APPENDIX F – Coliform Monitoring Plan

Helpful Hints

- Good sample collection technique can reduce the possibility of having a total coliform-present sample.
- Make sure to collect every routine and repeat sample.
- Find and fix any sanitary defects as soon as you are aware of them.
- Remember to send us your completed Level 1 and Level 2 assessment documentation.
- If you are a seasonal water system, remember to follow your start-up procedure before providing water to the public at the beginning of each new season.

For more information

Call our regional office:

Eastern Region: Spokane Valley
509-329-2100

Northwest Region: Kent
253-395-6750

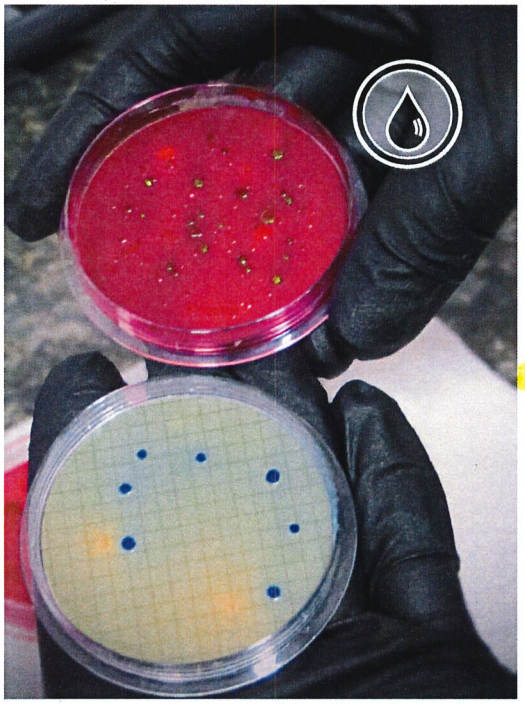
Southwest Region: Tumwater
360-236-3030

You can also visit our website at www.doh.wa.gov/CommunityandEnvironment/DrinkingWater

Washington State Department of Health
Environmental Public Health
Office of Drinking Water

DOH PUB #331-556
December 2015

If you need this publication in an alternative format, call 800.525.0127 (TDD/TTY call 711). This and other publications are available at www.doh.wa.gov/CommunityandEnvironment/DrinkingWater/PublicationsandForms.



Revised Total Coliform Rule

The **Revised Total Coliform Rule (RTCR)** will replace the Total Coliform Rule on April 1, 2016. EPA expects the RTCR to protect public health better by requiring systems vulnerable to microbial contamination to "find and fix" problems that allow contamination to enter a water system.

We have always required water systems to look for any maintenance or operational defects that could allow contamination to enter a system. RTCR formalizes the process and requires water systems to submit a water system assessment report to us any time they have total coliform-present sample results.

RTCR Introduces the *E. coli* MCL

RTCR calls the acute Maximum Contaminant Level (MCL) an "*E. coli* MCL." An *E. coli* MCL violation can occur four ways:

- A total coliform-present repeat sample follows an *E. coli*-present routine sample.
- An *E. coli*-present repeat sample follows a total coliform-present routine sample.
- The lab fails to test a total coliform-present repeat sample for *E. coli*.
- New. A system fails to take 3 repeat samples following an *E. coli*-present routine sample.

Required Routine Monitoring

Water systems will continue to collect the same number of routine samples at the same frequency as they do now. See your Water Facilities Inventory (WFI) form for your system's monitoring schedule.

RTCR requires all water systems to collect 3 repeat samples for every total coliform-present routine sample. Systems that collect 1 sample a month will collect 3 repeats instead of 4. Systems that collect 2 or more routine samples will continue to collect 3 repeats. If a system fails to collect 3 repeat samples for every total coliform-present routine sample, RTCR will require it to conduct a water system assessment.

RTCR does not allow any system to use a source sample as both a repeat sample and a groundwater source sample. Instead, it will require all systems to collect a raw water sample from each groundwater source that was in use on the day they collected the routine sample.

RTCR requires water systems to collect their normal number of routine samples the month after a total coliform-present routine sample. Systems that serve 4,100 or fewer people no longer have to collect 5 routine samples.

"Sanitary Defects" and "Defects"

RTCR distinguishes between "sanitary defects" and "defects." Either might cause a total coliform-present sample, which triggers the assessment requirement.

Sanitary defect: A pathway for contaminants to enter the water system or the failure or imminent failure of an existing barrier.

Defect: An issue identified during an assessment that could have caused total coliform-present samples, such as using an improper sample collection technique.

Assessment Elements

Evaluate anything that might affect water quality in the distribution system, or indicate that quality is impaired, such as:

- *Atypical events.*
- *Changes in distribution system operation and maintenance, including water storage.*
- *Source and treatment considerations.*
- *Existing water quality data.*
- *Inadequate sample sites, sample protocols, or sample processing.*
- *Others, depending on the size and complexity of the system.*

Treatment Techniques Trigger Assessments

A treatment technique trigger is a situation that requires a water system to take action. RTCR requires water systems to conduct an assessment to "find and fix" any sanitary defects whenever a treatment technique trigger occurs. There are two assessment levels. Both evaluate the entire system from the sample collection point to the source of supply.

You can anticipate that a treatment technique trigger might occur any time you collect routine and repeat samples. Therefore, you should be ready to start a system evaluation as soon as the lab notifies you of total coliform-present results, which trigger the assessment requirement.

Don't wait to hear from us. You must complete a Level 1 and Level 2 assessment within 30 days after the treatment trigger occurs.

