



Environment and Labour

PROCEDURE

REGISTERED PUBLIC DRINKING WATER SUPPLIES - OPERATIONAL BULLETIN FOR ADDRESSING WATER QUALITY EXCEEDENCES

Approved by: Gerard MacLellan

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Effective: April 27, 2005

Version Control: Replaces "Operational Bulletin - Registered Drinking Water Supplies - Procedure for Handling of Positive Test Results and/or Non-Compliance" dated October 24, 2000.

Latest Revision - Administrative Amendments - January 5, 2006

TABLE OF CONTENTS

1.	INTRODUCTION	1
2.	AUTHORITY	1
3.	CORRECTIVE ACTION TO BE TAKEN WHEN BACTERIA ARE PRESENT ..	2
3.1	Immediate Notification	2
3.2	Dug and Drilled Well Water Sources	2
3.2.1	No Obvious Signs of Well Construction Problems	2
3.2.2	Obvious Signs of Well Construction Problems	4
3.3	Surface Water Supplies	4
3.4	Boil Water Advisories	5
3.5	Boil Water Advisory Protocol and Signage	5
3.5.1	Initiating the Boil Water Advisory	5
3.5.2	Procedure for Notification of Boil Water Advisory	6
3.5.3	Instructions for Boiling and Disinfecting Tap Water	6
3.5.4	Removing the Boil Water Advisory	7
3.6	Consultation With Other Departments	7
3.7	Ultraviolet (UV) Disinfection - Drinking Water Applicability	7

4.	CORRECTIVE ACTIONS TO BE TAKEN WITH CHEMICAL/PHYSICAL/RADIOLOGICAL EXCEEDENCES	7
4.1	Immediate Notification	7
4.2	Re-sample to Confirm Exceedence	8
4.3	Consult with MOH	8
4.4	Action Plan Components	8
4.4.1	Determine Why the Water Supply Exceeds the MAC or IMAC ..	9
4.4.2	Select Corrective Action	10
4.4.3	Action Plan Schedule	10
4.4.4	Collect a Post-Corrective Action Sample	11
4.5	Check-list	11
5.	ADDITIONAL MATERIAL	12
	• Action Plan Check-list	
	• Summary of Operational Procedures for Registered Supplies - Microbiological Exceedences	
	• Summary of Operational Procedures for Registered Supplies - Chemical/Physical/Radiological Exceedences	
	• Signage for Microbiological Contamination	
	• Posted by Owner/Proprietaire	
	• Posted by Nova Scotia Environment and Labour	
	• Signage for Chemical/Physical/Radiological Contamination	
	• Posted by Owner/Proprietaire	
	• Posted by Nova Scotia Environment and Labour	
	• Water Supply Investigation - Qualified Persons Report	

1. INTRODUCTION

Section 33 of the *Water and Wastewater Facilities and Public Drinking Water Supplies Regulations* requires an owner of a public drinking water supply to regularly monitor drinking water quality for the parameters listed in the *Guidelines for Monitoring Public Drinking Water Supplies*, as well as other substances as may be required by the Minister or an Administrator. Samples are to be collected in the manner and with the frequency set out in the *Guidelines for Monitoring Public Drinking Water Supplies* or as required by the Minister or Administrator.

Drinking water quality testing is to be completed by approved laboratories in accordance with the Policy for the Accreditation of Laboratories.

Section 34 of the *Water and Wastewater Facilities and Public Drinking Water Supplies Regulations* requires an owner of a public drinking water supply to:

- notify the department immediately upon becoming aware of not meeting the bacteriological and/or chemical criteria set out in the *Guidelines for Canadian Drinking Water Quality*; and
- take corrective action as set out in the guidelines or as may be required by the Minister or Administrator.

This guide outlines the corrective actions to be taken for:

- positive bacteria samples (see Section 3); and
- chemical/physical/radiological exceedences (see Section 4)

2. AUTHORITY

Section 35 of the *Water and Wastewater Facilities and Public Drinking Water Supplies Regulations* requires an owner of a public drinking supply to ensure that the microbiological, physical and chemical characteristics of the supply do not exceed the maximum acceptable concentration (MAC) or interim maximum acceptable concentration (IMAC) for substances listed in the *Guidelines for Canadian Drinking Water Quality*. As such, only the health-related guidelines set out in the *Guidelines for Canadian Drinking Water Quality* are legally enforceable standards that require corrective action (e.g. those with a MAC or IMAC).

