sample site can be identified on your sampling site plan.

l. **County**. Record the county where the public water system is located.

m. **Sample Collector**. Record the name of the person who actually collected the sample.

n. **Name, Address, City, Zip**. Please record the full address of the person or organization the coliform sample results should be mailed to. Make sure that this information is printed clearly because the laboratory uses this information to return the results to you.

Appendix F – Bacteriological Sample Log

Date Sample Taken MM/DD/YY	Time Sample Taken (Military time)	Sample Location (Describe, i.e. Cedar Lodge Kitchen Sink)	Chlorine Residual	Date Sample Mailed MM/DD/YY	Date Sample Results Reviewed	Sample Results Positive (+) Negative (-)	If Sample * Results +, Repeat Samples Taken (Yes=Y)	Date Public Notice Given

Military Time

8:30 a.m. is 0830 in MT (essentially clock time)
1:30 p.m. is 1330 in MT (clock time plus 12)

*Show Date, Time, Place, and provide for Results of each repeat sample taken on this log.

Appendix G

Community Water System

Bacteriological Sample Site Plan Example

Rural Utility District
PWSID #0000007

Last Updated: February 3, 2016

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Purpose/Objective

The Tennessee Department of Environment and Conservation, Division of Water Resources regulations require that bacteriological samples are to be collected according to a written sample siting plan. This plan is to ensure that collection sites are representative of water throughout the distribution system. Samples will be collected from areas used by all customers and will include…

- Residential areas (at least 30%)
- Dead end lines
- Low use areas
- Commercial areas
- Areas near storage tanks

Sampling sites will be distributed to ensure that no area served by the system is neglected during the year. The justification for selecting sampling sites is to aid our operators in understanding the bacteriological quality of the water throughout the system and to monitor and evaluate the quality of the water consumed by all the users of the system.

General System Information

The official name and address for this system is

Rural Utility District
6464 River Road
Somewhere, TN 393939

The PWSID (Public Water Supply Identification Number) number for this system is
TN0000007

The population served by this system is __3501_____.

The Person(s) responsible for reporting to the Division of Water resources and keeping the plan updated is _John Johnson, Utility Manager_____.

Date of last plan update __December 25, 2015__ _____.

The Rural Utility District (RUD) PWSID #s: 0000007 provides drinking water to 1395 customers serving an estimated population of 3501 people. RUD operates a surface water filtration treatment facility utilizing the Rocky River as the water source. The treatment facility supplies water to approximately 80% of the customers utilizing two distribution storage tanks and two pressure zones. The RUD also purchases and distributes water from the TLB Utility. The purchased water serves approximately 20% of RUD customers and constitutes a third hydraulic pressure zone. The system is required to collect four (4) routine bacteriological samples per month. Population densities and pressure zones were utilized in selection of sampling sites to insure an approximate equal ratio of samples to population coverage through each hydraulic zone. Since pressure zone 2 serves approximately 50% of the population, two (2) of the four (4) monthly sample will be collected from this zone. The remaining samples will be split equally among the remaining two zones each month.

The RUD primarily utilizes the State of TN Health Department laboratory for bacteriological sample analyses. If a sample needs to be analyzed after hours, on a weekend or holiday, the Broadview Utility District laboratory will be utilized.

Special purpose samples are collected during repairs, in response to complaints, or for other maintenance reasons. Collection of these types of samples is necessary to ensure that coliform bacteria have not entered the distribution system as a result of events such as installation of mains, main line repair or routine maintenance. Special purpose samples cannot be included in compliance or assessment trigger calculations. Special purpose samples are collected in addition to any samples collected in accordance with this plan for compliance with the Revised Total Coliform Rule.

This plan contains examples of responses to treatment triggers which may require level 1 and or level 2 assessments to be conducted. It is anticipated that the systems certified water and distribution system operators will conduct any required level 1 assessments jointly. The RUD has made arrangements with Broadview Utility operators who are qualified to conduct a level 2 assessment if needed. The plan also contains example public notification documents that can be used in conjunction with the systems Emergency Operations Plan if needed.

John Johnson, Utility Manager and Certified Distribution Operator, is responsible for insuring that proper sampling procedures are followed and that samples are collected in accordance with this plan. John Johnson will annually review the sampling plan and update the plan when the population served increases sufficiently to require an increased number of samples and at any time significant changes to the system are made impacting hydraulic flows in the system. A copy of this plan will be kept in the RUD main office. Copies will also will also be distributed and kept at the water treatment plant and distribution warehouse offices.

Number of Samples Required

The number of samples to be taken by Rural Utility District is determined by the Tennessee Department of Environment and Conservation, Division of Water Resources, Rule 0400-45-1-.07(b)

The population served by RUD is determined to be 3501. The number of samples is based on Division Rule 0400-45-01-.41-.07(b) as indicated in the chart below.

Population Served	Samples per Month
1,001 to 2,500	2
2,501 to 3,300	3
3,301 to 4,100	4
12,901 to 17,200	15
17,201 to 21,500	20

Routine samples

Presently, based on a population served of approximately 3501 RUD is required to take four (4) routine samples each month.

Our system can take the required number of samples, or more than is required. The number of samples our system will take is four (4) each month.

Repeat samples

If a routine bacteriological sample is total coliform-positive, the number of repeat samples required is three (3). The system must collect at least one repeat sample from the sampling tap where the original total coliform-positive sample was taken, and at least one repeat sample at a tap within five service connections upstream and at least one repeat sample at a tap within five service connections downstream of the original sampling site. A set of three (3) repeat samples will be collected for each positive sample. The repeat sampling procedure will continue until all samples are total coliform negative or a treatment technique trigger has been exceeded. Reference page 11 for additional actions required in the event of a positive sample.

The number of routine samples required the month following a total coliform-positive sample is four (4).

The person(s) responsible for reporting to the Division of Water Resources is (are):

John Johnson

The Division of Water Resources can be contacted at the following numbers:
Every Environmental Field Office
1-888-891-8332
(XXX) 891-8332

Selected Sampling Sites

The Public Water System will collect four (4) routine samples per month. The System has been divided into three (3) sampling/hydraulic/source zones. If a primary sampling site is not available, a secondary sampling site will be selected from the same zone for routine monitoring. Sampling will be conducted throughout the month with a goal of sample collection as follows.

Samples are to be taken from each sampling zone each month. Sampling sites from each zone will be alternated each month to ensure all areas of the system are represented during the course of a year.

Samples will be collected throughout the month as follows.

First Week Number of Samples: _____1_____ Zone(s) _____ 1_____
Number of Samples: _____1_____ Zone(s)_____2_____

Second Week Number of Samples: _____1_____ Zone(s)_____3_____

Third Week Number of Samples: _____1_____ Zone(s)_____2_____

*Fourth Week Number of Samples: _____ Zone(s)_____
*System may elect to collect all samples prior to the fourth week.

(All primary and alternative sites should be selected at least one to five taps from the end of a line to allow for proper repeat sampling)

Primary Routine Total Coliform Sampling Sites:

Map Site ID	Specific Addresses or GPS Coordinates	Zone	[1]Water Source
1	2525 Circle Drive	1	TLB
2	623 Perkins Lane	1	TLB
3	840 Lakeview	2	WTP
4	2484 Callie Lane	2	WTP
5	26 Stubby Road	2	WTP
6	427 Rocket Road	3	WTP
7	3870 Pleasant Valley	3	WTP

Alternative Routine Total Coliform Sampling Sites: (to be used if primary sites are not available or may be included in the rotation of sites)

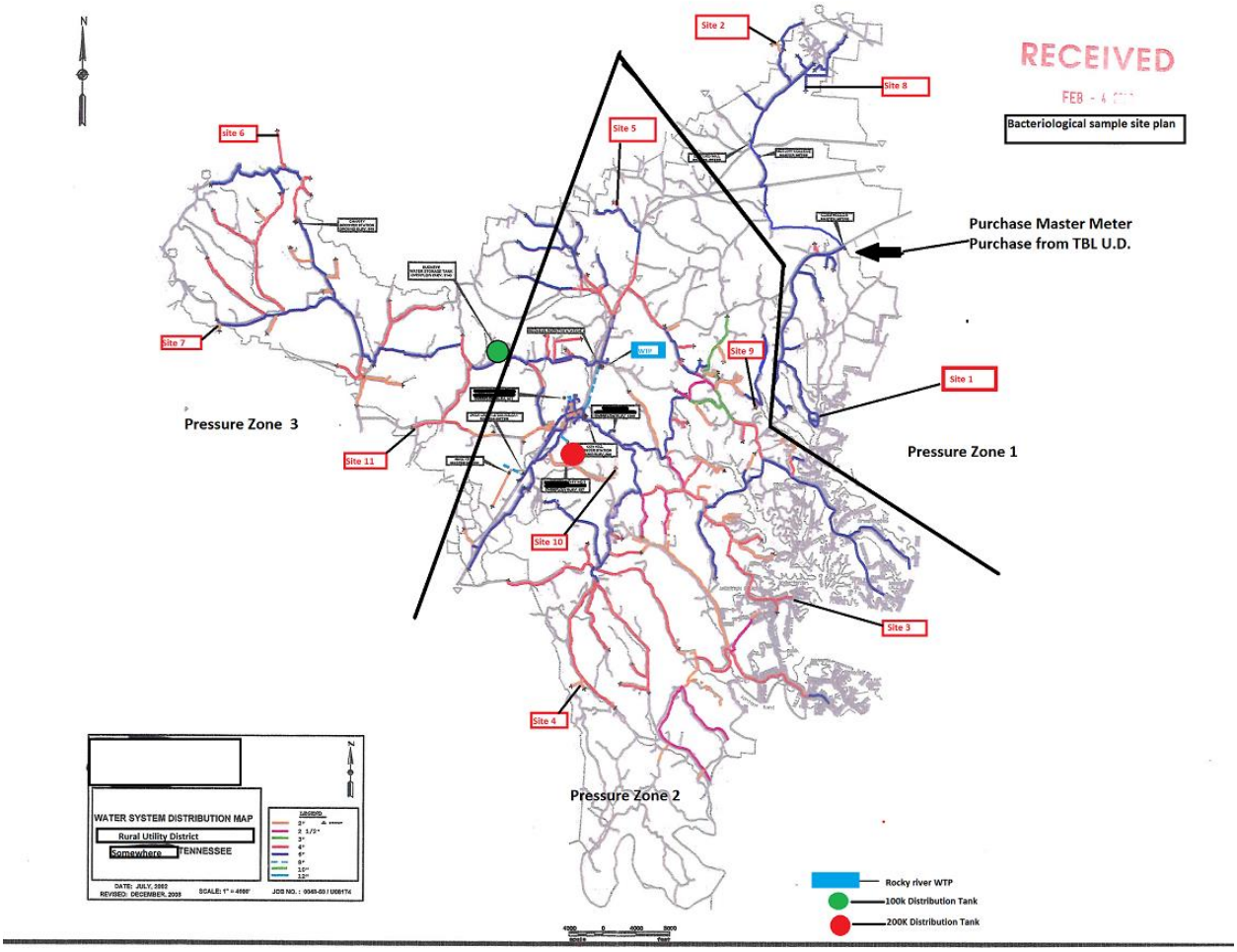
Map Site ID	Specific Addresses or GPS Coordinates	Zone	Water Source
8	11 Church lane	1	TLB
9	2768 Bell Bridge	2	WTP
10	1004 Water Tank Rd	2	WTP
11	747 Jet Way	3	WTP

The goal should be to collect all required samples by the beginning of the third week in the month. This is to allow ample time to collect another sample should one arrive at the laboratory and not be able to be analyzed. (i.e. leaked in transit, out of holding time, lab accident, etc…). Samples must be analyzed within 30 hours of collection. Refer to page 11 for additional guidance.

If there is a total coliform or E. coli positive sample, three repeat samples will be collected within 24 hours of notification. Refer to page 11 for additional guidance.

