

REVISED TOTAL COLIFORM RULE (RTCR)
COLIFORM SAMPLING PLAN FOR ALL PUBLIC WATER SYSTEMS
SERVING A POPULATION OVER 1,000

System Information							
System Name:	<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 30%;">WSID Number:</td> <td>System Type (check one):</td> </tr> <tr> <td></td> <td> <input type="checkbox"/> TNC <input type="checkbox"/> NTNC <input type="checkbox"/> Community </td> </tr> </table>	WSID Number:	System Type (check one):		<input type="checkbox"/> TNC <input type="checkbox"/> NTNC <input type="checkbox"/> Community		
WSID Number:	System Type (check one):						
	<input type="checkbox"/> TNC <input type="checkbox"/> NTNC <input type="checkbox"/> Community						
# of Service Connections:	<table style="width: 100%; border-collapse: collapse;"> <tr> <td colspan="2">Source Water Type (check one):</td> </tr> <tr> <td><input type="checkbox"/> Groundwater</td> <td><input type="checkbox"/> Surface Water/GWUDI</td> </tr> <tr> <td colspan="2"><input type="checkbox"/> Consecutive</td> </tr> </table>	Source Water Type (check one):		<input type="checkbox"/> Groundwater	<input type="checkbox"/> Surface Water/GWUDI	<input type="checkbox"/> Consecutive	
Source Water Type (check one):							
<input type="checkbox"/> Groundwater	<input type="checkbox"/> Surface Water/GWUDI						
<input type="checkbox"/> Consecutive							
System Population:	# of Pressure Zones:						
Number of Monthly Routine Samples Required (check one, based on the system's population served): <input type="checkbox"/> 2 (1,001 – 2,500) <input type="checkbox"/> 3 (2,501 – 3,300) <input type="checkbox"/> 4 (3,301 – 4,100) <input type="checkbox"/> 5 (4,101 – 4,900) <input type="checkbox"/> 6 (4,901 – 5,800) <input type="checkbox"/> 7 (5,801 – 6,700) <input type="checkbox"/> 8 (6,701 – 7,600) <input type="checkbox"/> 9 (7,601 – 8,500) <input type="checkbox"/> 10 (8,501 – 12,900) <input type="checkbox"/> >10 (12,901+)							
Number of Distribution Systems (check one): <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> more than 3. If the system has more than one distribution system, identify the distribution system to which this form pertains: DS00 _____							

Instructions for completion: This form is designed to be completed by all public drinking water systems serving a population over 1,000. **Systems over 5,800 in population will either need to attach additional sheets to complete Tables 1 and 2 or are authorized to submit a custom sampling plan identifying Routine Sampling Locations and either a) Repeat locations upstream and downstream as required on this form or b) pre-determined Repeat sampling locations and justification for why those repeat locations were chosen.** For systems with multiple unique distribution systems, a separate sampling plan for each distribution system is required. Attach a map with this plan. The map must include the water system name and identification (WSID) number, clearly labeled coliform sampling locations that are included in this plan, clearly labeled groundwater source water sampling tap location(s) (if the system utilizes groundwater), locations served by the system, directional flow of the system and major water system infrastructure such as: all sources, treatment facilities, storage tanks, pump stations, pressure zones, and major distribution lines.

Repeat Sampling: If the system has a total coliform or E. coli presence in a routine compliance sample, collection of 3 repeat samples is required for each routine positive sample. That means if two routine monthly samples are positive in a month, the system is required to take **six** repeat samples, three samples for each routine positive sample. Repeat sampling locations include: Repeat Sample #1 at the location where the original positive sample was taken; Repeat Sample location #2 within 5 connections upstream (toward from the well/source of water) of the original positive; and Repeat Sample location #3 within 5 connections downstream (away from the well/source of water). This form allows a system to list all 5 connections upstream/downstream although only one location is required. **All sample locations used for compliance purposes under the Revised Total Coliform Rule must be identified on this form.** Groundwater Systems or surface water systems that also use groundwater are also required to take triggered source water samples from each groundwater source that was active at the time of the routine positive as required by the Groundwater Rule.