Examples of health-related parameters include antimony, arsenic, barium, boron, cadmium, chromium, fluoride, lead, nitrate, selenium, and uranium. Turbidity is also a health-related parameter for surface water supplies and groundwater supplies under the direct influence of surface water.

Aesthetic objectives, such as those for chloride, colour, copper, iron, manganese, sodium, sulphate, total dissolved solids, or zinc are not enforceable unless they

compromise the disinfection process (if applicable). In this case, corrective action or other terms and conditions of a registration may be necessary to ensure safe drinking water.

3. CORRECTIVE ACTION TO BE TAKEN WHEN BACTERIA ARE PRESENT

3.1 Immediate Notification

An owner of a registered water supply shall contact Nova Scotia Environment and Labour (NSEL) immediately upon receipt of any sample results indicating the presence of total coliform or *E. coli*.

The lab shall also contact NSEL.

3.2 Dug and Drilled Well Water Sources

Where total coliform or *E. coli* are present, the owner shall:

1. immediately notify NSEL
2. immediately initiate a boil water advisory or seek an acceptable alternate potable water supply until satisfactory bacteriological quality is restored
3. immediately re-sample the supply

NSEL will respond within 24 hours. Based on this response, the following protocol will apply.

3.2.1 No Obvious Signs of Well Construction Problems

Where there are no obvious signs of well construction problems and the re-sample result confirms the presence of total coliform or *E. coli*, the owner shall:

1. immediately disinfect the water source as per the well disinfection procedure outlined in *Disinfection of Water Wells by Chlorination* at www.gov.ns.ca/enla/water/pdf/DisinfectWaterWell.pdf
2. re-sample the well 5 days after the well has been disinfected or after confirmatory tests, using a chlorine test kit, indicates the absence of chlorine residual

It is critical that there be no remaining chlorine residual prior to taking the re-sample from a well that is normally untreated (i.e. does not have a continuous chlorination system).

a) Positive Re-sample Following Disinfection

If the re-sample result indicates the presence of total coliform or *E. coli*, following disinfection, the owner shall immediately seek the expertise of a person qualified under the *Well Construction Regulations* to confirm the well is constructed properly. Any upgrading of the well to address deficiencies must meet the requirements of the *Well Construction Regulations*.

Once the well is confirmed to be constructed properly and contamination persists, the owner shall submit an action plan to NSEL outlining the corrective measures that will be taken to remediate the situation. The action plan shall be prepared by a qualified professional, complete with a schedule for implementation of the corrective measures and copies of any water quality results. The action plan shall be submitted to NSEL within 30 calendar days of the initial notification unless otherwise advised by NSEL.

The proposed action plan must be acceptable to NSEL. The acceptance of the proposed action plan does not preclude the owner from having to take additional corrective measures if the proposed action plan is unsuccessful at remediating the problem or from having to submit a revised or new action plan.

Qualified professionals may include licensed hydrogeologists, licensed engineers, or water treatment specialists.

b) Negative Re-sample Following Disinfection

If the re-sample results indicates the absence of total coliform or *E. coli* following disinfection, the owner shall continue following the *Guidelines for Monitoring Public Drinking Water Supplies*.

The boil water advisory would be removed by NSEL, in consultation with the Medical Officer of Health (MOH) and the owner, per the *Guidelines for Monitoring Public Drinking Water Supplies*. Under normal circumstances the boil water advisory would be removed when:

- the *Guidelines for Canadian Drinking Water Quality* for bacteriological parameters are met for two (2) consecutive sets of samples separated by a minimum of 24 hours; and
- the deficiencies which led to the boil water advisory are corrected.