Distribution System Map with Sample Sites and Pressure Zones

Full size copy of map is located in RUD Mangers Office



Sampling Procedure

1. Review the sample siting plan to determine where and when samples are to be taken.
2. After arriving at the sampling site, remove any attachments on the faucet.
3. Consider the use of a sodium hypochlorite spray solution or flaming to disinfect the faucet. Flaming should not be used on plastic faucets.
4. Turn the water on and let it run for several minutes or until water temperature stabilizes.
   - Flush out the customer lines, and
   - Ensure that the water being sampled is from the distribution lines, not the plumbing fixture. (A thermometer can be used to determine when water is being drawn from the distribution system and not the plumbing fixture. The water temperature will stabilize once all the water from the fixture has been flushed out and the water flowing from the faucet is coming from the distribution system.)
5. Adjust the flow from the faucet to a slow, steady stream.
6. Take a sample of water flowing from the tap and determine and document the free chlorine residual.
7. Open the laboratory supplied container used to take the bacteriological sample.
8. Do not touch the inside of the bottle or lid.
9. Do not set the lid down.
10. Do not rinse the bottle out.
11. Grasp the container near the bottom and quickly place it under the flowing stream.
12. Fill the bottle to the neck or indicated fill line. Do not overfill. Collect at least 100 mL of water; this is the volume the laboratory must have for testing.
13. Remove the sample container from the flow as soon as it is filled. SEAL THE CONTAINER IMMEDIATELY.
14. Turn off the water and replace any fixtures or attachments that were removed previously.
15. Fill out the bacteriological sample slip. Instructions are included on page XX.
16. Place the container and completed forms in the shipping box.
17. Insure that the sample is delivered to the laboratory in a timely manner. Analysis must be initiated with within 30 hours from the time sample is collected.
18. Record sampling event and information in the bacteriological sampling log. Refer to page XX.

Faucets to Avoid

Avoid taking samples at these faucets if at all possible.

- Unprotected Outdoor Faucets
- Frost-proof Faucets

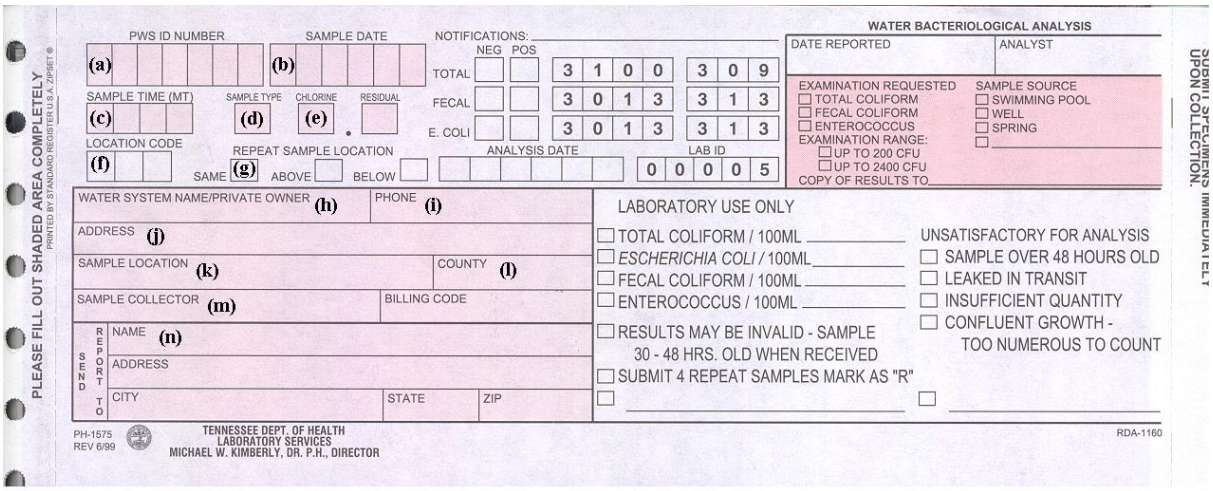
If you cannot avoid these, be sure to use good sampling techniques. Avoid dust, obvious contamination, splashing rain, snow and other possible sources of contamination, such as:

- An indoor faucet connected to a pressure tank, or water heater.
- A new faucet.
- A hot water faucet.
- A recently repaired faucet.
- Faucets with threaded taps.
- Mixing faucets.
- Sites with a higher-than-usual possibility for bacterial contamination.
- Swing/swivel faucets.
- Faucets positioned close to a sink or the ground. (It must be high enough to keep it from touching the sampling container.
- Leaky faucets or faucets which allow water to seep around the valve stem.
- Faucets that supply areas, such as janitorial or commercial sinks, where bacterial contamination is likely.
- Faucets that have aerators. (If such faucets are to be used, the aerators should be removed before a sample is collected.)

What does this all mean? Avoid any faucet that will threaten to contaminate a sample. The idea is to sample the water in the distribution system, not necessarily the condition of the plumbing fixture. You may not always be able to avoid all these types of faucets. If you have to take a sample from one of these faucets, you should exercise extreme care and use good sampling techniques including spray disinfection or flaming of the faucet where appropriate.

Bacteriological Sample Slip Information

Sample Information Slip
Figure 1


PLEASE FILL OUT SHADED AREA COMPLETELY
PRINTED BY STANDARD REGISTER U.S.A. ZIPSET ®
PWS ID NUMBER (a)
SAMPLE DATE (b)
NOTIFICATIONS:
NEG POS
TOTAL 3 1 0 0 3 0 9
FECAL 3 0 1 3 3 1 3
E. COLI 3 0 1 3 3 1 3
WATER BACTERIOLOGICAL ANALYSIS
DATE REPORTED
ANALYST
SAMPLE TIME (MT) (c)
SAMPLE TYPE (d)
CHLORINE (e)
RESIDUAL
EXAMINATION REQUESTED
TOTAL COLIFORM
FECAL COLIFORM
ENTEROCOCCUS
EXAMINATION RANGE:
UP TO 200 CFU
UP TO 2400 CFU
COPY OF RESULTS TO
SAMPLE SOURCE
SWIMMING POOL
WELL
SPRING
LOCATION CODE (f)
REPEAT SAMPLE LOCATION
SAME (g) ABOVE BELOW
ANALYSIS DATE
LAB ID 0 0 0 0 5
SUBMIT SPECIMENS IMMEDIATELY UPON COLLECTION.
WATER SYSTEM NAME/PRIVATE OWNER (h)
PHONE (i)
ADDRESS (j)
SAMPLE LOCATION (k)
COUNTY (l)
SAMPLE COLLECTOR (m)
BILLING CODE
SEND REPORT TO
NAME (n)
ADDRESS
CITY
STATE
ZIP
LABORATORY USE ONLY
TOTAL COLIFORM / 100ML
ESCHERICHIA COLI / 100ML
FECAL COLIFORM / 100ML
ENTEROCOCCUS / 100ML
RESULTS MAY BE INVALID - SAMPLE 30 - 48 HRS. OLD WHEN RECEIVED
SUBMIT 4 REPEAT SAMPLES MARK AS "R"
UNSATISFACTORY FOR ANALYSIS
SAMPLE OVER 48 HOURS OLD
LEAKED IN TRANSIT
INSUFFICIENT QUANTITY
CONFLUENT GROWTH - TOO NUMEROUS TO COUNT
PH-1575
REV 6/99
TENNESSEE DEPT. OF HEALTH
LABORATORY SERVICES
MICHAEL W. KIMBERLY, DR. P.H., DIRECTOR
RDA-1160

o. **<u>PWSID number</u>**. XXXX Water System's PWSID # is 0000XXX. In order to get credit for the sample, the PWSID number must be correct.

p. **<u>Sample date</u>**. Record the date the sample is collected. Example: August 22, 2002 would read 082202.

q. **<u>Sample time</u>**. Record the time of day in military time. 8:30 a.m. would be recorded as 0830. 1:30 p.m. would be recorded as 1330.

r. **<u>Sample type</u>**. Sample types are recorded as follows:

D – Routine	S – Special
R – Repeat	Q – Quality Control
N – New lines	F – Fix or Repair

Failure to record the correct sample type can result in a monitoring requirement violation. Most samples will be coded as a "D" for a routine sample. Follow-up samples immediately following a positive routine sample are repeat samples and are coded as "R".

s. **<u>Chlorine Residual</u>**. All systems that disinfect their water must record the chlorine residual when coliform samples are collected. Chlorine residuals should be reported to the nearest one tenth of a milligram per liter or one tenth of a part per million.

t. **Location code**. This 3-digit block would only be used when repeat samples are collected. The laboratory will furnish the numbers to be put in these blocks.

u. **Repeat Sample Location**. Same ☐ Above ☐ Below ☐
Only used when collecting repeat "R" samples.

v. **Water System Name/Private Owner**. Provide the name of the Water System or Utility District where the sample was collected.

w. **Phone**. Provide a daytime telephone number to be called by the laboratory if they need to contact you about the sample.

x. **Address**. Provide the complete mailing address of the Water System from which the sample was collected.

y. **Sample Location**. Provide sufficient information so that you can return to the sample site for repeat samples if necessary and sufficient information that the sample site can be identified on your sampling site plan.

z. **County**. Record the county where the public water system is located.

aa. **Sample Collector**. Record the name of the person who actually collected the sample.

bb. **Name, Address, City, Zip**. Please record the full address of the person or organization the coliform sample results should be mailed to. Make sure that this information is printed clearly because the laboratory uses this information to return the results to you.

Bacteriological Sample Log

Date Sample Taken MM/DD/YY	Time Sample Taken (Military time)	Sample Location (Describe, i.e. Cedar Lodge Kitchen Sink)	Chlorine Residual	Date Sample Mailed MM/DD/YY	Date Sample Results Reviewed	Sample Results Positive (+) Negative (-)	If Sample * Results +, Repeat Samples Taken (Yes=Y)	Date Public Notice Given

Military Time

8:30 a.m. is 0830 in MT (essentially clock time)
1:30 p.m. is 1330 in MT (clock time plus 12)

*Show Date, Time, Place, and provide for Results of each repeat sample taken on this log.

Actions to be taken if a Sample is Total Coliform-Positive

Should one of the routine samples be total coliform-positive, we are required to take a set of three (3) repeat samples. The set of repeat samples will be taken as follows:

- at least one of the repeat samples must be taken from the sampling tap where the original total coliform-positive samples was taken;
- at least one of the repeat samples must be taken at a tap within 5 service connections downstream from the original sampling site;
- at least one of the repeat samples must be taken at a tap within 5 service connections upstream from the original sampling site;
- the complete set of repeat samples must be taken within 24 hours of the system being notified of a positive coliform result, or when instructed to sample by the Division of Water Resources;
- the entire set of repeat samples must be taken on the same day.
- If a total coliform-positive sample is at the end of the distribution system, or one service connection away from the end of the distribution system, the system must still take all required repeat samples. However, the State may allow an alternative sampling location in lieu of the requirement to collect at least one repeat sample upstream or downstream of the original sampling site. The State will be contacted in the event this scenario occurs.

Should one of the repeat samples be positive, another set must be collected.

Repeat samples must be taken until:

- total coliforms are not detected in one complete set of repeat samples, or
- the system exceeds the total coliform treatment technique trigger during the month and notifies the State Department of Environment and Conservation, Division of Water Resources.

Sampling During Weekends and Holidays

Routine should be taken on Mondays and Tuesdays to avoid a problem with repeat samples. This should allow ample time for repeat samples to be collected before the weekend if they are required. If a holiday should occur, which could cause a problem with either routine or repeat sampling being submitted to the state laboratory, samples must be taken to the Broadview Utility District laboratory for analysis. Planning ahead, and following these guidelines, should avoid any sampling problems associated with weekends or holidays.

Should it not be possible to collect repeat samples and submit them for analysis within the required 24-hour period because of a holiday or weekend, the system will provide for a "boil water notice" to be issued until sufficient samples can be collected and analyzed to verify that the contamination has been eliminated. Refer to page XX for an example of a "boil water notice".