Level 1 Assessment

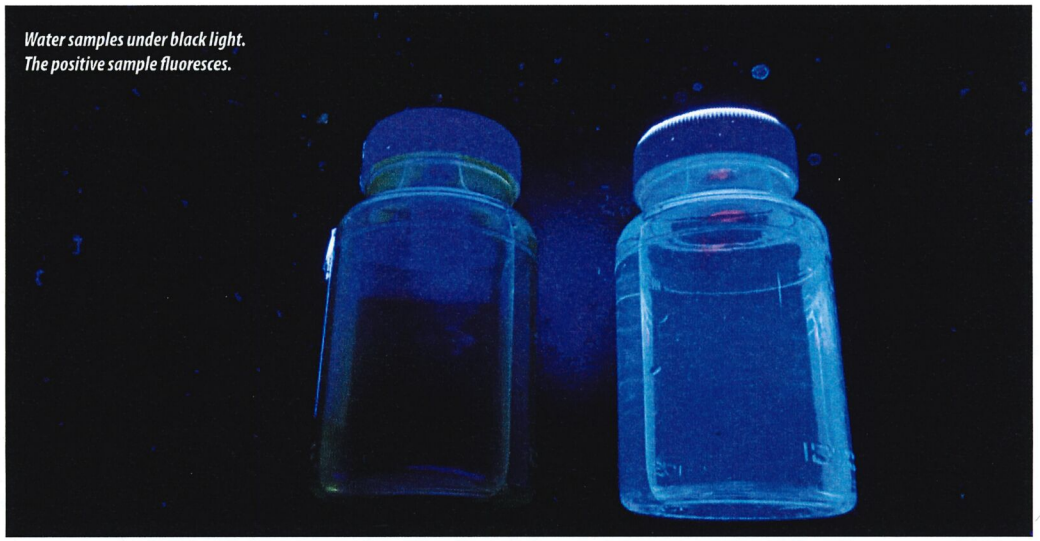
A basic water system evaluation an owner, manager, or other knowledgeable person can do. A Level 1 treatment technique trigger occurs any time a water system:

- Collects fewer than 40 routine samples a month and has 2 or more total coliform-present results the same month.
- Collects 40 or more routine samples a month and has total coliform-present results in more than 5 percent of its routine and repeat samples.
- Fails to collect 3 repeats for every total coliform-present routine sample.

Level 2 Assessment

A complex evaluation that only a person with state-required qualifications can do. A Level 2 treatment technique trigger occurs when a water system has:

- An *E. coli* MCL violation.
- A second Level 1 treatment technique trigger within a rolling 12-month period.



Water samples under black light. The positive sample fluoresces.

Seasonal Water Systems

RTCR recognizes a new noncommunity seasonal water system. RTCR's seasonal system doesn't operate year-round, totally depressurizes the water lines at the end of each operating season, and has at least one month when it serves no people.

Complete system shutdown creates opportunities for contamination to enter or spread through the distribution system. Therefore, all seasonal water systems must:

- Have a state-approved start-up procedure by March 31, 2016.
- Follow the procedure before opening for the season each year.
- Send us a certificate declaring that they followed the procedure before serving water to the public.

Failure to do so is a treatment technique violation, which requires public notification to water system customers.

Treatment Technique Violations

RTCR requires public notification within 30 days when a:

- Water system fails to conduct a required Level 1 or Level 2 assessment within 30 days of learning about the treatment technique trigger.
- Water system fails to correct a sanitary defect identified in a Level 1 or Level 2 assessment within 30 days of learning about the treatment technique trigger.
- Seasonal system fails to complete state-approved startup procedures before providing water to customers.

Monitoring Violations

- A water system fails to collect every routine sample.
- A lab fails to test a total coliform-present routine sample for *E. coli.*

Reporting Violations

- Water system fails to submit a monitoring report or completed assessment report in a timely manner.
- Water system fails to notify us of an *E. coli*-present sample in a timely manner.
- Seasonal system fails to submit certification of completion of approved start-up procedure.

RTCR Level 1 Assessment Guidance Template

331-569, March 2016

Send your assessment to:

Eastern Region	16201 East Indiana Avenue, Suite 1500 Spokane Valley, WA 99216	Phone: 509.329.2100 Fax: 509.329.2104 Email: mark.steward@doh.wa.gov
Northwest Region	20425 72nd Ave. South, Suite 310 Kent, WA 98032-2358	Phone: 253.395.6750 Fax: 253.395.6760 Email: dw.nwro@doh.wa.gov
Southwest Region	PO Box 47823 Olympia, WA 98504-7823	Phone: 360-236-3030 Fax: 360-664-8058 Email: swro.coli@doh.wa.gov

Water System Name:	County:	Water System ID #:
Operator in Responsible Charge (ORC):	ORC Phone:	Water System Mailing Address:
ORC Address, City, State:		
Assessor Name:		
Assessor Address, City, State, Zip:		
Date(s) Assessment Completed:		

Your water system exceeded a treatment technique trigger for the Revised Total Coliform Rule. Assess the water system's condition and operation using this *Level 1 Assessment Template* as a guide.

Part A: Respond to each item below. Identify corrective actions taken to address the issue(s) found.
Part B: Summarize your findings and include an action plan with timetable for corrective actions not yet taken.

For parts A and B, include additional information (photos or other documentation) as needed to depict assessment findings and corrective actions that have been completed. All assessment elements listed in this template must be addressed in your assessment. Systems with multiple facilities such as wells or storage tanks may need to provide additional pages.

Within 30 days of learning of the treatment technique trigger, submit completed assessment documentation to your regional office and keep a copy in your water system files.

Part A: Assessment		**Corrective action needed?**	**Corrective action(s) taken & date taken**
1. Site and Sampling Protocol 1a. Do you have a written coliform monitoring plan & sampling procedure that ensures samples are representative of the distribution system?	☐ Yes ☐ No	☐ Yes ☐ No	
1b. Have there been any changes in sampling conditions or procedures that may have contributed to the treatment technique trigger? Describe:	☐ Yes ☐ No	☐ Yes ☐ No	
1c. Inspect the sampling sites: - Are the sampling locations free of potential sources of contamination? - Are the sampling taps in good condition? - Other: (describe) _____	☐ Yes ☐ No ☐ N/A ☐ Yes ☐ No ☐ N/A ☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No ☐ Yes ☐ No ☐ Yes ☐ No	