3.2.2 Obvious Signs of Well Construction Problems

Where there are obvious signs of well construction problems, the owner shall immediately seek the expertise of a person qualified under the *Well Construction Regulations* to remediate the situation. Any upgrading of the well to address deficiencies must meet the requirements of the *Well Construction Regulations*.

Once the well is confirmed to be constructed properly and contamination persists, the owner shall submit an action plan to NSEL outlining the corrective measures that will be taken to remediate the situation. The action plan shall be prepared by a qualified professional, complete with a schedule for implementation of the corrective measures and copies of any water quality results. The action plan shall be submitted to NSEL within 30 calendar days of the initial notification unless otherwise advised by NSEL.

The proposed action plan must be acceptable to NSEL. The acceptance of the proposed action plan does not preclude the owner from having to take additional corrective measures if the proposed action plan is unsuccessful at remediating the problem or from having to submit a revised or new action plan.

Qualified professionals may include licensed hydrogeologists, licensed engineers or water treatment specialists.

Where corrective measures have failed to remediate problems related to the presence of total coliform or *E. coli*, treatment shall be required pursuant to Section 34 of the *Water and Wastewater Facilities and Public Drinking Water Supplies Regulations*.

3.3 Surface Water Supplies

Where total coliform or *E. coli* are present, the owner shall:

- immediately notify NSEL
- immediately initiate a boil water advisory or seek an acceptable alternate potable water supply until satisfactory bacteriological quality is restored
- immediately re-sample the supply

NSEL will respond within 24 hours. Based on this response, the following protocol will apply.

If the re-sample result indicates the presence of total coliform or *E. coli*, the owner shall submit an action plan to NSEL outlining the corrective measures that will be taken to remediate the situation. The action plan shall be prepared by a qualified professional, complete with a schedule for implementation of the corrective measures and copies of any water quality results. The action plan shall be submitted to NSEL within 30 calendar days of the initial notification unless otherwise advised by NSEL.

The proposed action plan must be acceptable to NSEL. The acceptance of the proposed action plan does not preclude the owner from having to take additional corrective measures if the proposed action plan is unsuccessful at remediating the problem or from having to submit a revised or new action plan.

Qualified professionals may include licenced engineers or water treatment specialists.

All public drinking water supplies registered under the *Water and Wastewater Facilities and Public Drinking Water Supplies Regulations* made pursuant to the *Environment Act* that derive their supply from surface water sources shall be filtered and disinfected.

3.4 Boil Water Advisories

Deficiencies that require a boil water advisory include:

1. presence of total coliform or *E. coli*
2. lack of disinfection, where required
3. ineffective disinfection, where required, due to high turbidity or high chlorine demand
4. suspected cross-connection or negative pressure
5. other circumstances which in the opinion of NSEL or the Medical Officer of Health (MOH) constitutes a risk to public health (e.g. *Giardia*, *Cryptosporidium* contamination, etc.)
6. evidence of an outbreak of waterborne illness as determined by the MOH (the risk to young children, elderly and immuno-compromised people should be considered in a decision)
7. a serious incident of raw water contamination

3.5 Boil Water Advisory Protocol and Signage

3.5.1 Initiating the Boil Water Advisory

Where one or more of the conditions described above exists, the owner shall initiate the boil water advisory and contact NSEL

immediately.

In the event that NSEL or the MOH is aware of a potential serious health risk, NSEL will advise the water supply owner to initiate the boil water advisory.

During the boil water advisory there should be frequent communication between NSEL, the MOH and the owner.

3.5.2 Procedure for Notification of Boil Water Advisory

- 1) The owner will ensure that proper signage is posted to inform consumers of the boil water advisory. Signage must be acceptable to NSEL.
- 2) If the owner fails to notify consumers, NSEL will take appropriate steps to notify consumers.
- 3) Signage is to be posted for the duration of the boil water advisory.

3.5.3 Instructions for Boiling and Disinfecting Tap Water

During a boil water advisory it is essential that all water to be used for any of the following activities be boiled:

- 1) drinking
- 2) preparing infant formulas
- 3) preparing juices and ice cubes
- 4) washing fruits and vegetables
- 5) cooking
- 6) dental hygiene

Holding water at a rolling boil for at least 1 minute will inactivate all waterborne pathogenic micro-organisms. Water can be boiled either in a pot or kettle on a stove, an electric kettle without an automatic shut-off or in a microwave oven. If water is boiled in a microwave, it is advisable to include a glass rod or wooden or plastic stir stick in the container to provide nucleation sites for bubble formation and energy diffusion. This will prevent the formation of superheated water.