Treatment Technique Triggers

Level 1 Assessments

A level 1 assessment is required to be conducted as soon as practical but no later than 30 days of the following events. A Division of Water Resources Level 1 Assessment form must be completed and submitted to the Division of Water Resources. Refer to Appendix A for Level 1 Assessment forms.

- For systems, which take less than 40 samples during a month**,** the system has exceeded the Level 1 treatment technique trigger if the system has more than one total coliform-positive sample, including repeat samples during a month.

- The system fails to collect every required repeat sample after any single total coliform positive sample.

Level 1 assessment for a CWS must be conducted by a licensed certified operator. John Johnson or other RUD certified operator will conduct Level 1 assessments if a trigger is exceeded. A State approved Level 1 Assessment form must be completed and submitted to the Division of Water Resources within 30 days of the trigger exceedance. Any sanitary defects or deficiencies must be corrected within 30 days of the trigger exceedance or in accordance with an approved schedule from the Division of Water Resources.

Treatment Technique Triggers

Level 2 Assessments

A level 2 assessment is required to be conducted as soon as practical but no later than 30 days of any of the following events.

- An E. coli Maximum Contaminant Level (MCL) violation
- A second Level 1 assessment trigger within a rolling 12 month period.

Level 2 assessments for all systems must be conducted by a licensed operator who is certified to at least the same level as the public water system being assessed and who has completed an approved level 2 training certification course from the Division of Water Resources. A system serving a population of less than 50,000 must use a 3rd party assessor. The RUD has made arrangements with Broadview Utility operators who are qualified to conduct a level 2 assessment if needed.

A Division of Water Resources Level 2 Assessment form must be completed and submitted to the Division of Water Resources within 30 days of the trigger exceedance. Any sanitary defects or deficiencies must be corrected within 30 days of the trigger exceedance or in accordance with an approved schedule from the Division of Water Resources.

E. coli Maximum Contaminant Level (MCL) Violations

An E. coli MCL violation occurs when any of the following conditions exist.

- An E. coli positive repeat sample follows a Total Coliform positive routine sample.
- A Total Coliform positive repeat sample follows an E. coli positive routine sample.
- A system fails to take all required repeat samples (3) following an E. coli positive routine sample.
- A system fails to test for E. coli when any repeat sample tests positive for total coliform.

Actions to be taken if an E. coli-Positive Sample is involved in the Violation (A Violation Requiring a Tier 1 Public Notification)

If any repeat sample is E. coli -positive or any repeat sample following an E. coli-positive routine sample is total coliform-positive:

- Report the violation to the State no later than the end of the day when the system was notified of the results, unless the system is notified after the Department office is closed, in which case it must notify the State before the end of the next business day.
  Person to Contact: _Mr. State Inspector at the Local Environmental Field Office
  Telephone: _____ or 1-888-891-8332
- Notify the public using this procedure:
  - Furnish a copy of the notice to customers via direct delivery and or to the local radio and television stations served by the public water system as soon as possible, **but no later than 24 hours after the violation;**
- Refer to the EPA Public Notification Handbook for specific content and delivery requirements. An example PN is contained on the following page.
  - The notice must contain the language shown in the example notice on the next page;
  - The system may want to describe what is being done to correct the problem:
    - Total number of samples taken,
    - Total number of positive samples,
    - Problem areas,
    - Mains are being flushed, etc.
- A Level Two Assessment must be conducted within 30 days of the E. coli positive sample.

Tier 1 PN for Violating the *E. coli* MCL

DRINKING WATER WARNING

E. coli is Present in Rural Utility Districts Water

BOIL YOUR WATER BEFORE DRINKING OR USING

Our water system detected *E. coli* bacteria in our distribution system. As our customers, you have a right to know what happened and what we are doing to correct this situation. On April 4, 2016, we learned that coliform bacteria were present and one of our routine samples collected on April 2, 2016, was total coliform-positive (TC+). As required by the Revised Total Coliform Rule, one of our follow-up steps was to collect repeat samples at and near the location where the TC+ sample was originally taken. One of these repeat samples collected on April 5 tested positive for *E. coli*. We are now conducting additional sampling to determine the extent of the problem and are conducting a thorough investigation to determine the source of the contamination.

What should I do?

DO NOT DRINK THE WATER WITHOUT BOILING IT FIRST. Bring all water to a rolling boil, let it boil for one minute, and let it cool before using it. Boiling kills bacteria and other organisms in the water. You may also use bottled water. Use boiled or bottled water for drinking, making ice, preparing food and washing dishes until further notice.

Also, if you have a severely compromised immune system, have an infant, or are elderly, you may be at increased risk and should seek advice about drinking water from your health care providers. General guidelines on ways to lessen the risk of infection by microbes are available from EPA's Safe Drinking Water Hotline at (800) 426-4791. If you have specific health concerns, consult your doctor. We are also providing regular updates on this situation on Channel 22 or Radio Station WZYX (90.3 FM).

What does this mean?

Inadequately treated or inadequately protected water may contain disease-causing organisms. These organisms can cause symptoms such as diarrhea, nausea, cramps and associated headaches. *E. coli are bacteria whose presence indicates that the water may be contaminated with human or animal wastes. Human pathogens in these wastes can cause short-term effects, such as diarrhea, cramps, nausea, headaches, or other symptoms. They may pose a greater health risk for infants, young children, some of the elderly, and people with severely-compromised immune systems.* These symptoms are not caused only by organisms in drinking water. If you experience any of these symptoms and they persist, you may want to seek medical advice.

What is being done?

We are conducting a thorough investigation to determine the source of the contamination and will be working with the State to implement corrective actions to ensure that our water supplies are protected against contamination. We will keep you informed of the steps we are taking to protect your drinking water and will provide information on any steps you should be taking. We will inform you when tests show no bacteria and you no longer need to boil your water. We are also providing regular updates on this situation on Channel 22 or Radio Station KMMM (97.3 FM).

For more information, please contact John Johnson, manager of Rural Utility District, at (555) 555-1234 or write to 2600 Winding Rd., Townsville, TM 12345.

Please share this information with all the other people who drink this water, especially those who may not have received this notice directly (for example, people in apartments, nursing homes, schools and businesses). You can do this by posting this notice in a public place or distributing copies by hand or mail.

This notice is being sent to you by Rural Utility District State Water System ID# TN 0000007

Treatment Technique Violations

A treatment technique violation occurs when any of the following conditions occur.

- The system exceeds a treatment technique trigger and then fails to conduct an assessment or complete corrective actions within required timeframes.

Actions to be taken in the event of a Treatment Technique Violation (A Violation Requiring a Tier 2 Public Notification)

A public water system that has violated the treatment technique for total coliforms by failing to conduct an assessment, complete corrective actions or fails to complete the approved seasonal start up procedure must;

- Report the violation to the State no later than the end of the next business day after system learns of the violation.
  Person to Contact: Mr. State Inspector at the Local Environmental Field Office
  Telephone: _____ or 1-888-891-8332
  - A Tier 2 Public Notice must be issued:

  Tier 2 notices must be issued within 30 days of learning of the violation.
- Refer to the EPA Public Notification Handbook for specific content and delivery requirements. Examples are contained in the next two pages

- Notify the public using this procedure:
  - Furnish a copy of the notice to the customers served by the public water system via mail or other direct delivery as soon as possible, **but no later than 30 days after the violation;**
    - The notice should contain the language shown in the example notices on the next pages;
    - The system may want to describe what is being done to correct the problem:

Tier 2 PN for Failure to Perform a Level 1 or 2 Assessment

DRINKING WATER NOTICE

RUD Failed to Conduct an Assessment of the Facility and Distribution System

Coliforms are bacteria that are naturally present in the environment and are used as an indicator that other, potentially harmful, waterborne pathogens may be present or that a potential pathway exists through which contamination may enter the distribution system. In one sample we collected on June 12, 2016, and one sample collected on June 16, 2016, we found coliforms, indicating the need to look for potential problems in water treatment or distribution. When this occurs, we are required to conduct an assessment to identify problems and to correct any problems that are found. We were required to conduct a Level 1 assessment within 30 days of learning of the second total coliform-positive (TC+) sample. A Level 1 assessment is a study of the water system to identify potential problems and determine (if possible) why total coliform bacteria have been found in our water system. As our customers, you have a right to know what happened and what we are doing to correct this situation. As required by the Revised Total Coliform Rule, *we failed to conduct the required Level 1 or 2 assessment* within 30 days, and have therefore, violated a requirement of the Revised Total Coliform Rule.

What does this mean?

This is not an emergency. If it had been an emergency, you would have been notified within 24 hours.
Failure to conduct an assessment to identify the sanitary defect that triggered the assessment has the potential to cause distribution system contamination. *Inadequately treated or inadequately protected water may contain disease-causing organisms. These organisms can cause symptoms such as diarrhea, nausea, cramps, and associated headaches.* Failure to perform the assessment prolonged the risk of fecal contamination of our distribution system water. While we have not detected any evidence of fecal contamination in our distribution system, we are committed to correcting the deficiency to eliminate the potential threat of contamination.

What should I do?

- You do not need to boil your water or take other corrective actions. However, if you have specific health concerns, consult your doctor.
- If you have a severely compromised immune system, have an infant, are pregnant, or are elderly, you may be at increased risk and should seek advice from their health care providers about drinking this water. General guidelines on ways to lessen the risk of infection by microbes are available from EPA's Safe Drinking Water Hotline at (800) 426-4791.

You do not need to boil your water or take other corrective actions. If a situation arises where the water is no longer safe to drink, you will be notified within 24 hours. We will announce any emergencies on Channel 22 or Radio Station KMMM (97.3 FM).

What is being done?

We have since completed the Level 1 assessment and identified the cause of the sanitary defect; damage to the storage tank. We are implementing the corrective action plan established by the State. Under this plan, the damage will be repaired and the tank will be disinfected by August 31, 2016.

For more information, please contact John Johnson, manager of System B, at (555) 555-1234 or write to 2600 Winding Rd., Townsville, TM 12345.

Please share this information with all the other people who drink this water, especially those who may not have received this notice directly (for example, people in apartments, nursing homes, schools and businesses). You can do this by posting this notice in a public place or distributing copies by hand or mail.

This notice is being posted by System B. State Water System ID# TN 1234583. Sent: 8/10/2016

Example of a Tier 2 PN for Failure to Perform Corrective Action
DRINKING WATER NOTICE
RUD Failed to Perform Corrective Action Following an Assessment of the Facility and Distribution System

Coliforms are bacteria that are naturally present in the environment and are used as an indicator that other, potentially harmful, waterborne pathogens may be present or that a potential pathway exists through which contamination may enter the distribution system. We found coliforms, indicating the need to look for potential problems in water treatment or distribution. When this occurs, we are required to conduct assessment(s) to identify problems and to correct any problems that are found. This past summer, we were required to conduct a Level 1 assessment. We completed the required Level 1 assessment and identified the cause of the sanitary defect to be damage to the storage tank. *While we failed to correct the sanitary defect within the required timeframe,* we are implementing the corrective action plan established by the State. As our customers, you have a right to know what happened and what we are doing to correct this situation. As required by the Revised Total Coliform Rule, we failed to complete the corrective action within the required timeframe, and have therefore, violated a requirement of the Revised Total Coliform Rule.

What does this mean?
This is not an emergency. If it had been an emergency, you would have been notified within 24 hours.
Failure to correct the identified defect that was found during the assessment has the potential to cause distribution system contamination. *Inadequately treated or inadequately protected water may contain disease-causing organisms. These organisms can cause symptoms such as diarrhea, nausea, cramps, and associated headaches.*

What should I do?
- You do not need to boil your water or take other corrective actions. However, if you have specific health concerns, consult your doctor.
- If you have a severely compromised immune system, have an infant, are pregnant, or are elderly, you may be at increased risk and should seek advice from their health care providers about drinking this water. General guidelines on ways to lessen the risk of infection by microbes are available from EPA's Safe Drinking Water Hotline at (800) 426-4791.