	Routine Location Address	Justification	5 Connections Upstream For repeat locations Numbers 2 – 5 are optional	5 Connections Downstream For repeat locations Numbers 2 – 5 are optional
1	Routine Location 1 (Base): _____		1	1
			2	2
			3	3
			4	4
			5	5
2	Routine Location 2: _____		1	1
			2	2
			3	3
			4	4
			5	5
3	Routine Location 3: _____		1	1
			2	2
			3	3
			4	4
			5	5
4	Routine Location 4: _____		1	1
			2	2
			3	3
			4	4
			5	5
5	Routine Location 5: _____		1	1
			2	2
			3	3
			4	4
			5	5
6	Routine Location 6: _____		1	1
			2	2
			3	3
			4	4
			5	5
7	Routine Location 7: _____		1	1
			2	2
			3	3
			4	4
			5	5

Table 1 – Sampling Locations

Instructions: The locations for all routine samples taken for compliance purposes must be identified in this table. 1) List up to 7 routine monitoring locations. If more space is needed, attach additional sheets. Systems over 5,800 in population may submit a custom sampling plan in lieu of this form or attach additional sheets. These are the locations where the required routine monthly compliance samples are to be collected. If possible, list the 911 addresses for each location. If 911 addresses are not available, list where the samples are taken; 2) Explain why the system chooses to sample at each routine location under the “Justification” column; and 3) List at least 1 and up to 5 repeat locations within 5 connections upstream and 5 connections downstream of each Routine sampling location listed.

Table 2 – Monthly Monitoring

To be completed by all **public water systems serving more than 1,000 users**. Systems can list up to six routine samples each month on this form. If the system serves a population of over 5,800, attach extra sheets or submit a custom plan identifying routine sampling locations to be taken each month.

Month	Routine Sampling Locations	
January	1	4
	2	5
	3	6
February	1	4
	2	5
	3	6
March	1	4
	2	5
	3	6
April	1	4
	2	5
	3	6
May	1	4
	2	5
	3	6
June	1	4
	2	5
	3	6
July	1	4
	2	5
	3	6
August	1	4
	2	5
	3	6
September	1	4
	2	5
	3	6
October	1	4
	2	5
	3	6
November	1	4
	2	5
	3	6
December	1	4
	2	5
	3	6

Table 3 – Groundwater Source Information

For systems that utilize groundwater or that serve the system with a mixture of groundwater and surface water. Provide the names/numbers of groundwater sources (wells, springs, etc.) and the source sample tap location at which each source may be sampled **prior to any treatment**.

Attach additional sheets if necessary

Source Name/Number	Source Sample Tap Location (as shown on the attached map)	Is this a combined source sampling location?
Source 1:		
Source 2 (if applicable):		
Source 3 (if applicable):		
Source 4 (if applicable):		

Checklist Prior to Form Submission:

- A map, including the following information:
 - o Water system name and identification (WSID) number,
 - o Clearly labeled coliform sampling locations that are included in this plan,
 - o Clearly labeled groundwater source sample tap locations for systems that utilize groundwater in any portion of the system,
 - o Locations served by the system,
 - o Directional flow of the system, and
 - o All major water system infrastructure such as:
 - o Sources,
 - o Treatment facilities,
 - o Storage tanks,
 - o Pump stations,
 - o Pressure zones, and
 - o Major distribution lines.
- All required tables are complete, including:
 - o Complete basic system information on page 1,
 - o Justification for each routine sampling location,
 - o At least one repeat location within 5 connections upstream and 5 connections downstream of each routine location,
 - o Monthly routine Sampling locations identified as required in Table 2,
 - o All ground water sources and source sample tap locations identified in Table 3.
- Make and retain a copy of this plan for Water System records.

Signature of System Owner or Administrative Contact

I have read the Coliform Sampling Plan Guidance document and certify that the above information is true and accurate to the best of my knowledge.

Signature:	Date:
Printed Name:	Title:

Return this form to:

Community and NTNC Systems	TNC Systems
David Love Drinking Water and Groundwater Protection Division 1 National Life Drive, Davis 4 Montpelier, VT 05620-3521 Phone: 802-585-4902 Fax: 802-828-1541	Jeff Girard Drinking Water and Groundwater Protection Division 1 National Life Drive, Davis 4 Montpelier, VT 05620-3521 Phone: 802-585-0314 Fax: 802-828-1541

COLIFORM SAMPLING PLAN GUIDANCE

The Revised Total Coliform Rule requires all public water systems to sample in accordance with a written sampling plan subject to review, revision and approval by the Drinking Water and Groundwater Protection Division (Division). The purpose of the sampling plan is to ensure that sample locations monitored for contamination represent the entire distribution system. For systems with multiple unique distribution systems, a separate monitoring plan is required for each distribution system.