Part A: Assessment		Corrective action needed?	Corrective action(s) taken & date taken
2. Distribution 2a. Do you have procedures in place to ensure proper maintenance of the distribution system, including: - Appropriate pipe replacement and repair procedures - Replacement and repair of other distribution system components - Regular flushing program - Routine vault inspections - Fully implemented cross connection control program - Maintain positive pressure in all parts of the distribution system	 ☐ Yes ☐ No ☐ Yes ☐ No ☐ Yes ☐ No ☐ N/A ☐ Yes ☐ No ☐ N/A ☐ Yes ☐ No ☐ Yes ☐ No	 ☐ Yes ☐ No ☐ Yes ☐ No ☐ Yes ☐ No ☐ Yes ☐ No ☐ Yes ☐ No ☐ Yes ☐ No	
2b. Has there been any recently reported low pressure (<20 PSI) or complete loss of pressure in the distribution system?	☐ Yes ☐ No	☐ Yes ☐ No	
2c. Have there been any changes in distribution conditions or operations that may have contributed to the treatment technique trigger? Describe:	☐ Yes ☐ No	☐ Yes ☐ No	
2d. Inspect the distribution system: - Are there any visible line breaks or leaks? - Are there any observed unprotected cross connections? - Is there any evidence of vandalism or other security breaches? - Other: (describe) _____	 ☐ Yes ☐ No ☐ Yes ☐ No ☐ Yes ☐ No ☐ Yes ☐ No ☐ N/A	 ☐ Yes ☐ No ☐ Yes ☐ No ☐ Yes ☐ No ☐ Yes ☐ No	
3. Storage Facilities 3a. Does your water system have a water storage tank? *If no, skip to Section 4.*	☐ Yes ☐ No		
3b. Do you have procedures in place for periodic inspection and maintenance of the exterior and interior of each storage facility?	☐ Yes ☐ No	☐ Yes ☐ No	
3c. Have there been any changes in storage conditions or operations that may have contributed to the treatment technique trigger? Describe:	☐ Yes ☐ No	☐ Yes ☐ No	
3d. Inspect the storage facilities: - Does the tank have any cracks or other openings? - Is the reservoir roof free of any unprotected openings? - Is the access hatch constructed and sealed to keep contaminants out? - If there is an air vent on the storage tank, is it constructed to prevent the entry of contaminants? - Is the overflow line constructed to prevent contaminants from entering the tank? - If the overflow line discharges into a storm drain, to surface water, or directly into a sanitary sewer, is it protected by a proper air gap? - Is there any evidence of vandalism or other security breaches? - Other: (describe) _____	 ☐ Yes ☐ No ☐ Yes ☐ No ☐ Yes ☐ No ☐ Yes ☐ No ☐ N/A ☐ Yes ☐ No ☐ Yes ☐ No ☐ N/A ☐ Yes ☐ No ☐ Yes ☐ No ☐ N/A	 ☐ Yes ☐ No ☐ Yes ☐ No ☐ Yes ☐ No ☐ Yes ☐ No ☐ Yes ☐ No ☐ Yes ☐ No ☐ Yes ☐ No ☐ Yes ☐ No	

Part A: Assessment		Corrective action needed?	Corrective action(s) taken & date taken
4. Source--Groundwater 4a. Does your water system have a well or spring? If no, skip to Section 6.	☐ Yes ☐ No		
4b. Do you comply with Sanitary Control Area requirements (WAC 246-290-135(2))?	☐ Yes ☐ No	☐ Yes ☐ No	
4c. Have there been any changes in source conditions or operations that may have contributed to the treatment technique trigger? Describe:	☐ Yes ☐ No	☐ Yes ☐ No	
4d. Inspect the source facilities: - Is the sanitary control area free of all potential sources of contamination? - Is the wellhead or spring box above grade with no potential for flooding? - Is the pressure tank water logged? - Is the well cap sealed and watertight, and the well casing free of unprotected openings? - (For springs) Is the spring box (structure, hatch, and overflow) free of any unprotected openings? - Other: (describe) _____	☐ Yes ☐ No ☐ Yes ☐ No ☐ Yes ☐ No ☐ N/A ☐ Yes ☐ No ☐ N/A ☐ Yes ☐ No ☐ N/A ☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No ☐ Yes ☐ No ☐ Yes ☐ No ☐ Yes ☐ No ☐ Yes ☐ No ☐ Yes ☐ No	
5. Treatment--Groundwater 5a. Is any source continuously treated with a disinfectant? If no, skip to Section 6.	☐ Yes ☐ No		
5b. Do you have procedures in place for proper operation and maintenance of disinfection treatment facilities?	☐ Yes ☐ No	☐ Yes ☐ No	
5c. Have there been any changes in treatment equipment or process that may have contributed to the treatment technique trigger? Describe:	☐ Yes ☐ No	☐ Yes ☐ No	
5d. Inspect the treatment facilities: - Is the treatment system operating properly? - Is there any evidence of vandalism or other security breaches? - Other: (describe) _____	☐ Yes ☐ No ☐ N/A ☐ Yes ☐ No ☐ N/A ☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No ☐ Yes ☐ No ☐ Yes ☐ No	
6. Source—Surface Water Supply (watershed) 6a. Does your water system have a surface water supply? If no, skip to Section 8.	☐ Yes ☐ No		
6b. Do you comply with Watershed Control Program requirements (WAC 246-290-135(4))?	☐ Yes ☐ No	☐ Yes ☐ No	
6c. Have there been any changes within the watershed or in raw water conditions that may have contributed to the treatment technique trigger? Describe:	☐ Yes ☐ No	☐ Yes ☐ No	

Part A: Assessment		Corrective action needed?	Corrective action(s) taken & date taken
6d. Inspect the surface water intake/headworks: - Is there evidence of problems at the intake? - Is there evidence of vandalism or other security breaches at the intake? - Other: (describe) _____	☐ Yes ☐ No ☐ Yes ☐ No ☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No ☐ Yes ☐ No ☐ Yes ☐ No	
7. Treatment—Surface Water 7a. Do you have procedures in place for proper operation and maintenance of surface water treatment facilities?	☐ Yes ☐ No	☐ Yes ☐ No	
7b. Have there been any changes in treatment equipment or process that may have contributed to the treatment technique trigger? Describe:	☐ Yes ☐ No	☐ Yes ☐ No	
7c. Inspect the treatment facilities: - Is the treatment system operating properly? - Is there any evidence of vandalism or other security breaches? - Other: (describe) _____	☐ Yes ☐ No ☐ N/A ☐ Yes ☐ No ☐ N/A ☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No ☐ Yes ☐ No ☐ Yes ☐ No	
8. Other assessment activities (describe):			

Part B. Assessment Summary and Action Plan with Timetable for corrective actions not yet taken

☐ ASSESSOR: CHECK HERE if you did not identify any issues that may have directly or indirectly caused or contributed to entry of coliform bacteria into the system.

Corrective Actions Completed: ASSESSOR: Summarize the issues found and the corrective actions that have been completed and date completed

Describe issue found	Describe corrective action taken and date completed

Corrective Actions Not Completed: ASSESSOR: Describe the issues for which corrective actions have not yet been completed. **Provide an action plan with timetable for completion.**

Describe issue found	Describe planned corrective action and timetable for completion.