You do not need to boil your water or take other corrective actions. If a situation arises where the water is no longer safe to drink, you will be notified within 24 hours. We will announce any emergencies on Channel 22 or Radio Station KMMM (97.3 FM).

What is being done?
Since being informed of the failure, we have begun to correct the sanitary defect identified during the Level 1 assessment. During the assessment, the sanitary defect was determined to be damage to the storage tank. We are in communication with the State and have modified the corrective action plan's schedule to repair and disinfect the storage tank.

For more information, please contact John Johnson, manager of System B, at (555) 555-1234 or write to 2600 Winding Rd., Townsville, TM 12345.

Please share this information with all the other people who drink this water, especially those who may not have received this notice directly (for example, people in apartments, nursing homes, schools and businesses). You can do this by posting this notice in a public place or distributing copies by hand or mail.
This notice is being posted by System B. State Water System ID# TN1234583. Sent: 9/20/2016

Monitoring and Reporting Violations

A Monitoring or Reporting violation occurs when any of the following conditions exist.

- A system fails to collect all routine or additional routine samples
- A system fails to take/analyze for E. coli after a total coliform positive routine.
- A system fails to submit a monitoring report, assessment report or certification of start-up procedure completion.
- A system fails to notify the State of an E. coli positive sample.

Actions to be taken in the event of a Monitoring/ Reporting Violation (A Violation Requiring a Tier 3 Public Notification)

A public water system that has violated the Monitoring and or Reporting requirements must;

- Report the violation to the State no later than the end of the next business day after system learns of the violation.
  Person to Contact: Mr. State Inspector at the Local Environmental Field Office
  Telephone: _____ or 1-888-891-8332
- A Tier 3 Public Notice must be provided to customers:
  Tier 3 notices must be issued within 365 days of learning of the violation.
- Refer to the EPA Public Notification Handbook for specific content and delivery requirements. Examples are contained in the next two pages
- Notify the public using this procedure:
  - Furnish a copy of the notice to the customers served by the public water system via mail or other direct delivery as soon as possible, **but no later than 365 days after the violation;**
    - The notice should contain the language shown in the example notices on the next pages;
    - The system may want to describe what is being done to correct the problem:

Example Tier 3 PN for Failure to Take All Routine Total Coliform Samples in the Required Compliance Period

IMPORTANT INFORMATION ABOUT YOUR DRINKING WATER
Monitoring Requirements Not Met for System D

We are required to monitor your drinking water for specific contaminants on a regular basis. Results of regular monitoring are an indicator of whether or not your drinking water meets health standards. During December 2016, we did not complete all monitoring or testing for total coliform, and therefore, cannot be sure of the quality of your drinking water during that time.

On January 11, 2017, we became aware that our water system failed to collect all of the required monthly routine total coliform distribution system samples in December 2016. Although this incident was not an emergency, as our customers, you have a right to know what happened and what we did to correct the situation. None of the 12 samples that we did collect was positive for total coliform or *E. coli* bacteria.

What should I do?
There is nothing you need to do. You do not need to boil your water or take other corrective actions. You may continue to drink the water. If a situation arises where the water is no longer safe to drink, you will be notified within 24 hours. We will also announce any emergencies on Channel 22 and Radio Station KMMM (97.3 FM).

What was done?
We collected all 15 of the required routine total coliform samples in January and tested them for *E. coli*. None of the samples collected in January was positive for *E. coli*.

For more information, please contact John Johnson, manager of System D, at (555) 555-1234 or write to 2600 Winding Rd., Townsville, TM 12345.

Please share this information with all the other people who drink this water, especially those who may not have received this notice directly (for example, people in apartments, nursing homes, schools and businesses). You can do this by posting this notice in a public place or distributing copies by hand or mail.

This notice is being sent to you by System D. State Water System ID# TM1234585. Sent: 1/10/2018

Example Tier 3 PN for Failure to Notify the State Following an *EC*+ Sample Result

IMPORTANT INFORMATION ABOUT YOUR DRINKING WATER
Reporting Requirements Not Met for System F

Our system failed to notify the state of an *E. coli*-positive (*EC*+) routine sample by the end of the day that we learned of the violation. The water system has not exceeded the *E. coli* MCL standard set by the Revised Total Coliform Rule. Although this incident was not an emergency, as our customers, you have a right to know what happened and what we did to correct the situation.

What should I do?
There is nothing you need to do. You do not need to boil your water or take other corrective actions. You may continue to drink the water. If a situation arises where the water is no longer safe to drink, you will be notified within 24 hours. We will also announce any emergencies on Channel 22 and Radio Station KMMM (97.3 FM).

What was done?
We notified the state of the routine monitoring sample that was *EC*+.

For more information, please contact John Johnson, manager of System F, at (555) 555-1234 or write to 2600 Winding Rd., Townsville, TM 12345.

Please share this information with all the other people who drink this water, especially those who may not have received this notice directly (for example, people in apartments, nursing homes, schools and businesses). You can do this by posting this notice in a public place or distributing copies by hand or mail.

This notice is being sent to you by System F. State Water System ID# TN1234585. Sent: 3/11/2017

Appendix H

Non Community Seasonal System

Bacteriological Sample Site Plan Example

Lemons Campground
PWSID #0000007

Last Updated: February 3, 2016

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Purpose/Objective

The Tennessee Department of Environment and Conservation, Division of Water Resources regulations require that bacteriological samples are to be collected according to a written sample siting plan. This plan is to ensure that collection sites are representative of water throughout the distribution system. Samples will be collected from areas used by all customers and will include…

- Residential areas (at least 30%)
- Dead end lines
- Low use areas
- Commercial areas
- Areas near storage tanks

Sampling sites will be distributed to ensure that no area served by the system is neglected during the year. The justification for selecting sampling sites is to aid our operator and manager in understanding the bacteriological quality of the water throughout the system and to monitor and evaluate the quality of the water consumed by all the users of the system.

General System Information

The official name and address for this system is

Lemons Campground
6464 River Road
Somewhere, TN 393939

The PWSID number for this system is
TN0000007

The population served by this system is __30_____.

The Person(s) responsible for reporting to the Division of Water resources and keeping the plan updated is _John Johnson, Owner_____.

Date of last plan update __December 25, 2015__ _____.

The Lemons Campground PWSID #s: 0000007 provides drinking water to 13 tent and RV camp sites, a bathhouse and the Campground Office. The Campground is operated seasonally, opening on May 01 and closing October 31 of each year. The campground averages 30 customers per day. Historically the month of August is our busiest month when the campground generally experiences full occupancy each day.

Water is supplied by a well on site which has been classified as a true ground water source. Although not required, and in the interest of public health, we have installed a residential sized ultraviolet lamp. The device is located just downstream of the pressure tank in our well house. Water is supplied to all campsites, the main office and the bathhouse through a 2 inch PVC water line extending approximately ¼ mile throughout the campground. Two flush valves are located at distill ends of the campground near sites 9 and 10. A spigot is located inside the well house from which raw water from the well may be obtained if needed.

Since our system is seasonal, we are required to submit certification of completion of the State mandated start-up checklist including the results of a negative bacteriological sample prior to our opening on May 01 each year. The system is shock chlorinated, flushed and sampled each year for this purpose. A Start- up checklist is included in Appendix A.

The system is required to collect one (1) routine bacteriological sample per month. Sample sites locations are rotated between the two distil ends of the system at sites 9 and 10. In the event of a positive sample we are required to collect three repeat samples within 24 hours of notification.

Or

The Division of Water Resources has approved and granted our system a reduction to quarterly monitoring. We are required to collect one (1) routine bacteriological quarterly to include the month of highest demand which is August. We will collect samples during May, August and October. Sample sites locations are rotated between the two distil ends of the system at sites 9 and 10. In the event of a positive sample we are required to collect three repeat samples within 24 hours of notification. Additionally we are required to collect three samples during the month following any positive sample and are subject to increased monthly monitoring if certain conditions exist

The Lemons Campground primarily utilizes the State of TN Health Department laboratory for bacteriological sample analyses. If a sample needs to be analyzed after hours, on a weekend or holiday, the Broadview Utility District laboratory will be utilized.

Special purpose samples are collected during repairs, in response to complaints, or for other maintenance reasons. Collection of these types of samples is necessary to ensure that coliform bacteria have not entered the distribution system as a result of events such as installation of mains, main line repair or routine maintenance. Special purpose samples cannot be included in compliance or assessment trigger calculations. Special purpose samples are collected in addition

to any samples collected in accordance with this plan for compliance with the Revised Total Coliform Rule.

This plan contains examples of responses to treatment triggers which may require level 1 and or level 2 assessments to be conducted. It is anticipated that the systems certified water and owner will conduct any required level 1 assessments. The Lemon Campground has made arrangements with Broadview Utility operators who are qualified to conduct a level 2 assessment if needed. The plan also contains example public notification documents that can be used in if needed.

John Johnson, owner and Certified Operator, is responsible for insuring that proper sampling procedures are followed and that samples are collected in accordance with this plan. John Johnson will annually review the sampling plan and update the plan when the population served increases sufficiently to require an increased number of samples and at any time significant changes to the system are made impacting hydraulic flows in the system. A copy of this plan will be kept in the Campgrounds main office.

Number of Samples Required

The number of samples to be taken by Lemons Campground is determined by the Tennessee Department of Environment and Conservation, Division of Water Resources, Rule 0400-45-1-(5) –(7).

Routine samples
Presently, based on a population served of approximately 30 Lemons is required to take one (1) routine samples each month.

Our system can take the required number of samples, or more than is required. The number of samples our system will take is one (1) each month. The number of routine samples required the month following a total coliform-positive sample is one (1).

Or

Routine samples
The Division of Water Resources has approved and granted our system a reduction to quarterly monitoring. We are required to collect one (1) routine bacteriological quarterly to include the month of highest demand which is August. We will collect samples during May, August and October. Our system can take the required number of samples, or more than is required. The number of samples our system will take is one (1) each quarter in the designated months.

Additionally, the number of routine samples required the month following a total coliform-positive sample is three (3). We are subject to increased monthly monitoring if certain conditions exist

Repeat samples
If a routine bacteriological sample is total coliform-positive, the number of repeat samples required is three (3). The system must collect at least one repeat sample from the sampling tap where the original total coliform-positive sample was taken, and at least one repeat sample at a tap within five service connections upstream and at least one repeat sample at a tap within five service connections downstream of the original sampling site. When a positive sample occurs at the end of line one sample at the site of the positive sample and two samples upstream will be collected. A set of three (3) repeat samples will be collected for each positive sample. The repeat sampling procedure will continue until all samples are total coliform negative or a treatment technique trigger has been exceeded. Reference page 11 for additional actions required in the event of a positive sample.

The person(s) responsible for reporting to the Division of Water Resources is John Johnson.

The Division of Water Resources can be contacted at the following numbers:

Every Environmental Field Office 1-888-891-8332 or (XXX) 891-8332

Selected Sampling Sites

The Lemons Campground will collect (one (1) routine sample per month or one (1) routine sample per quarter) as indicated below. If a primary sampling site is not available, an alternative sampling site will be selected from the list for routine monitoring. Sampling will be conducted as follows.

Samples are to be taken from each designated site throughout the season and be alternated each monitoring period to ensure all areas of the system are represented during the course of a year.

