Iowa Department of Natural Resources

Public Water Supply Bacteria Sampling Plan Requirements for Surface Water/IGW Systems Collecting Two or More Monthly Samples

Instructions:
Attached is a model sampling plan for a public water supply using surface water or influenced groundwater that is required to collect two or more routine bacteria samples on a monthly basis.

This plan covers the sample collection requirements and recommendations for the Revised Total Coliform Rule (RTCR), per 567—IAC 41.2(1)"c". Systems must collect total coliform samples at sites which are representative of water throughout the distribution system according to a written sample siting plan. Major elements of the plan shall include but are not limited to:

- Map of the distribution system served by the system;
- List of routine compliance sample locations for each sample period;
- List of repeat compliance sample locations for each routine compliance sample location;
- Any other sample locations necessary to meet the rule requirements;
- Sample collection schedule;
- Proper sample collection techniques; and,
- Log of samples taken.

The plan shall be reviewed by the public water supply system every two years, updated as needed, and shall be retained on file at the facility. The plan must be made available to the DNR upon request and during sanitary surveys, and must be revised by the system as directed by the department. Failure to have and to maintain the plan is a significant deficiency.

Any time a system wishes to collect a coliform bacteria sample for operational control purposes, such sample should be labeled Special (SP). Special samples cannot be used for compliance purposes and positive results do not trigger additional monitoring. Samples cannot be changed from Special to Routine or from Routine to Special once the results have been transmitted by the laboratory without DNR approval.

This sampling plan should be provided to and reviewed by all persons responsible for collection of bacteria samples. The model plan may be modified as needed as long as the required components as listed in the rules are contained in the plan. Add additional pages as needed.

If you should have any questions please contact the DNR:

Regional Field Offices

FO 1, Manchester	563-927-2640
FO 2, Mason City	641-424-4073
FO 3, Spencer	712-262-4177
FO 4, Atlantic	712-243-1934
FO 5, Des Moines	515-725-0268
FO 6, Washington	319-653-2135

Water Supply Section, Des Moines
515-725-8200
Fax: 515-725-8201

Include your 7-digit Public Water Supply Identification number (PWSID)/Permit Number located on the front page of your operation permit on all correspondence and sampling sheets. This number should also be used when contacting your contract lab or the DNR.

Surface Water/Influenced Groundwater Bacteria Sampling Plan

PWS Name: _____ PWSID: _____

Two or More Samples per Month Bacteria Sampling Plan

A. Sampling Plan for System

The operator will collect the required number of bacteria samples on a monthly basis as required in the public water supply operation permit. The bacteria samples shall be collected at various locations throughout the distribution system. In order to avoid a concentration of samples in certain areas of the distribution system, a distribution system map is attached with all of the planned sampling locations marked for the year.

Using this sampling plan, the water supply is able to provide an adequate, uniform representation of the water throughout the distribution system. Please note that higher risk or more vulnerable areas are recommended to be sampled at a higher frequency. Examples of these include:

- Schools
- Day care facilities
- Hospitals, nursing homes
- Mobile home parks

The sampling locations for the year are listed on the Sample Collection Schedule. These sample locations are shown on the Distribution System Map. When the samples are collected, document the locations and sampling information on the Sampling Plan Log. Any deviation from the Sample Collection Schedule should be documented on the Log.

If coliform bacteria are detected in the routine (RT) sample (referred to as a total coliform-positive sample) after analysis by the laboratory, the system must react immediately and collect repeat (RP) samples within 24 hours of notification of the coliform-positive sample. The repeat samples must be collected on the same day unless otherwise approved by the DNR. In addition, the repeat samples must be analyzed by the same laboratory that analyzed the positive routine sample unless approved by the DNR.

The system is required to collect _____ (routine (RT) samples per month, which must be collected on separate days, at regular intervals, during the month. If notified by the laboratory or DNR that a routine sample has tested positive for coliform bacteria, the system must take three repeat (RP) samples for each coliform-positive routine sample. The repeat locations must be identified in this sampling plan for each routine sample location.

- One repeat sample must be collected at the location of the coliform-positive routine sample.
- A second repeat sample must be collected within five (5) service connections above or upstream of the coliform-positive sample location.
- A third repeat sample must be collected within five (5) service connections below or downstream of the coliform-positive sample location.

If the water supply is unable to meet the repeat monitoring specifications as noted above (location or timeframe), an alternate location or time extension must be requested. The DNR must be contacted within 24 hours of notification of the coliform-positive sample to approve any alternate location or time extension.

Reasons for such a request may be as follows:

1. Coliform-positive sample located at a “dead end line.”
2. Coliform-positive line supplying one serviced customer; i.e., country club, school, etc.
3. Coliform-positive sample collected from a dwelling that cannot be re-entered in a timely manner: i.e., residents on vacation, residents gone south for winter, residents’ refusal.
4. System needs to obtain additional sample bottles.
5. Laboratory is unable to process samples within 24 hours of collection (weekends, holidays).

If the system has more than one coliform-positive routine or repeat sample, there are additional steps it must take for system assessments and could include additional repeat samples. The DNR will instruct the system on those steps at that time.