Print Name of Assessor: _____ Signature of Assessor: _____ Date: _____

OFFICE OF DRINKING WATER USE ONLY

Regional Office Reviewer: _____ Date of Review: _____

Assessment sufficient? ☐ Yes ☐ No Likely cause determined? ☐ Yes ☐ No Sanitary defect(s) identified? ☐ Yes ☐ No

Corrective actions completed? ☐ Yes ☐ No Corrective action plan included? ☐ Yes ☐ No Corrective action plan approved? ☐ Yes ☐ No

Comments:

RTCR Level 2 Assessment Guidance Template

331-570, March 2016

Send your assessment to:

Eastern Region	16201 East Indiana Avenue, Suite 1500 Spokane Valley, WA 99216	Phone: 509.329.2100 Fax: 509.329.2104 Email: mark.steward@doh.wa.gov
Northwest Region	20425 72nd Ave. South, Suite 310 Kent, WA 98032-2358	Phone: 253.395.6750 Fax: 253.395.6760 Email: dw.nwro@doh.wa.gov
Southwest Region	PO Box 47823 Olympia, WA 98504-7823	Phone: 360-236-3030 Fax: 360-664-8058 Email: swro.coli@doh.wa.gov

Water System Name:	County:	Water System ID #:
Operator in Responsible Charge (ORC):	ORC Phone:	Water System Mailing Address:
ORC Address, City, State:		
Assessor Name:	Assessor is: ☐ WDM-2, 3, or 4 ☐ Engineer ☐ LHJ	
Assessor Address, City, State, Zip:		
Date(s) Assessment Completed:		

Your water system exceeded a treatment technique trigger for the Revised Total Coliform Rule. Assess the water system's condition and operation using this *Level 2 Assessment Template* as a guide.

Part A: Respond to each item below. Identify corrective actions taken to address the issue(s) found.
Part B: Summarize your findings and include an action plan with timetable for corrective actions not yet taken.

For parts A and B, include additional information (photos or other documentation) as needed to depict assessment findings and corrective actions that have been completed. All assessment elements listed in this template must be addressed in your assessment. Systems with multiple facilities such as wells or storage tanks may need to provide additional pages.

Within 30 days of learning of the treatment technique trigger, submit completed assessment documentation to your regional office and keep a copy in your water system files.

Part A: Assessment		**Corrective action needed?**	**Corrective action(s) taken & date taken**
1. Site and Sampling Protocol 1a. Do you have a written coliform monitoring plan & sampling procedure that ensures samples are representative of the distribution system?	☐ Yes ☐ No	☐ Yes ☐ No	
1b. Do you have a program in place that ensures that all sample collectors are trained before being allowed to collect compliance samples?	☐ Yes ☐ No	☐ Yes ☐ No	
1c. Do you regularly monitor the condition of each routine and repeat sample site to ensure that no site will contaminate the sample?	☐ Yes ☐ No	☐ Yes ☐ No	
1d. Was the sample collected by a trained, qualified person?	☐ Yes ☐ No	☐ Yes ☐ No	
1e. Did the sampler follow your monitoring plan and sampling procedure?	☐ Yes ☐ No	☐ Yes ☐ No	

Part A: Assessment		Corrective action needed?	Corrective action(s) taken & date taken
1f. Was the sample collected representative of the water in the distribution system?	☐ Yes ☐ No	☐ Yes ☐ No	
1g. Have there been any changes in sampling conditions or procedures that may have contributed to the treatment technique trigger? Describe:	☐ Yes ☐ No	☐ Yes ☐ No	
1h. Inspect the sampling sites: - Are the sampling locations free of potential sources of contamination? - Are the sampling taps in good condition? - Other: (describe) _____	 ☐ Yes ☐ No ☐ Yes ☐ No ☐ Yes ☐ No	 ☐ Yes ☐ No ☐ Yes ☐ No ☐ Yes ☐ No	
2. Distribution 2a. Do you have procedures in place to ensure proper maintenance of the distribution system, including: - Appropriate pipe replacement and repair procedures - Replacement and repair of other distribution system components - Regular flushing program - Routine vault inspections - Fully implemented cross connection control program - Maintain positive pressure in all parts of the distribution system	 ☐ Yes ☐ No ☐ Yes ☐ No ☐ Yes ☐ No ☐ N/A ☐ Yes ☐ No ☐ N/A ☐ Yes ☐ No ☐ Yes ☐ No	 ☐ Yes ☐ No ☐ Yes ☐ No ☐ Yes ☐ No ☐ Yes ☐ No ☐ Yes ☐ No ☐ Yes ☐ No	
2b. Following work done on the water system and following any pressure loss event, do you collect investigative coliform samples?	☐ Yes ☐ No	☐ Yes ☐ No	
2b. Has there been any recently reported low pressure (<20 PSI) or complete loss of pressure in the distribution system?	☐ Yes ☐ No	☐ Yes ☐ No	
2c. Have there been any recent repairs or new construction in the distribution system?	☐ Yes ☐ No	☐ Yes ☐ No	
2d. Are there any known pipe leaks that have not yet been repaired?	☐ Yes ☐ No	☐ Yes ☐ No	
2e. Has there been any recent use of fire hydrants such as hydrant maintenance or utility/FD flushing?	☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No	
2f. If there are there any air-vacuum relief valve vaults in the distribution system, are any flooded?	☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No	
2g. Has there been any recent report of a cross connection incident?	☐ Yes ☐ No	☐ Yes ☐ No	
2h. Have there been any off-normal events, such as discolored water, odd taste, or smell?	☐ Yes ☐ No	☐ Yes ☐ No	
2i. Have there been any other changes in distribution conditions or operations that may have contributed to the treatment technique trigger? Describe:	☐ Yes ☐ No	☐ Yes ☐ No	