Monthly
First Week Number of Samples: _____1_____ Zone(s)_____1_____

Next month on schedule

Monthly
First Week Number of Samples: _____1_____ Zone(s)_____2_____

Sample sites will be alternated from Zone 1-West to Zone 2-East each sampling period

OR----------

For Quarterly Monitoring during the months of May, August and October
Monthly
First Week Number of Samples: _____1_____ Zone(s)_____1_____

Next month on schedule

Monthly
First Week Number of Samples: _____1_____ Zone(s)_____2_____

Sample sites will be alternated from Zone 1-West to Zone 2-East each sampling period

Primary Routine Total Coliform Sampling Sites:

Map Site ID	Specific Addresses or GPS Coordinates	Zone	Water Source
7	Near end of line west side of park	1-west	Well
8	Near end of line west side of park	1-west	Well
9	End of line west side of park	1-west	Well
10	End of line east side of park	2-east	Well
11	Near end of line east side of park	2-east	Well
12	Near end of line east side of park	2-east	Well

Alternative Routine Total Coliform Sampling Sites: (to be used if primary sites are not available or if additional sites are needed)

Map Site ID	Specific Addresses or GPS Coordinates	Zone	Water Source
6	Near end of line west side of park	1-west	Well
13	Near end of line east side of park	2-east	Well

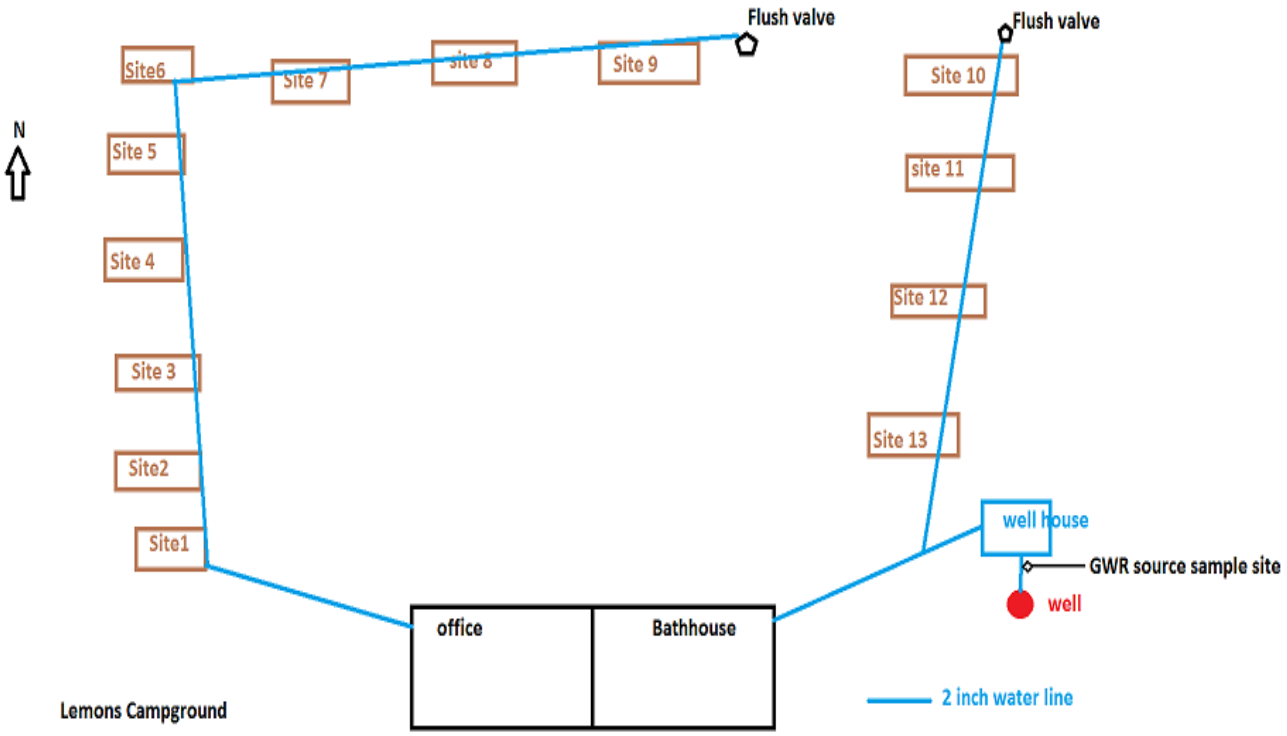
Sample site for Compliance with the Ground Water Rule Source Water Monitoring (if required)

GWR	At well house	Na	Well

The goal should be to collect all required samples at the beginning of the first week in the monthly monitoring period. This is to allow ample time to collect another sample should one arrive at the laboratory and not be able to be analyzed. (i.e. leaked in transit, out of holding time, lab accident, etc…). Samples must be analyzed within 30 hours of collection.

If there is a total coliform or E. coli positive sample, three repeat samples will be collected within 24 hours of notification. Refer to page 16 for additional guidance.

Distribution System Map with Sample Sites



Sampling Procedure

1. Review the sample siting plan to determine where and when samples are to be taken.
2. After arriving at the sampling site, remove any attachments on the faucet.
3. Consider the use of a sodium hypochlorite spray solution or flaming to disinfect the faucet. Flaming should not be used on plastic faucets.
4. Turn the water on and let it run for several minutes until water temperature stabilizes.
   - Flush out the customer lines, and
   - Ensure that the water being sampled is from the distribution lines, not the plumbing fixture. (A thermometer can be used to determine when water is being drawn from the distribution system and not the plumbing fixture. The water temperature will stabilize once all the water from the fixture has been flushed out and the water flowing from the faucet is coming from the distribution system.)
5. Adjust the flow from the faucet to a slow, steady stream.
6. Take a sample of water flowing from the tap and determine and document the free chlorine residual.
7. Open the laboratory supplied container used to take the bacteriological sample. Consider the use of latex gloves to minimize contamination risk.
8. Do not touch the inside of the bottle or lid.
9. Do not set the lid down.
10. Do not rinse the bottle out.
11. Grasp the container near the bottom and quickly place it under the flowing stream.
12. Fill the bottle to the neck or indicated fill line. Do not overfill. Collect at least 100 mL of water, this is the volume the laboratory must have for testing.
13. Remove the sample container from the flow as soon as it is filled. SEAL THE CONTAINER IMMEDIATELY.
14. Turn off the water and replace any fixtures or attachments that were removed previously.
15. Fill out the bacteriological sample slip. Instructions are included on page XX.
16. Place the container and completed forms in the shipping box.
17. Insure that the sample is delivered to the laboratory in a timely manner. Analysis must be initiated with within 30 hours from the time sample is collected.
18. Record sampling event and information in the bacteriological sampling log. Refer to page XX.

Faucets to Avoid

Avoid taking samples at these faucets if at all possible.

- Unprotected Outdoor Faucets
- Frost-proof Faucets

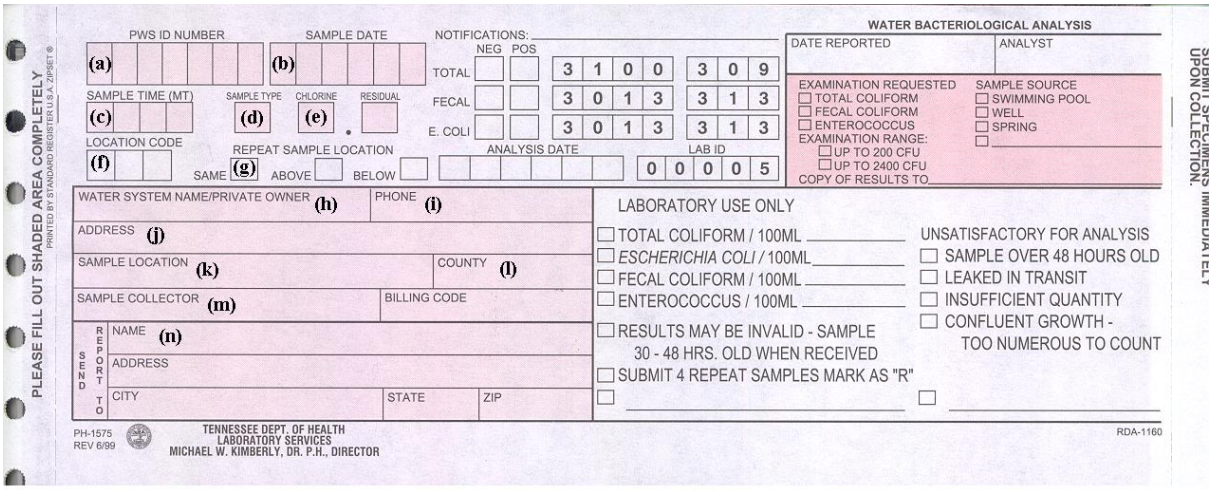
If you cannot avoid these, be sure to use good sampling techniques. Avoid dust, obvious contamination, splashing rain, snow and other possible sources of contamination, such as:

- An indoor faucet connected to a pressure tank, or water heater.
- A new faucet.
- A hot water faucet.
- A recently repaired faucet.
- Faucets with threaded taps.
- Mixing faucets.
- Sites with a higher-than-usual possibility for bacterial contamination.
- Swing/swivel faucets.
- Faucets positioned close to a sink or the ground. (It must be high enough to keep it from touching the sampling container.
- Leaky faucets or faucets which allow water to seep around the valve stem.
- Faucets that supply areas, such as janitorial or commercial sinks, where bacterial contamination is likely.
- Faucets that have aerators. (If such faucets are to be used, the aerators should be removed before a sample is collected.)

What does this all mean? Avoid any faucet that will threaten to contaminate a sample. The idea is to sample the water in the distribution system, not necessarily the condition of the plumbing fixture. You may not always be able to avoid all these types of faucets. If you have to take a sample from one of these faucets, you should exercise extreme care and use good sampling techniques including spray disinfection or flaming of the faucet where appropriate.

Bacteriological Sample Slip Information

Sample Information Slip
Figure 1


PLEASE FILL OUT SHADED AREA COMPLETELY
PRINTED BY STANDARD REGISTER U.S.A. ZIPSET ®
PWS ID NUMBER (a)
SAMPLE DATE (b)
NOTIFICATIONS:
NEG POS
TOTAL 3 1 0 0 3 0 9
FECAL 3 0 1 3 3 1 3
E. COLI 3 0 1 3 3 1 3
SAMPLE TIME (MT) (c)
SAMPLE TYPE (d)
CHLORINE (e)
RESIDUAL
LOCATION CODE (f)
REPEAT SAMPLE LOCATION
SAME (g) ABOVE BELOW
ANALYSIS DATE
LAB ID 0 0 0 0 5
WATER BACTERIOLOGICAL ANALYSIS
DATE REPORTED
ANALYST
EXAMINATION REQUESTED
TOTAL COLIFORM
FECAL COLIFORM
ENTEROCOCCUS
EXAMINATION RANGE:
UP TO 200 CFU
UP TO 2400 CFU
COPY OF RESULTS TO
SAMPLE SOURCE
SWIMMING POOL
WELL
SPRING
SUBMIT SPECIMENS IMMEDIATELY UPON COLLECTION.
WATER SYSTEM NAME/PRIVATE OWNER (h)
PHONE (i)
ADDRESS (j)
SAMPLE LOCATION (k)
COUNTY (l)
SAMPLE COLLECTOR (m)
BILLING CODE
SEND REPORT TO
NAME (n)
ADDRESS
CITY
STATE
ZIP
LABORATORY USE ONLY
TOTAL COLIFORM / 100ML
ESCHERICHIA COLI / 100ML
FECAL COLIFORM / 100ML
ENTEROCOCCUS / 100ML
RESULTS MAY BE INVALID - SAMPLE 30 - 48 HRS. OLD WHEN RECEIVED
SUBMIT 4 REPEAT SAMPLES MARK AS "R"
UNSATISFACTORY FOR ANALYSIS
SAMPLE OVER 48 HOURS OLD
LEAKED IN TRANSIT
INSUFFICIENT QUANTITY
CONFLUENT GROWTH - TOO NUMEROUS TO COUNT
PH-1575
REV 6/99
TENNESSEE DEPT. OF HEALTH
LABORATORY SERVICES
MICHAEL W. KIMBERLY, DR. P.H., DIRECTOR
RDA-1160

cc. **PWSID number**. XXXX Water System's PWSID # is 0000XXX. In order to get credit for the sample, the PWSID number must be correct.