Instructions for completing the tables

- **Table 1:** This table is intended to capture all possible routine coliform monitoring locations within a water system. Wherever possible utilize the 911 address for each sample location. Routine sample locations include the Routine Location 1 (Base) site and additional locations based on system size and/or complexity. These locations should not be located at the far ends of lines, to allow for repeat locations to be further downstream than the routine sample location. In the “justification” column, identify why each location has been selected for sampling. Possible justification for sampling locations can be: “center of distribution”, “hospital with vulnerable population”, “west end of distribution”, “high pressure zone”, “low pressure zone”, etc. in order to capture the population served by the system, the system complexity, and potential changes in water quality that may arise throughout the distribution system.
- **Table 2:** This table identifies sampling locations for a system sampling up to six locations per month. If additional space is needed to accommodate more monthly samples, please attach additional sheets or submit a custom sampling plan to the Division for review and approval. Locations must either alternate each month or be repeated from month to month. If a system takes several monthly samples and repeats the same locations from month to month, the locations must represent the entire distribution system adequately. If the locations alternate from month to month, the system’s Routine Location 1 (Base) must be sampled every other month.
- **Table 3:** Identifies groundwater source water sample tap locations. This must be completed by groundwater systems or systems that blend surface water and ground water.

Routine Monthly Sampling Frequency

Population	Number of Samples	Population	Number of Samples
25 – 1,000	1	7,601 – 8,500	9
1,001 – 2,500	2	8,501 – 12,900	10
2,501 – 3,300	3	12,901 – 17,200	15
3,301 – 4,100	4	17,201 – 21,500	20
4,101 – 4,900	5	21,501 – 25,000	25
4,901 – 5,800	6	25,001 – 33,000	30
5,801 – 6,700	7	33,001 – 40,000	40
6,701 – 7,600	8	40,001 – 50,000	50

Distribution Sampling Location and Rationale

Locate the Routine Location 1 (Base) compliance sample location near the center of the distribution system either geographically or based on the population center of the system. The Routine 1 (Base) location must be sampled every other month unless all sampling locations are repeated every month. Select additional sample locations, based on the population and complexity of the water system and the availability of suitable sampling locations, to represent the entire distribution system. All samples collected at these locations are considered distribution samples and must be denoted as such on the laboratory sample collection / chain-of-custody forms.

Please note that if there is more than one pressure zone, each zone must have a sample that is representative of that zone. Different pressure zones create isolation zones from the rest of the system which may produce areas of vulnerability. These locations must be listed as Routine Sampling locations in **Table 1**.

Sample Collection and submittal to the Laboratory

Refer to the laboratory's sampling instructions for important collection information. If the system utilizes a chemical disinfectant at the time the coliform sample is collected, the free chlorine residual must be measured at the time when the coliform sample is collected and recorded on the sample collection/chain-of-custody form that is submitted with the coliform sample to the laboratory. If utilizing a chemical disinfectant and no free chlorine is present, measure and record the total chlorine and record on the form. Identify sample locations on the form using the 911 address wherever possible. The Water System Identification (WSID) Number must be included on the sample collection /chain-of-custody form as well as other sample identification information. This information is listed on the system monitoring schedule issued by the Division (Facility ID, Sample Point ID). Remember to record the coliform sample type – Routine (RT), Repeat (RP) or Triggered Groundwater source sample (TG).

Repeat Samples

If the system receives a positive result during routine monitoring, collection of three repeat samples within 24 hours of notification of the positive result is required. Systems need to take three repeat samples for each positive routine sample. Always keep sufficient sample bottles on hand at any given time so that the system is able to collect repeat samples within the 24-hour time requirement. The Revised Total Coliform Rule requires that the extent and severity of the contamination be examined through the repeat sampling. If the water system does not normally disinfect, please do not turn on the disinfection system before all repeat samples are collected, unless directed to do so by the Division. All repeat samples must be taken on the same day. The system must take:

1. One sample from the original sample location.
2. One sample from a tap within five connections upstream of the original sample point.
3. One sample from a tap within five connections downstream of the original sample point.
4. If the system is served by groundwater, then a source sample will be required from each source that was active as of the time of the routine positive sample for Groundwater Rule compliance purposes.

Systems serving more than 5,800 users may choose to follow the above requirements for repeat samples or submit a Standard Operating Procedure that identifies pre-determined repeat sampling locations along with the justification behind why the system has selected these repeat locations. The Division will review and consider this Standard Operating Procedure as part of the overall approval of the coliform sampling plan.

Return to Routine Monitoring Schedule

Systems sampling on a monthly schedule do not have any special sampling requirements during the month following a coliform positive sampling result; systems resume normal monthly monitoring at the approved sampling locations and frequency the next month.

This form and related environmental information are available electronically via the internet. For information visit the Drinking Water and Groundwater Protection Division website directly at www.dec.vermont.gov/water.

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