Part A: Assessment		Corrective action needed?	Corrective action(s) taken & date taken
2j. Inspect the distribution system: - Are there any visible line breaks or leaks? - Are there any observed unprotected cross connections? - Is there any evidence of vandalism or other security breaches? - Other: (describe) _____	☐ Yes ☐ No ☐ Yes ☐ No ☐ Yes ☐ No ☐ Yes ☐ No	☐ Yes ☐ No ☐ Yes ☐ No ☐ Yes ☐ No ☐ Yes ☐ No	
3. Storage Facilities 3a. Does your water system have a water storage tank? If no, skip to Section 4.	☐ Yes ☐ No		
3b. Do you have procedures in place for periodic inspection and cleaning of the interior of each storage facility including vent, roof hatch, and overflow?	☐ Yes ☐ No	☐ Yes ☐ No	
3c. Has there been any recent work done on a storage facility?	☐ Yes ☐ No	☐ Yes ☐ No	
3d. Are all storage facilities secured from unauthorized entry and vandalism?	☐ Yes ☐ No	☐ Yes ☐ No	
3e. Have there been any other changes in storage conditions or operations that may have contributed to the treatment technique trigger? Describe:	☐ Yes ☐ No	☐ Yes ☐ No	
3f. Inspect the storage facilities: - Does the tank have any cracks or other openings? - Is the reservoir roof free of any unprotected openings? - Is the access hatch constructed and sealed to keep contaminants out? - If there is an air vent on the storage tank, is it constructed to prevent the entry of contaminants? - Is the overflow line constructed to prevent contaminants from entering the tank? - If the overflow line discharges into a storm drain, to surface water, or directly into a sanitary sewer, is it protected by a proper air gap? - Is there any evidence of vandalism or other security breaches? - Other: (describe) _____	☐ Yes ☐ No ☐ Yes ☐ No ☐ Yes ☐ No ☐ Yes ☐ No ☐ N/A ☐ Yes ☐ No ☐ Yes ☐ No ☐ N/A ☐ Yes ☐ No ☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No ☐ Yes ☐ No ☐ Yes ☐ No ☐ Yes ☐ No ☐ Yes ☐ No ☐ Yes ☐ No ☐ Yes ☐ No ☐ Yes ☐ No	
4. Source--Groundwater 4a. Does your water system have a well or spring? If no, skip to Section 6.	☐ Yes ☐ No		
4b. Do you comply with Sanitary Control Area requirements (WAC 246-290-135(2)?	☐ Yes ☐ No	☐ Yes ☐ No	
4c. Are all sources protected from fecal contamination by appropriate placement and construction?	☐ Yes ☐ No	☐ Yes ☐ No	
4d. Have any unapproved sources recently been used?	☐ Yes ☐ No	☐ Yes ☐ No	

Part A: Assessment		Corrective action needed?	Corrective action(s) taken & date taken
4e. Have there been any recent land use changes observed within a source sanitary control area, such as construction, farming, or dumping in the last month?	☐ Yes ☐ No	☐ Yes ☐ No	
4f. Has there been any standing water, heavy precipitation, or flooding around a source in the last month?	☐ Yes ☐ No	☐ Yes ☐ No	
4g. Has there been any recent work done on a well or spring box?	☐ Yes ☐ No	☐ Yes ☐ No	
4h. Has there been any recent failure of a source pump?	☐ Yes ☐ No	☐ Yes ☐ No	
4i. Has there been any recent maintenance performed on a source pump or other source component?	☐ Yes ☐ No	☐ Yes ☐ No	
4j. Are the source facilities secured from unauthorized entry and vandalism?	☐ Yes ☐ No	☐ Yes ☐ No	
4k. Have there been any other changes in source conditions or operations that may have contributed to the treatment technique trigger? Describe:	☐ Yes ☐ No	☐ Yes ☐ No	
4l. Inspect the source facilities: - Is the sanitary control area free of all potential sources of contamination? - Is the wellhead or spring box above grade with no potential for flooding? - Is the pressure tank water logged? - Is the well cap sealed and watertight, and the well casing free of unprotected openings? - (For springs) Is the spring box (structure, hatch, and overflow) free of any unprotected openings? - Is there any evidence of vandalism or other security breaches? - Other: (describe) _____	☐ Yes ☐ No ☐ Yes ☐ No ☐ Yes ☐ No ☐ N/A ☐ Yes ☐ No ☐ N/A ☐ Yes ☐ No ☐ N/A ☐ Yes ☐ No ☐ N/A ☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No ☐ Yes ☐ No ☐ Yes ☐ No ☐ Yes ☐ No ☐ Yes ☐ No ☐ Yes ☐ No ☐ Yes ☐ No	
5. Treatment--Groundwater 5a. Is any source continuously treated with a disinfectant? If no, skip to Section 6.	☐ Yes ☐ No		
5b. Do you have procedures in place for proper operation and maintenance of disinfection treatment facilities?	☐ Yes ☐ No	☐ Yes ☐ No	
5c. If a disinfection residual should be continuously maintained throughout the distribution system, was the measured free chlorine residual at the time of coliform sample collection below 0.2 mg/L?	☐ Yes ☐ No	☐ Yes ☐ No	
5d. Have there been any recent interruptions in any treatment process?	☐ Yes ☐ No	☐ Yes ☐ No	
5e. Has there been any recent maintenance performed on any treatment component?	☐ Yes ☐ No	☐ Yes ☐ No	

Part A: Assessment		Corrective action needed?	Corrective action(s) taken & date taken
5f. Have there been any other changes in treatment equipment or process that may have contributed to the treatment technique trigger? Describe:	☐ Yes ☐ No	☐ Yes ☐ No	
5g. Inspect the treatment facilities: - Is the treatment system operating properly? - Is there any evidence of vandalism or other security breaches? - Other: (describe) _____	☐ Yes ☐ No ☐ Yes ☐ No ☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No ☐ Yes ☐ No ☐ Yes ☐ No	
6. Source—Surface Water Supply (watershed) 6a. Does your water system have a surface water supply? If no, skip to Section 8.	☐ Yes ☐ No		
6b. Do you comply with Watershed Control Program requirements (WAC 246-290-135(4)?	☐ Yes ☐ No	☐ Yes ☐ No	
6c. Has there been any recent spikes in raw water turbidity?	☐ Yes ☐ No	☐ Yes ☐ No	
6d. Have there been any land use changes within the watershed, such as logging, construction, or different farming practices in the past month?	☐ Yes ☐ No	☐ Yes ☐ No	
6e. Have there been any other changes within the watershed or in raw water conditions that may have contributed to the treatment technique trigger? Describe:	☐ Yes ☐ No	☐ Yes ☐ No	
6f. Inspect the surface water intake/headworks: - Is there evidence of problems at the intake? - Is there evidence of vandalism or other security breaches at the intake? - Other: (describe) _____	☐ Yes ☐ No ☐ Yes ☐ No ☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No ☐ Yes ☐ No ☐ Yes ☐ No	
7. Treatment—Surface Water 7a. Do you have procedures in place for proper operation and maintenance of surface water treatment facilities?	☐ Yes ☐ No	☐ Yes ☐ No	
7b. Have there been any recent interruptions in any part of the filtration or disinfection treatment process?	☐ Yes ☐ No	☐ Yes ☐ No	
7c. Are filtration and disinfection treatment facilities properly operated and maintained?	☐ Yes ☐ No	☐ Yes ☐ No	
7d. Has there been any maintenance performed on any treatment component in the past month?	☐ Yes ☐ No	☐ Yes ☐ No	
7e. Have there been any problems with a treatment process in the past month, such as high finished water turbidity, disinfection inactivation ratio <1, or changes in coagulation practices or filtration rate?	☐ Yes ☐ No	☐ Yes ☐ No	