dd. **Sample date**. Record the date the sample is collected. Example: August 22, 2002 would read 082202.

ee. **Sample time**. Record the time of day in military time. 8:30 a.m. would be recorded as 0830. 1:30 p.m. would be recorded as 1330.

ff. **Sample type**. Sample types are recorded as follows:

D – Routine	S – Special
R – Repeat	Q – Quality Control
N – New lines	F – Fix or Repair

Failure to record the correct sample type can result in a monitoring requirement violation. Most samples will be coded as a "D" for a routine sample. Follow-up samples immediately following a positive routine sample are repeat samples and are coded as "R".

gg. **Chlorine Residual**. All systems that disinfect their water must record the chlorine residual when coliform samples are collected. Chlorine residuals should be reported to the nearest one tenth of a milligram per liter or one tenth of a part per million.

hh. **Location code**. This 3-digit block would only be used when repeat samples are collected. The laboratory will furnish the numbers to be put in these blocks.

ii. **Repeat Sample Location**. Same ☐ Above ☐ Below ☐
Only used when collecting repeat "R" samples.

jj. **Water System Name/Private Owner**. Provide the name of the Water System or Utility District where the sample was collected.

kk. **Phone**. Provide a daytime telephone number to be called by the laboratory if they need to contact you about the sample.

ll. **Address**. Provide the complete mailing address of the Water System from which the sample was collected.

mm. **Sample Location**. Provide sufficient information so that you can return to the sample site for repeat samples if necessary and sufficient information that the sample site can be identified on your sampling site plan.

nn. **County**. Record the county where the public water system is located.

oo. **Sample Collector**. Record the name of the person who actually collected the sample.

pp. **Name, Address, City, Zip**. Please record the full address of the person or organization the coliform sample results should be mailed to. Make sure that this information is printed clearly because the laboratory uses this information to return the results to you.

Bacteriological Sample Log

Date Sample Taken MM/DD/YY	Time Sample Taken (Military time)	Sample Location (Describe, i.e. Cedar Lodge Kitchen Sink)	Chlorine Residual	Date Sample Mailed MM/DD/YY	Date Sample Results Reviewed	Sample Results Positive (+) Negative (-)	If Sample * Results +, Repeat Samples Taken (Yes=Y)	Date Public Notice Given

Military Time

8:30 a.m. is 0830 in MT (essentially clock time)
1:30 p.m. is 1330 in MT (clock time plus 12)

*Show Date, Time, Place, and provide for Results of each repeat sample taken on this log.

Actions to be taken if a Sample is Total Coliform-Positive

Should one of the routine samples be total coliform-positive, we are required to take a set of three (3) repeat samples. The set of repeat samples will be taken as follows:

- at least one of the repeat samples must be taken from the sampling tap where the original total coliform-positive samples was taken;
- at least one of the repeat samples must be taken at a tap within 5 service connections downstream from the original sampling site;
- at least one of the repeat samples must be taken at a tap within 5 service connections upstream from the original sampling site;
- the complete set of repeat samples must be taken within 24 hours of the system being notified of a positive coliform result, or when instructed to sample by the Division of Water Resources;
- the entire set of repeat samples must be taken on the same day.
- If a total coliform-positive sample is at the end of the distribution system, or one service connection away from the end of the distribution system, the system must still take all required repeat samples. One sample at the original positive site and two upstream samples within 5 service connections will be collected.
- To comply with the requirements of the Ground Water Rule, one untreated source water sample must be collected within 24 hours of notification. This sample shall be coded "s" for special and is in addition to the three required repeat samples.

Should one of the repeat samples be positive, another set must be taken.

Repeat samples must be taken until:

- total coliforms are not detected in one complete set of repeat samples, or
- the system exceeds the total coliform treatment technique trigger during the month and notifies the State Department of Environment and Conservation, Division of Water Resources.

If on reduced quarterly sampling and in the event of a TC positive sample, three routine samples are required the following month.

Increased monitoring to monthly is required if:

- A level 2 assessment or two level 1 assessments are triggered in a rolling 12 month period.
- An E. coli MCL violation.
- A coliform treatment technique violation.
- Two RTCR monitoring violations in a rolling 12- month period.
- One RTCR monitoring violation and one level 1 assessment in a rolling 12 month period.

Sampling During Weekends and Holidays

Routine should be taken on Mondays and Tuesdays to avoid a problem with repeat samples. This should allow ample time for repeat samples to be collected before the weekend if they are required. If a holiday should occur, which could cause a problem with either routine or repeat sampling being submitted to the state laboratory, samples must be taken to the Broadview Utility District laboratory for analysis. Planning ahead, and following these guidelines, should avoid any sampling problems associated with weekends or holidays.

Should it not be possible to collect repeat samples and submit them for analysis within the required 24-hour period because of a holiday or weekend, the system will provide for a "boil water notice" to be issued until sufficient samples can be collected and analyzed to verify that the contamination has been eliminated. Refer to page 17 for an example of a "boil water notice".

Treatment Technique Triggers

Level 1 Assessments

A level 1 assessment is required to be conducted as soon as practical but no later than 30 days of the following events. A Division of Water Resources Level 1 Assessment form must be completed and submitted to the Division of Water Resources. Refer to Appendix B for Level 1 Assessment forms.

- For systems, which take less than 40 samples during a month**,** the system has exceeded the Level 1 treatment technique trigger if the system has more than one total coliform-positive sample, including repeat samples during a month.

- The system fails to collect every required repeat sample after any single total coliform positive sample.

Level 1 assessment for a NCWS must be conducted by a licensed certified operator or the owner. John Johnson owner and certified operator will conduct Level 1 assessments if a trigger is exceeded. A State approved Level 1 Assessment form must be completed and submitted to the Division of Water Resources within 30 days of the trigger exceedance. Any sanitary defects or deficiencies must be corrected within 30 days of the trigger exceedance or in accordance with an approved schedule from the Division of Water Resources.

Treatment Technique Triggers

Level 2 Assessments

A level 2 assessment is required to be conducted as soon as practical but no later than 30 days of any of the following events.

- An E. coli Maximum Contaminant Level (MCL) violation
- A second Level 1 assessment trigger within a rolling 12 month period.

Level 2 assessments for all systems must be conducted by a licensed operator who is certified to at least the same level as the public water system being assessed and who has completed an approved level 2 training certification course from the Division of Water Resources. A system serving a population of less than 50,000 must use a 3rd party assessor. The Lemons Campground has made arrangements with Broadview Utility operators who are qualified to conduct a level 2 assessment if needed.

A Division of Water Resources Level 2 Assessment form must be completed and submitted to the Division of Water Resources within 30 days of the trigger exceedance. Any sanitary defects or deficiencies must be corrected within 30 days of the trigger exceedance or in accordance with an approved schedule from the Division of Water Resources.

E. coli Maximum Contaminant Level (MCL) Violations

An E. coli MCL violation occurs when any of the following conditions exist.

- An E. coli positive repeat sample follows a Total Coliform positive routine sample.
- A Total Coliform positive repeat sample follows an E. coli positive routine sample.
- A system fails to take all required repeat samples (3) following an E. coli positive routine sample.
- A system fails to test for E. coli when any repeat sample tests positive for total coliform.

Actions to be taken if an E. coli-Positive Sample is involved in the Violation (A Violation Requiring a Tier 1 Public Notification)

If any repeat sample is E. coli -positive or any repeat sample following an E. coli-positive routine sample is total coliform-positive:

- Report the violation to the State no later than the end of the day when the system was notified of the results, unless the system is notified after the Department office is closed, in which case it must notify the State before the end of the next business day.
  Person to Contact: _Mr. State Inspector at the Local Environmental Field Office
  Telephone: _____ or 1-888-891-8332
- Notify the public using this procedure:
  - Furnish a copy of the notice to customers via direct delivery and or to the local radio and television stations served by the public water system as soon as possible and or hand deliver and post notice as appropriate, **but no later than 24 hours after the violation;**
- Refer to the EPA Public Notification Handbook for specific content and delivery requirements. An example PN is contained on the following page.
  - The notice should contain the language shown in the example notice on the next page;
  - The system may want to describe what is being done to correct the problem:
    - Total number of samples taken,
    - Total number of positive samples,
    - Problem areas,
    - Mains are being flushed, etc.
- A Level Two Assessment must be conducted within 30 days of the E. coli positive sample.

Tier 1 PN for Violating the *E. coli* MCL

DRINKING WATER WARNING

E. coli is Present in Lemons Campground Water

BOIL YOUR WATER BEFORE DRINKING OR USING

Our water system detected *E. coli* bacteria in our distribution system. As our customers, you have a right to know what happened and what we are doing to correct this situation. On April 4, 2016, we learned that coliform bacteria were present and one of our routine samples collected on April 2, 2016, was total coliform-positive (TC+). As required by the Revised Total Coliform Rule, one of our follow-up steps was to collect repeat samples at and near the location where the TC+ sample was originally taken. One of these repeat samples collected on April 5 tested positive for *E. coli.* We are now conducting additional sampling to determine the extent of the problem and are conducting a thorough investigation to determine the source of the contamination.

What should I do?

DO NOT DRINK THE WATER WITHOUT BOILING IT FIRST. Bring all water to a rolling boil, let it boil for one minute, and let it cool before using it. Boiling kills bacteria and other organisms in the water. You may also use bottled water. Use boiled or bottled water for drinking, making ice, preparing food and washing dishes until further notice.

Also, if you have a severely compromised immune system, have an infant, or are elderly, you may be at increased risk and should seek advice about drinking water from your health care providers. General guidelines on ways to lessen the risk of infection by microbes are available from EPA's Safe Drinking Water Hotline at (800) 426-4791. If you have specific health concerns, consult your doctor. We are also providing regular updates on this situation on Channel 22 or Radio Station WZYX (90.3 FM).

What does this mean?

Inadequately treated or inadequately protected water may contain disease-causing organisms. These organisms can cause symptoms such as diarrhea, nausea, cramps and associated headaches. *E. coli are bacteria whose presence indicates that the water may be contaminated with human or animal wastes. Human pathogens in these wastes can cause short-term effects, such as diarrhea, cramps, nausea, headaches, or other symptoms. They may pose a greater health risk for infants, young children, some of the elderly, and people with severely-compromised immune systems.* These symptoms are not caused only by organisms in drinking water. If you experience any of these symptoms and they persist, you may want to seek medical advice.

What is being done?

We are conducting a thorough investigation to determine the source of the contamination and will be working with the State to implement corrective actions to ensure that our water supplies are protected against contamination. We will keep you informed of the steps we are taking to protect your drinking water and will provide information on any steps you should be taking. We will inform you when tests show no bacteria and you no longer need to boil your water. We are also providing regular updates on this situation on Channel 22 or Radio Station KMMM (97.3 FM).

For more information, please contact John Johnson, manager of Rural Utility District, at (555) 555-1234 or write to 2600 Winding Rd., Townsville, TM 12345.

Please share this information with all the other people who drink this water, especially those who may not have received this notice directly (for example, people in apartments, nursing homes, schools and businesses). You can do this by posting this notice in a public place or distributing copies by hand or mail.

This notice is being sent to you by Rural Utility District State Water System ID# TN 0000007

Treatment Technique Violations

A treatment technique violation occurs when any of the following conditions occur.

- The system exceeds a treatment technique trigger and then fails to conduct an assessment or complete corrective actions within required timeframes.