B. Proper Sampling Technique for Bacteria Drinking Water Samples

The following recommendations regarding sample collection technique are to ensure that the sample is representative of the drinking water quality in the distribution system, and not the result of a drinking water sample that was improperly collected. Four instructional You-Tube videos are available from the DNR's website: http://www.iowadnr.gov/WS-Training-Videos. Two are on the RTCR requirements, one is the Bacteria Sample Collection Procedure, and the last is the Chlorine Sample Collection Procedure.

1. Be sure that you have the correct sterile sample bottle for coliform bacteria sample collection. If you provide continuous chlorination of your water supply, the sample bottle must contain a dechlorinating agent. Check with your laboratory if you are not sure. Minimum sample volume for analysis is 100mL; bottles will be at least 125mL.

2. Avoid collecting a sample from the following locations:
   a. Faucets with hose or sprayer attached
   b. Faucets served by home softening units or home treatment units
   c. Hoses or outside faucets/sillcocks
   d. Swivel "bar type" or "swing arm" faucets
   e. Frost-proof hydrants
   f. Sprinkler systems for fire protection
   g. Meter pits
   h. Fire hydrants, blow-off, or clean-outs
   i. Taps or sinks that are dirty
   j. Taps that are leaking at the base of the faucet or at the handles

3. Collect the sample using the following procedure:
   a. Remove any hose attachments
   b. Remove any aerator or "screen" on the end of the faucet
   c. Ensure that the faucet is clean from contamination
   d. Run the cold water for 3-5 minutes or for sufficient time to clear the service line
   e. Do not rinse out the bottle
   f. Throttle tap back to smooth flow, about the width of a pencil
   g. Ensure the water does not splash
   h. Do not adjust the flow while sampling
   i. Remove the bottle cap and hold in one hand; hold bottle in the other
   j. Do not touch the inside of the cap or set the cap down
   k. Do not touch the lip or the inside of the bottle
   l. Fill the bottle to within ½ inch of the top or to the mark on the bottle or as directed by your laboratory
   m. Remove the bottle from the stream of water and immediately cap it. Do not overly tighten the cap or it may split.

You may now turn the water off and fill out the sample analysis sheet.

The sample must reach the lab so that the test (incubation) is begun within 30 hours of collection. It is recommended but not required to hold samples below 10°C (50°F) during transit.

The SW/IGW system must measure and record the free and total chlorine residual disinfectant concentration at least at the same points in the distribution system and at the same time as routine and repeat total coliform bacteria samples are collected. Those residual disinfectant measurements may be used in lieu of separate distribution samples required

under the surface water treatment rule for that day. The system shall report the residual disinfectant concentration to the laboratory with the bacteria sample on the sample collection form.

List persons authorized to collect bacteria samples:

Sample Collection Schedule

List each Routine (RT) sample address for the month, followed by the Repeat (RP) sample location within 5 connections upstream and 5 connections downstream for that Routine site.

January:

Routine Location: _____

Repeat (up): _____

Repeat (down): _____

Routine Location: _____

Repeat (up): _____

Repeat (down): _____

February:

Routine Location: _____

Repeat (up): _____

Repeat (down): _____

Routine Location: _____

Repeat (up): _____

Repeat (down): _____

March:

Routine Location: _____

Repeat (up): _____

Repeat (down): _____

Routine Location: _____

Repeat (up): _____

Repeat (down): _____

April:

Routine Location: _____

Repeat (up): _____

Repeat (down): _____

Routine Location: _____

Repeat (up): _____

Repeat (down): _____

May:

Routine Location: _____

Repeat (up): _____

Repeat (down): _____

Routine Location: _____

Repeat (up): _____

Repeat (down): _____

June:

Routine Location: _____

Repeat (up): _____

Repeat (down): _____

Routine Location: _____

Repeat (up): _____

Repeat (down): _____

July:

Routine Location: _____

Repeat (up): _____

Repeat (down): _____

Routine Location: _____

Repeat (up): _____

Repeat (down): _____

August:

Routine Location: _____

Repeat (up): _____

Repeat (down): _____

Routine Location: _____

Repeat (up): _____

Repeat (down): _____

September:

Routine Location: _____

Repeat (up): _____

Repeat (down): _____

Routine Location: _____

Repeat (up): _____

Repeat (down): _____

October:

Routine Location: _____

Repeat (up): _____

Repeat (down): _____

Routine Location: _____

Repeat (up): _____

Repeat (down): _____

November:

Routine Location: _____

Repeat (up): _____

Repeat (down): _____

Routine Location: _____

Repeat (up): _____

Repeat (down): _____

December:

Routine Location: _____

Repeat (up): _____

Repeat (down): _____

Routine Location: _____

Repeat (up): _____

Repeat (down): _____

Map of System

Indicate all sample locations, wells, treatment plant, and storage reservoirs

Sampling Plan Log

Record the sample collection information for each sample

Month/ Year	Section	Location	Sample Type*	Collection		By	Chlorine (ppm)		#RTCR Samples Collected during month (RT+RP)	Comments	Lab Report Received
				Date	Time		Free	Total			
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*RT - Routine, RP - Repeat, S - Special

Sampling Plan Log

Record the sample collection information each month in this log for each sample

Month/ Year	Section	Location	Sample Type*	Collection		By	Chlorine (ppm)		#RTCR Samples Collected during month (RT+RP)	Comments	Lab Report Received
				Date	Time		Free	Total			
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*RT - Routine, RP - Repeat, SP - Special