Part A: Assessment		Corrective action needed?	Corrective action(s) taken & date taken
7f. Have there been any other changes in treatment equipment or process that may have contributed to the treatment technique trigger? Describe:	☐ Yes ☐ No	☐ Yes ☐ No	
7g. Inspect the treatment facilities: - Is the treatment system operating properly? - Is there any evidence of vandalism or other security breaches? - Other: (describe) _____	☐ Yes ☐ No ☐ Yes ☐ No ☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No ☐ Yes ☐ No ☐ Yes ☐ No	
8. Other assessment activities (describe):			

Part B. Assessment Summary and Action Plan with Timetable for corrective actions not yet taken

☐ ASSESSOR: CHECK HERE if you did not identify any issues that may have directly or indirectly caused or contributed to entry of coliform bacteria into the system.

Corrective Actions Completed: ASSESSOR: Summarize the issues found and the corrective actions that have been completed and date completed

Describe issue found	Describe corrective action taken and date completed

Corrective Actions Not Completed: ASSESSOR: Describe the issues for which corrective actions have not yet been completed. **Provide an action plan with timetable for completion.**

Describe issue found	Describe planned corrective action and timetable for completion.

Print Name of Assessor: _____ Signature of Assessor: _____ Date: _____

OFFICE OF DRINKING WATER USE ONLY

Regional Office Reviewer: _____ Date of Review: _____

Assessment sufficient? ☐ Yes ☐ No Likely cause determined? ☐ Yes ☐ No Sanitary defect(s) identified? ☐ Yes ☐ No

Corrective actions completed? ☐ Yes ☐ No Corrective action plan included? ☐ Yes ☐ No Corrective action plan approved? ☐ Yes ☐ No

Comments:

Coliform Monitoring Plan for: PUBLIC UTILITY DISTRICT #1 of THURSTON COUNTY

A. System Information

Plan Date: April 2017

Water System Name Meadows Water	**County** Thurston	**System I.D. Number** 87784 Q
Name of Plan Preparer Jim Campbell	**Position** Service Manager	**Daytime Phone** **360-357-8783**
Sources: DOH Source Number, Source Name, Well Depth, Pumping Capacity	S01, Well 1 AKB320, 797 ft., 149 gpm S02, Well 2 AKB321, 103 ft., 30 gpm S03, Well 3 AKB322, 307 ft., 78 gpm S04, Well 4 AKB323, 293 ft., 182 gpm S05, Well 5 AKB324, 336 ft., 30 gpm S06, Well 6 AKB325, 310 ft., 186 gpm	
Storage: List and Describe	No. 1 Foxfire Reservoir (concrete) – 116,000 gallons No. 2 Pinedrop Reservoir (concrete) – 175,000 gallons No. 3 The Ridge Reservoir (concrete) – 80,000 gallons	
Treatment: Source Number & Process	No Treatment	
Pressure Zones: Number and name	No. 1 Foxfire No. 2 Widgeon Court No. 3 The Ridge	
Population by Pressure Zone	No. 1 Foxfire = 649 services No. 2 Widgeon Court = 52 services No. 3 The Ridge = 174 services	
Number of Routine Samples Required Monthly by Regulation:		3
Number of Sample Sites Needed to Represent the Distribution System:		3
***Request DOH Approval of Triggered Source Monitoring Plan?**		**Yes** ☐ **No** ☒

*If approval is requested a fee will be charged for the review.

B. Laboratory Information

Laboratory Name Water Management Laboratories	**Office Phone 253-531-3121** **After Hours Phone 253-312-1650 or 1651**
Address 1515 80th Street E, Tacoma WA 98404	**Cell Phone** - - **Email** _____
Hours of Operation Monday-Friday 9 AM to 5 PM Saturday 9 AM to 12 PM	
Contact Name Christa Garretson	

Emergency Laboratory Name _____	**Office Phone - -** **After Hours Phone - -**
Address _____	**Cell Phone - -** **Email** _____
Hours of Operation _____	
Contact Name _____	

C. Routine, Repeat, and Triggered Source Sample Locations*

Location/Address for **Routine Sample Sites**	Location/Address for **Repeat Sample Sites**	Groundwater Sources for **Triggered Sample Sites****
X1. Sample Station - Shadberry	**1-1.** Sample Station - Shadberry	**S01**
	1-2. 9134 Shadberry Dr	**S02**
	1-3. 9130 Shadberry Dr	**S03**
		S04
		S05
		S06
X2. Sample Station - Summerfield	**2-1.** Sample Station - Summerfield	**S01**
	2-2. 9620 Summerfield Lp	**S02**
	2-3. 9608 Summerfield Lp	**S03**
		S04
		S05
		S06
X3. Sample Station - Pinedrop	**3-1.** Sample Station - Pinedrop	**S01**
	3-2. 9433 Pinedrop Ct	**S02**
	3-3. 9436 Pinedrop Ct	**S03**
		S04
		S05
		S06

Location/Address for **Routine Sample Sites**	Location/Address for **Repeat Sample Sites**		Groundwater Sources for **Triggered Sample Sites****
X4. Sample Station - Deerbrush	**4-1.**	Sample Station - Deerbrush	**S01**
	4-2.	604 Deerbrush Lp	**S02**
	4-3.	637 Bavarian Ln	**S03**
			S04
			S05
			S06
X5. Sample Station - Wisteria	**5-1.**	Sample Station - Wisteria	**S01**
	5-2.	1240 Wisteria Dr	**S02**
	5-3.	1236 Wisteria Dr	**S03**
			S04
			S05
			S06
X6. Sample Station - Clover	**6-1.**	Sample Station - Clover	**S01**
	6-2.	1317 Clover Lp	**S02**
	6-3.	1315 Clover Lp	**S03**
			S04
			S05
			S06