Actions to be taken in the event of a Treatment Technique Violation

(A Violation Requiring a Tier 2 Public Notification)

A public water system that has violated the treatment technique for total coliforms by failing to conduct an assessment, complete corrective actions or fails to complete the approved seasonal start up procedure must;

- Report the violation to the State no later than the end of the next business day after system learns of the violation.
  Person to Contact: Mr. State Inspector at the Local Environmental Field Office
  Telephone: _____ or 1-888-891-8332
  - A Tier 2 Public Notice must be issued:

  Tier 2 notices must be issued within 30 days of learning of the violation.
- Refer to the EPA Public Notification Handbook for specific content and delivery requirements. Examples are contained in the next two pages

- Notify the public using this procedure:
  - Furnish a copy of the notice to the customers served by the public water system via mail or other direct delivery or posting as soon as possible, **but no later than 30 days after the violation;**
    - The notice should contain the language shown in the example notices on the next pages;
    - The system may want to describe what is being done to correct the problem:

Tier 2 PN for Failure to Perform a Level 1 or 2 Assessment

DRINKING WATER NOTICE

Lemons Failed to Conduct an Assessment of the Facility and Distribution System

Coliforms are bacteria that are naturally present in the environment and are used as an indicator that other, potentially harmful, waterborne pathogens may be present or that a potential pathway exists through which contamination may enter the distribution system. In one sample we collected on June 12, 2016, and one sample collected on June 16, 2016, we found coliforms, indicating the need to look for potential problems in water treatment or distribution. When this occurs, we are required to conduct an assessment to identify problems and to correct any problems that are found. We were required to conduct a Level 1 assessment within 30 days of learning of the second total coliform-positive (TC+) sample. A Level 1 assessment is a study of the water system to identify potential problems and determine (if possible) why total coliform bacteria have been found in our water system. As our customers, you have a right to know what happened and what we are doing to correct this situation. As required by the Revised Total Coliform Rule, *we failed to conduct the required Level 1 or 2 assessment* within 30 days, and have therefore, violated a requirement of the Revised Total Coliform Rule.

What does this mean?

This is not an emergency. If it had been an emergency, you would have been notified within 24 hours.

Failure to conduct an assessment to identify the sanitary defect that triggered the assessment has the potential to cause distribution system contamination. *Inadequately treated or inadequately protected water may contain disease-causing organisms. These organisms can cause symptoms such as diarrhea, nausea, cramps, and associated headaches.* Failure to perform the assessment prolonged the risk of fecal contamination of our distribution system water. While we have not detected any evidence of fecal contamination in our distribution system, we are committed to correcting the deficiency to eliminate the potential threat of contamination.

What should I do?

- You do not need to boil your water or take other corrective actions. However, if you have specific health concerns, consult your doctor.
- If you have a severely compromised immune system, have an infant, are pregnant, or are elderly, you may be at increased risk and should seek advice from their health care providers about drinking this water. General guidelines on ways to lessen the risk of infection by microbes are available from EPA's Safe Drinking Water Hotline at (800) 426-4791.

You do not need to boil your water or take other corrective actions. If a situation arises where the water is no longer safe to drink, you will be notified within 24 hours. We will announce any emergencies on Channel 22 or Radio Station KMMM (97.3 FM).

What is being done?

We have since completed the Level 1 assessment and identified the cause of the sanitary defect; damage to the storage tank. We are implementing the corrective action plan established by the State. Under this plan, the damage will be repaired and the tank will be disinfected by August 31, 2016.

For more information, please contact John Johnson, manager of System B, at (555) 555-1234 or write to 2600 Winding Rd., Townsville, TM 12345.

Please share this information with all the other people who drink this water, especially those who may not have received this notice directly (for example, people in apartments, nursing homes, schools and businesses). You can do this by posting this notice in a public place or distributing copies by hand or mail.

This notice is being posted by System B. State Water System ID# TN 1234583. Sent: 8/10/2016

Example of a Tier 2 PN for Failure to Perform Corrective Action
DRINKING WATER NOTICE
Lemons Failed to Perform Corrective Action Following an Assessment of the Facility and Distribution System

Coliforms are bacteria that are naturally present in the environment and are used as an indicator that other, potentially harmful, waterborne pathogens may be present or that a potential pathway exists through which contamination may enter the distribution system. We found coliforms, indicating the need to look for potential problems in water treatment or distribution. When this occurs, we are required to conduct assessment(s) to identify problems and to correct any problems that are found. This past summer, we were required to conduct a Level 1 assessment. We completed the required Level 1 assessment and identified the cause of the sanitary defect to be damage to the storage tank. *While we failed to correct the sanitary defect within the required timeframe,* we are implementing the corrective action plan established by the State. As our customers, you have a right to know what happened and what we are doing to correct this situation. As required by the Revised Total Coliform Rule, we failed to complete the corrective action within the required timeframe, and have therefore, violated a requirement of the Revised Total Coliform Rule.

What does this mean?
This is not an emergency. If it had been an emergency, you would have been notified within 24 hours.
Failure to correct the identified defect that was found during the assessment has the potential to cause distribution system contamination. *Inadequately treated or inadequately protected water may contain disease-causing organisms. These organisms can cause symptoms such as diarrhea, nausea, cramps, and associated headaches.*

What should I do?

- You do not need to boil your water or take other corrective actions. However, if you have specific health concerns, consult your doctor.
- If you have a severely compromised immune system, have an infant, are pregnant, or are elderly, you may be at increased risk and should seek advice from their health care providers about drinking this water. General guidelines on ways to lessen the risk of infection by microbes are available from EPA's Safe Drinking Water Hotline at (800) 426-4791.

You do not need to boil your water or take other corrective actions. If a situation arises where the water is no longer safe to drink, you will be notified within 24 hours. We will announce any emergencies on Channel 22 or Radio Station KMMM (97.3 FM).

What is being done?
Since being informed of the failure, we have begun to correct the sanitary defect identified during the Level 1 assessment. During the assessment, the sanitary defect was determined to be damage to the storage tank. We are in communication with the State. and have modified the corrective action plan's schedule to repair and disinfect the storage tank.

For more information, please contact John Johnson, manager of System B, at (555) 555-1234 or write to 2600 Winding Rd., Townsville, TM 12345.

Please share this information with all the other people who drink this water, especially those who may not have received this notice directly (for example, people in apartments, nursing homes, schools and usinesses). You can do this by posting this notice in a public place or distributing copies by hand or mail.
This notice is being posted by System B. State Water System ID# TN1234583. Sent: 9/20/2016

Monitoring and Reporting Violations

A Monitoring or Reporting violation occurs when any of the following conditions exist.

- A system fails to collect all routine or additional routine samples
- A system fails to take/analyze for E. coli after a total coliform positive routine.
- A system fails to submit a monitoring report, assessment report or certification of start- up procedure completion.
- A system fails to notify the State of an E. coli positive sample.

Actions to be taken in the event of a Monitoring/ Reporting Violation
(A Violation Requiring a Tier 3 Public Notification)

A public water system that has violated the Monitoring and or Reporting requirements must;

- Report the violation to the State no later than the end of the next business day after system learns of the violation.
  Person to Contact: Mr. State Inspector at the Local Environmental Field Office
  Telephone: _____ or 1-888-891-8332
- A Tier 3 Public Notice must be provided to customers:
  Tier 3 notices must be issued within 365 days of learning of the violation.
- Refer to the EPA Public Notification Handbook for specific content and delivery requirements. Examples are contained in the next two pages

- Notify the public using this procedure:
  - Furnish a copy of the notice to the customers served by the public water system via mail, postings or other direct delivery as soon as possible, **but no later than 365 days after the violation;**
    - The notice should contain the language shown in the example notices on the next pages;
    - The system may want to describe what is being done to correct the problem:

Example Tier 3 PN for Failure to Take All Routine Total Coliform Samples in the Required Compliance Period

IMPORTANT INFORMATION ABOUT YOUR DRINKING WATER
Monitoring Requirements Not Met for System D

We are required to monitor your drinking water for specific contaminants on a regular basis. Results of regular monitoring are an indicator of whether or not your drinking water meets health standards. During December 2016, we did not complete all monitoring or testing for total coliform, and therefore, cannot be sure of the quality of your drinking water during that time.

On January 11, 2017, we became aware that our water system failed to collect all of the required monthly routine total coliform distribution system samples in December 2016. Although this incident was not an emergency, as our customers, you have a right to know what happened and what we did to correct the situation. None of the 12 samples that we did collect was positive for total coliform or *E. coli* bacteria.

What should I do?
There is nothing you need to do. You do not need to boil your water or take other corrective actions. You may continue to drink the water. If a situation arises where the water is no longer safe to drink, you will be notified within 24 hours. We will also announce any emergencies on Channel 22 and Radio Station KMMM (97.3 FM).

What was done?
We collected all 15 of the required routine total coliform samples in January and tested them for *E. coli*. None of the samples collected in January was positive for *E. coli*.

For more information, please contact John Johnson, manager of System D, at (555) 555-1234 or write to 2600 Winding Rd., Townsville, TM 12345.

Please share this information with all the other people who drink this water, especially those who may not have received this notice directly (for example, people in apartments, nursing homes, schools and businesses). You can do this by posting this notice in a public place or distributing copies by hand or mail.

This notice is being sent to you by System D. State Water System ID# TM1234585. Sent: 1/10/2018

Example Tier 3 PN for Failure to Notify the State Following an *EC*+ Sample Result

IMPORTANT INFORMATION ABOUT YOUR DRINKING WATER
Reporting Requirements Not Met for System F

Our system failed to notify the state of an *E. coli*-positive (*EC*+) routine sample by the end of the day that we learned of the violation. The water system has not exceeded the *E. coli* MCL standard set by the Revised Total Coliform Rule. Although this incident was not an emergency, as our customers, you have a right to know what happened and what we did to correct the situation.

What should I do?
There is nothing you need to do. You do not need to boil your water or take other corrective actions. You may continue to drink the water. If a situation arises where the water is no longer safe to drink, you will be notified within 24 hours. We will also announce any emergencies on Channel 22 and Radio Station KMMM (97.3 FM).

What was done?
We notified the state of the routine monitoring sample that was *EC*+.

For more information, please contact John Johnson, manager of System F, at (555) 555-1234 or write to 2600 Winding Rd., Townsville, TM 12345.

Please share this information with all the other people who drink this water, especially those who may not have received this notice directly (for example, people in apartments, nursing homes, schools and businesses). You can do this by posting this notice in a public place or distributing copies by hand or mail.

This notice is being sent to you by System F. State Water System ID# TN1234585. Sent: 3/11/2017

TENNESSEE DEPARTMENT OF ENVIRONMENT & CONSERVATION
DIVISION OF WATER RESOURCES - DRINKING WATER UNIT
William R. Snodgrass Tennessee Tower
312 Rosa L. Parks Ave., 11th Floor
Nashville, TN 37243-1102
615-532-0191

SEASONAL NON-COMMUNITY PUBLIC WATER SYSTEMS

State Approved Start-up Checklist for PWSID # and Name _____

Under the Revised Total Coliform Rule (RTCR), systems that are only opened part of the year or seasonal are required to follow the steps below and submit this form to the regional Environmental Field Office prior to serving water to the public for the season. To locate the Environmental Field Office for your area copy and paste the link below into your browser: http://www.tn.gov/environment/field-offices.shtml

(1.)	**Well Source and Pump House Start-up Shut-down**			
(a.)	Is pump house protected from trespassers (locked and completely secure)	YES	NO	N/A
(b.)	Well casing is structurally sound	YES	NO	N/A
(c.)	Chemicals (i.e. gas, solvents, pesticides) are stored outside isolation radius or at least more than 100 feet from well	YES	NO	N/A
(d.)	Is backup generator stored to capture any leaks in secondary containment area	YES	NO	N/A
(e.)	Well cap is tight with no openings that would allow insect infiltration	YES	NO	N/A
(f.)	Well vent is turned downward and the screen is intact	YES	NO	N/A
(g.)	Rodents and insects are kept out of the pump house and away from the well (keep area mowed)	YES	NO	N/A
(h.)	Sample tap does not leak and flows freely when open	YES	NO	N/A
(i.)	A water meter is working properly and water usage records are maintained	YES	NO	N/A
	COMMENTS:			
(2.)	**Chlorination and Other Treatment (softening, filters, phosphate, etc.)**			
(a.)	Are all treatment systems installed and operating properly	YES	NO	N/A
(b.)	Chlorine is pumping at an adequate dose throughout distribution system including distal ends	YES	NO	N/A
(c.)	The chlorine residual test kit is working, reagents are not expired and is properly calibrated at the beginning of the season.	YES	NO	N/A
(d.)	Chlorinator inspected and declared to be operating properly	YES	NO	N/A
(e.)	The chemical injection point has been cleaned and chemical feed pump is working properly	YES	NO	N/A
(f.)	Unless otherwise approved by the Division, system must ensure measureable disinfectant residual of 0.2 ppm at all distal ends of distribution system	YES	NO	N/A
	COMMENTS:			

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(3.)	**Monitoring and Reporting**			
(a.)	All required total coliform bacteria samples were collected prior to serving water to the public with a negative result	YES	NO	N/A
	COMMENTS:			

(4.)	**Storage Tanks**			
(a.)	Flush the interior of the tank	YES	NO	N/A
(b.)	The tank overflow pipe is screened and air gap is maintained above ground	YES	NO	N/A
(c.)	Tank has been visually inspected for damage or repairs	YES	NO	N/A
	COMMENTS:			

(5.)	**Pressure Tanks**			
(a.)	Pressure tank is checked to ensure pressure is being maintained and tank is not waterlogged	YES	NO	N/A
(b.)	All valves, gauges, controls, etc. are properly operating	YES	NO	N/A
(c.)	Pressure tanks thoroughly flushed	YES	NO	N/A
	COMMENTS:			

(6.)	**Distribution Lines**			
(a.)	Lines walked to ensure none are exposed or leaking	YES	NO	N/A
(b.)	Each valve located and are working properly	YES	NO	N/A
(c.)	Flush distribution lines and check chlorine residual at 2 locations on 2 separate days	YES	NO	N/A
(d.)	Ensure RV dump station maintains air gap	YES	NO	N/A
	COMMENTS:			

(7.)	**Additional Comments:**

***** Note: Remember to update your Wellhead Protection Plan**

If you have any questions, contact your local Environmental Field Office at (888) 891-TDEC (8332)

Sample

Certification Statement

I certify, under penalty of law, including but not limited to penalties for perjury, that this document and all attachments were prepared by me, or under my direction or supervision; that all of the submitted information is to the best of my knowledge and belief true, accurate, and complete; and that I am lawfully present in the United States as a U.S. citizen or a qualified alien as defined in 8 U.S.C §164(b). As specified in Tennessee Code Annotated §39-16-702(a)(4), this declaration is made under penalty of perjury. I understand that the penalties for providing false information and making false or fraudulent statements or representations include revocation in a fine, permit or license, civil penalties, and/or criminal prosecution resulting in a fine, imprisonment or both.

_____ _____

Owner/Operator Signature Date

Sample

Appendix B – Level 1 ASSESSMENT FORM

TENNESSEE DEPARTMENT OF ENVIRONMENT & CONSERVATION
DIVISION OF WATER RESOURCES – DRINKING WATER UNIT
William R. Snodgrass Tennessee Tower
312 Rosa L. Parks Ave., 11th Floor
Nashville, TN 37243-1102
615-532-0191

REVISED TOTAL COLIFORM RULE LEVEL 1 ASSESSMENT

Water System Name:	_____
PWSID #:	_____
Assessment Performed By:	_____
Date of Assessment:	_____
	(1.) Sampling
☐Yes ☐No If Yes, explain	(a.) Review total coliform sample results and chlorine residuals for the past three months (six months, if sampling quarterly). Are there any trends in bacteria samples or chlorine residuals?
	_____ _____ _____ _____ _____ _____
	(b.) Sampling Guidance
	• The water should be allowed to run for a few minutes to ensure it was from the distribution system and not household plumbing. • The faucet should be disinfected. • The chlorine residual should be taken but not using the bacteria sample bottle. • Care should be taken not to touch the inside of the bottle or lid, not to set the lid down and not rinse the bottle out. Container should not touch faucet. • The water should be flowing in a slow, steady stream. • Container should not be overfilled and should be sealed immediately. • Outdoor faucets, frost-proof faucets should be avoided. • If possible, avoid faucet connected to water heater, pressure tank; hot water faucet, new faucet, swing/swivel faucets, janitor sink faucets or other potentially contaminated faucets.
	(c.) Describe below the sampling technique used for bacteria sampling:
	_____ _____ _____ _____ _____
	(d.) Name of Sampler
	_____

Sample

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☐Yes ☐No If Yes, explain	(e.) Are conditions at the sample tap unsanitary and prone to external contamination?
☐Yes ☐No Explain setting/use of tap	(f.) Has the sample site been in regular use? Would the typical use of the tap be prone to contamination (food preparation, utility sink, etc.)?
	(g.) Describe how the samples were processed:
	I. Samples shipped or delivered? II. Time between sample collection and delivery to lab? III. Samples cooled or ambient temperature? IV. Fresh sample bottles? V. Properly stored sample bottles?
	(h.) If the system has a certified bacteriological lab, review their lab procedures, QA/QC and the cleanliness of the lab. Provide observations below:
	(2.) General – File Review
	(a.) Review last sanitary survey and survey letter for identified problems affecting water quality, particularly repeat issues. Provide observations below:
	(b.) Review Monthly Operating Reports (MORs) for past 6 months paying special attention to chlorine residual leaving plant and turbidity levels.

Sample

	Provide observations below:
	(c.) Review files for filter exceedance reports, filter performance reports, identify filter run times. Provide observations below:
□Yes □No If Yes, explain	(d.) Has there been a loss of service due to a failure of water transmission or distribution facilities?
□Yes □No If Yes, explain	(e.) Could any operation or maintenance activities have introduced contamination?
□Yes □No If Yes, explain	(f.) Has there been recent delivery of new treatment chemicals? Were they confirmed to be the correct chemical and strength?
□Yes □No If Yes, explain	(g.) Has there been vandalism or unauthorized access to facilities identified?
	(3.) Distribution System
□Yes □No	(a.) Have all issues identified in the last professional tank inspection and sanitary survey been addressed? Describe below:
□Yes □No	(b.) Have there been line replacements, water line breaks or repairs or new construction within the past 3 months? Describe disinfection techniques employed below:

Sample

□Yes □No	(c.) If the tank or clearwell inspection or repair was within the past 3 months, was proper disinfection employed afterward? When were the tanks last cleaned out? Describe disinfection technique below:
□Yes □No	(d.) Is there an ongoing flushing program and when was the last flushing performed? Describe below:
□Yes □No If yes, explain	(e.) Are there any areas where it's difficult to maintain chlorine residual without flushing?
□Yes □No If Yes, explain	(f.) Has there been any firefighting in the area within the past 3 months that would have dropped water pressure or other low pressure events such as line breaks?
	(4.) Cross Connections
□Yes □No	(a.) Are backflow prevention devices being tested annually?
□Yes □No If Yes, explain	(b.) Are there backflow prevention devices in the vicinity of the total coliform positive site or places that should have backflow prevention devices?
□Yes □No If Yes, explain	(c.) Have any failed backflow prevention devices missed being repaired/replaced and retested within the previous 12 months?
□Yes □No	(d.) Within the area of concern, have there been surveys conducted for the detection and elimination of hazards associated with cross-connections? Describe the area (e.g., residential, commercial, sparsely populated rural, etc.) and any known backflow prevention devices and potential risks.

Sample

	(5.) Plant Operation/Treatment
□Yes □No If No, explain	(a.) Are all of the facilities secure to prevent unauthorized access?
□Yes □No	(b.) Is the treatment facility operated and manned 24 hours a day? Explain below:
	(c.) If unmanned while in operation, what monitoring/shutdown alarms are in place at the treatment facility (turbidity, chlorine residual, etc.) and are they operational? Describe below:
□Yes □No If Yes, explain	(d.) Has there been any unusual filter performance within the past 3 months?
□Yes □No If Yes, explain	(e.) Review turbidity records for the past three months. Have there been any turbidity exceedances of more than 1 NTU in either the individual filters or combined?
	(f.) Have there been any other parameters out of normal range within the past 3 months? Describe below:
□Yes □No If Yes, explain	(g.) Have there been any disruptions within the past 3 months that could have affected turbidity or disinfection (chlorine feed or UV disinfection)?

Sample

☐Yes ☐No If Yes, explain	(h.) Are there any unsanitary conditions, rodents, birds, general housekeeping problems at any of the facilities?
	_____ _____
☐Yes ☐No If Yes, explain	(i.) Were there any observed leaks or other signs of poor maintenance within the facilities? :
☐Yes ☐No	_____ _____ _____ _____
☐Yes ☐No	(j.) If there is a pressure tank present, is it maintaining appropriate pressure?
☐Yes ☐No	(k.) If the system is using a cartridge filter, is the filter the correct absolute 1 micron cartridge and is it changed according to manufacturer's recommendation? Provide comments below:
	_____ _____ _____ _____ _____
	(6.) Chlorine Residual
☐Yes ☐No	(a.) Has the system been achieving the proper contact time, if required (minimum of 15 minutes)? Indicate below if system is not chlorinating and discuss system's contact time below:
	_____ _____ _____ _____
☐Yes ☐No	(b.) Is there consistent chlorine residual in the water leaving the plant? Describe below: Indicate below if system is not chlorinating. Describe below:
	_____ _____ _____ _____
	(7.) UV Disinfection – If applicable
☐Yes ☐No	(a.) Is the unit operational?
☐Yes ☐No	(b.) Is the turbidity low enough for it to work properly?
☐Yes ☐No	(c.) Does the unit have the proper UV lamp?
☐Yes ☐No	(d.) Does the lamp need replaced?
☐Yes ☐No	(e.) Is the lamp sleeve clean?
	(8.) Source
☐Yes ☐No If Yes, explain	(a.) Have there been any new or auxiliary sources brought online?
	_____ _____ _____

Sample

□Yes □No If Yes, explain	If seasonal, were there any problems with the startup procedure?
	(9.) Well/Spring
□Yes □No	(a.) Is springbox in good condition? Describe springbox below:
□Yes □No	(b.) Is springbox/well head protected from surface water drainage/infiltration? Describe below:
□Yes □No	(c.) Is well casing above grade/flood zone? Describe setting below:
□Yes □No	(d.) Is the sanitary seal on the well casing is intact?
□Yes □No	(e.) Is well vent screened?
□Yes □No If Yes, explain	(f.) Was there any heavy precipitation or flooding within the 30 days prior to the total coliform positive event?
	(10.) Intake
□Yes □No If Yes, explain	(a.) Any conditions that might increase turbidity or introduce contamination?
□Yes □No If Yes, explain	(b.) Is the intake or equipment in need of repair?
□Yes □No	(c.) Was there any heavy precipitation or flooding within the 30 days prior to the

Sample

If Yes, explain	total coliform positive event?
	_____ _____ _____ _____
☐Yes ☐No If Yes, explain	(d.) Have there been any changes in sources of potential contamination in proximity of the water source?
	_____ _____ _____ _____
	(11.) Assessment Statement and Proposed Remedy
	_____ _____ _____ _____

Attach additional sheets if necessary

Sample

Certification Statement

I certify, under penalty of law, including but not limited to penalties for perjury, that this document and all attachments were prepared by me, or under my direction or supervision; that all of the submitted information is to the best of my knowledge and belief true, accurate, and complete; and that I am lawfully present in the United States as a U.S. citizen or a qualified alien as defined in 8 U.S.C. §1641(b). As specified in Tennessee Code Annotated Section 39-16-702(a)(4), this declaration is made under penalty of perjury. I understand that the penalties for providing false information and making false or fraudulent statements or representations include revocation in a fine, permit or license, civil penalties, and/or criminal prosecution resulting in a fine, imprisonment or both.

_____ _____

Signature Date