Location/Address for **Routine Sample Sites**	Location/Address for **Repeat Sample Sites**	Groundwater Sources for **Triggered Sample Sites****
X7. Sample Station - Rockcress	**7-1.** Sample Station - Maggee	**S01**
	7-2. 619 Maggee St	**S02**
	7-3. 633 Maggee St	**S03**
		S04
		S05
		S06
X8. Sample Station - Maggee	**8-1.** Sample Station -Rockcress	**S01**
	8-2. 1639 Rockcress Dr	**S02**
	8-3. 1649 Rockcress Dr	**S03**
		S04
		S05
		S06

**** When you collect the repeats, you must sample every groundwater source that was in use when the original routine sample was collected.**

Important Notes for Sample Collector:

- Collect samples early in the month and early in the week.
- Check the sample sit/ tap before filling the bottle to make sure there is no reason to invalidate the sample result.
- Do not samples in week when key staff are on vacation or a holiday as it may create schedule conflicts.
- If a sample site is no longer a good sample site, substitute an acceptable site in the same area. If the site issues persist, choose a new permanent site and update CMP accordingly.

D. Reduced Triggered Source Monitoring Justification (add sheets as needed):

E. Routine Sample Rotation Schedule

Month	Routine Site(s)	Month	Routine Site(s)
January	X1 – X2 – X3	July	X3 – X4 – X5
February	X4 – X5 – X6	August	X6 – X7 – X8
March	X7 – X8 – X1	September	X1 – X2 – X3
April	X2 – X3 – X4	October	X4 – X5 – X6
May	X5 – X6 – X7	November	X7 – X8 – X1
June	X8 – X1 – X2	December	X2 – X3 – X4

F. Level 1 and Level 2 Assessment Contact Information

Name WADOH SW Office of Drinking Water	Office Phone 360-236-3030 After Hours Phone 877-481-4901
Address 243 Israel Road S.E. 2nd floor Tumwater, WA 98501	Email
Name	Office Phone - - After Hours Phone - -
Address	Email

G. *E. coli*-Present Sample Response

Distribution System *E. coli* Response Checklist				
Background Information	**Yes**	**No**	**N/A**	**To Do List**
We inform staff members about activities within the distribution system that could affect water quality.	☒	☐	☐	☐
We document all water main breaks, construction & repair activities, and low pressure and outage incidents.	☒	☐	☐	☐
We can easily access and review documentation on water main breaks, construction & repair activities, and low pressure and outage incidents.	☒	☐	☐	☐
Our Cross-Connection Control Program is up-to-date.	☒	☐	☐	☐
We test all cross-connection control devices annually as required, with easy access to the proper documentation.	☒	☐	☐	☐
We routinely inspect all treatment facilities for proper operation.	☒	☐	☐	☐
We identified one or more qualified individuals who are able to conduct a Level 2 assessment of our water system.	☒	☐	☐	☐
We have procedures in place for disinfecting and flushing the water system if it becomes necessary.	☒	☐	☐	☐
We can activate an emergency intertie with an adjacent water system in an emergency.	☒	☐	☐	☐
We have a map of our service area boundaries.	☒	☐	☐	☐
We have consumers who may not have access to bottled or boiled water.	☐	☒	☐	☐
There is a sufficient supply of bottled water immediately available to our customers who are unable to boil their water.	☒	☐	☐	☐
We have identified the contact person at each day care, school, medical facility, food service, and other customers who may have difficulty responding to a Health Advisory.	☒	☐	☐	☒
We have messages prepared and translated into different languages to ensure our consumers will understand them.	☒	☐	☐	☒
We have the capacity to print and distribute the required number of notices in a short time period.	☒	☐	☐	☐
Policy Direction	**Yes**	**No**	**N/A**	**To Do List**
We have discussed the issue of *E. coli*-present sample results with our policy makers.	☒	☐	☐	☐
If we find *E. coli* in a routine distribution sample, the policy makers want to wait until repeat test results are available before issuing advice to water system customers.	☐	☒	☐	☐
(Cont.)				

Distribution System *E. coli* Response Checklist

Potential Public Notice Delivery Methods	Yes	No	N/A	To Do List
It is feasible to deliver a notice going door-to-door.	☒	☐	☐	☐
We have a list of all of our customers' addresses.	☒	☐	☐	☐
We have a list of customer telephone numbers or access to a Reverse 9-1-1 system.	☒	☐	☐	☐
We have a list of customer email addresses.	☒	☐	☐	☐
We encourage our customers to remain in contact with us using social media.	☒	☐	☐	☐
We have an active website we can quickly update to include important messages.	☒	☐	☐	☐
Our customers drive by a single location where we could post an advisory and expect everyone to see it.	☒	☐	☐	☐
We need a news release to supplement our public notification process.	☐	☒	☐	☐

Distribution System *E. coli* Response Plan

If we have *E. coli* in our distribution system we will immediately:

1. Call DOH.
2. Collect repeat and triggered source samples per Part D. Collect additional investigative samples as necessary.
3. Inspect our water system facilities
4. Interview staff to determine whether anything unusual was happening in the water system service area, especially since the previous month's samples.
5. Review new construction activities, water main breaks, and pressure outages that may have occurred during the previous month.
6. Review Cross-Connection Control Program status.
7. Discuss whether a Health Advisory is warranted based on the findings of steps 3-6. Issue advisory if necessary.
8. Await repeat sample results and respond appropriately:

    a. Repeats all satisfactory-Lift HA, if one was issued.
    b. Any repeat unsatisfactory-Issue HA if not already in place. Host DOH for a system inspection and respond appropriately to any inspection findings.

E. coli-Present Triggered Source Sample Response Checklist – All Sources

Background Information	Yes	No	N/A	To Do List
We review our sanitary survey results and respond to any recommendations affecting the microbial quality of our water supply.	☒	☐	☐	☐
We address any significant deficiencies identified during a sanitary survey.	☒	☐	☐	☐
There are contaminant sources within our Wellhead Protection Area that could affect the microbial quality of our source water, and	☐	☒	☐	☐
If yes, we can eliminate them.	☐	☐	☒	☐
We routinely inspect our well site(s).	☒	☐	☐	☐
We have a good raw water sample tap installed at each source.	☒	☐	☐	☐
After we complete work on a source, we disinfect the source, flush, and collect an investigative sample.	☒	☐	☐	☐
Public Notice	**Yes**	**No**	**N/A**	**To Do List**
We discussed the requirement for immediate public notice of an *E. coli*-present source sample result with our water system's governing body (board of directors or commissioners) and received direction from them on our response plan.	☒	☐	☐	☐
We discussed the requirement for immediate public notice of an *E. coli*-present source sample result with our wholesale customers and encouraged them to develop a response plan.	☒	☐	☐	☐
We have prepared templates and a communications plan that will help us quickly distribute our messages.	☒	☐	☐	☐

E. coli-Present Triggered Source Sample Response Checklist – Source ALL

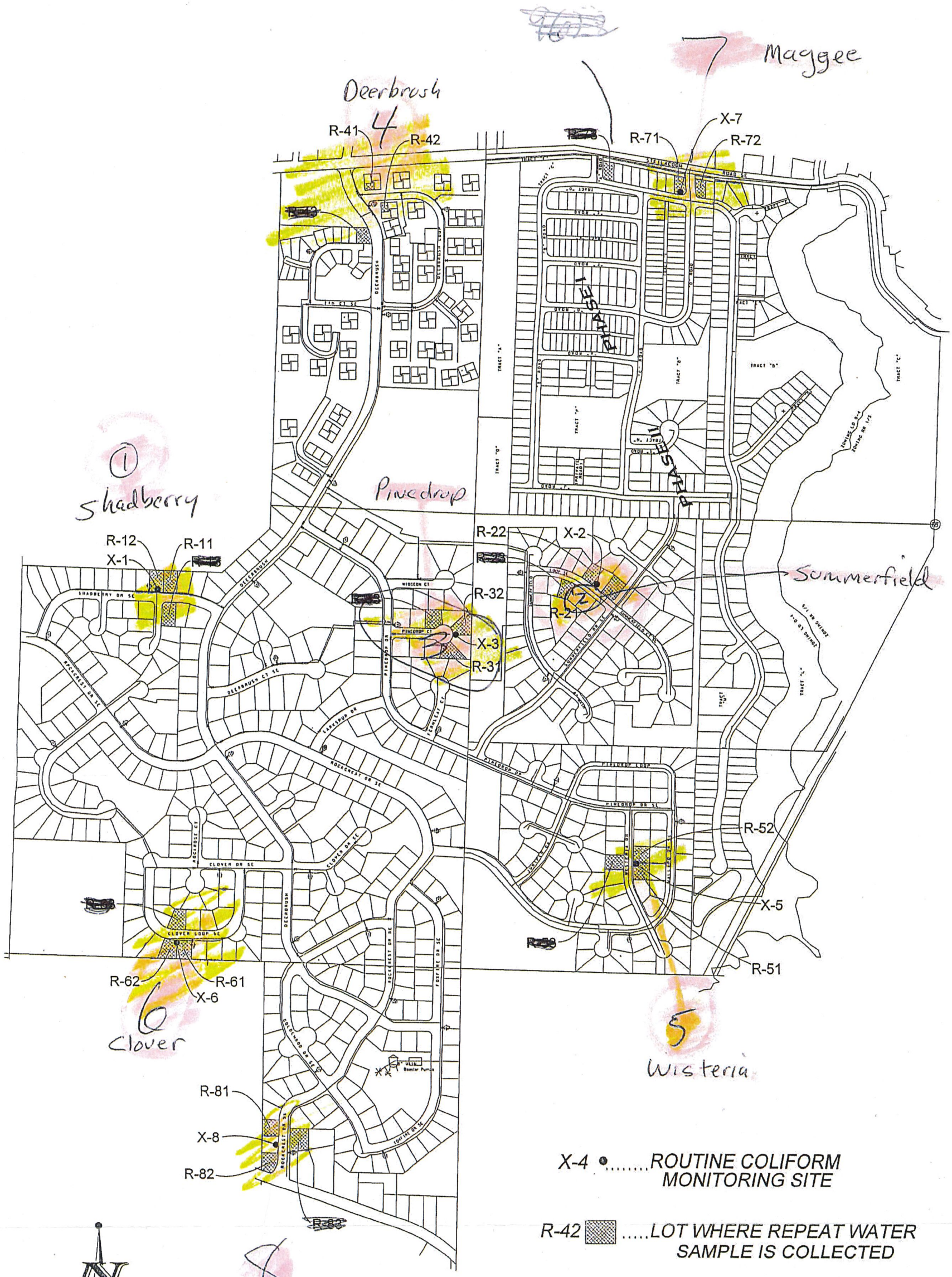
Alternate Sources	Yes	No	N/A	To Do List
We can stop using this source and still provide reliable water service to our customers.	☒	☐	☐	☐
We have an emergency intertie with a neighboring water system that we can use until corrective action is complete (perhaps for several months).	☒	☐	☐	☐
We can provide bottled water to all or part of the distribution system for an indefinite period.	☒	☐	☐	☐
We can quickly replace our existing source of supply with a more protected new source.	☒	☒	☐	☐
Temporary Treatment	**Yes**	**No**	**N/A**	**To Do List**
This source is continuously chlorinated, and our existing facilities can provide 4-log virus treatment (CT = 6) before the first customer. If yes, at what concentration? _____ mg/L	☐	☒	☐	☐
We can quickly introduce chlorine into the water system and take advantage of the existing contact time to provide 4-log virus treatment to a large portion of the distribution system.	☒	☐	☐	☐
We can reduce the production capacity of our pumps or alter the configuration of our storage quantities (operational storage) to increase the amount of time the water stays in the system before the first customer to achieve CT = 6.	☐	☒	☐	☐
We can alter the demand for drinking water (maximum day or peak hour) through conservation messages to increase the time the water is in the system prior to the first customer in order to achieve 4-log virus treatment with chlorine.	☐	☒	☐	☐

*NOTE: If your system has multiple sources, you may want to complete a separate checklist for each source.

E. coli-Present Triggered Source Sample Response Plan – Source ALL

If we have *E. coli* in Source ___ water we will immediately:

1. Call DOH.
2. Shut Off S01
3. Distribute required notice, including conservation message
4. Interview staff
5. Keep S01 off-line



X-4 .....ROUTINE COLIFORM MONITORING SITE

R-42 .....LOT WHERE REPEAT WATER SAMPLE IS COLLECTED

HATTON GODAT PANTIER

NO SCALE

MEADOWS WATER SYSTEM

COLIFORM MONITORING PLAN
BACTERIA SAMPLING SITES

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