Under most circumstances it is not necessary to boil water used for other household purposes. Adults, adolescents and older children may shower, bathe or wash using tap water but should avoid swallowing the water. Toddlers and infants should be sponge bathed. In non-outbreak situations, dishes and laundry may be washed in tap water, either by hand or by machine. In the event of a waterborne outbreak, as declared by the MOH, it may be necessary to advise the public to take additional precautions. In this situation, hands should

be washed in a dilute solution of household bleach and water (1 mL or 20 drops per litre of water). This is particularly important before preparing or eating meals, and after using the toilet, changing diapers, and handling animals. The solution should be allowed to stand 10 minutes before use. If dishes are hand washed they should be washed and rinsed in hot tap water, soaked in a dilute solution of household bleach (20 mL of bleach in 10 litres of water) for one minute and air dried. Alternatively, dishwashers with a hot water cycle will disinfect dishes.

3.5.4 Removing the Boil Water Advisory

The boil water advisory will be removed by NSEL, in consultation with the MOH and the owner. Under normal circumstances the boil water advisory will be removed when:

- the *Guidelines for Canadian Drinking Water Quality* for bacteriological quality are met for 2 consecutive sets of samples separated by a minimum of 24 hours; and
- the deficiencies which led to the boil water advisory are corrected.

3.6 Consultation With Other Departments

If the registered supply is regulated by another department, the other regulating department should be advised of the issuance and removal of the boil water advisory. Examples of other departments to notify would include:

- Agriculture and Fisheries - for eating establishments, etc.
- Community Services - for nursing homes, etc.
- Tourism, Culture and Heritage - for inns, B&B's, etc.

3.7 Ultraviolet (UV) Disinfection - Drinking Water Applicability

Where corrective actions have failed to remediate problems related to the presence of total coliform and/or *E. coli*, the Minister or an Administrator may require that a UV disinfection unit be installed. If this option is used, it should be applied in accordance with the Interpretative Bulletin issued May 7, 2004 (i.e. NSF55, Class A system).

4. CORRECTIVE ACTIONS TO BE TAKEN WITH CHEMICAL/PHYSICAL/RADIOLOGICAL EXCEEDENCES

4.1 Immediate Notification

An owner of a registered water supply shall contact Nova Scotia Environment

and Labour (NSEL) immediately upon receipt of any sample results that indicate a Maximum Acceptable Concentration (MAC) or an Interim Maximum Acceptable Concentration (IMAC) has been exceeded for any chemical, physical or radiological parameters.

4.2 Re-sampling to Confirm Exceedence

It is important to confirm that the water supply exceeds the health-related criteria (i.e. MAC or IMAC) by collecting a confirmation sample. Corrective action should not be requested based on a single sample result. The attached check list should be used to document the results of the initial sample and the confirmation sample. If the confirmation sample exceeds the MAC or IMAC, an action plan must be prepared to correct the exceedence. If the confirmation sample result is below the MAC or IMAC, the water supply is considered to be in compliance but NSEL may require that additional samples be taken to further evaluate the need for corrective action. Section 33(2) of the *Water and Wastewater Facilities and Public Drinking Water Supplies Regulations* provides the authority to require enhanced monitoring for this purpose.

4.3 Consult with MOH

The Medical Officer of Health (MOH) should be consulted when a health-related parameter is exceeded. Staff should have the following information available for the MOH:

- parameter(s) which exceed the health-related criteria (i.e. MAC or IMAC);
- levels observed in the original sample and re-sample;
- name and location of the public drinking water supply; and
- whether the supply is a non-transient or transient system.

A non-transient water supply means a registered public drinking water supply that provides water for human consumption to at least 25 of the same people at least six months per year. Examples of non-transient water supplies include schools, trailer parks, nursing homes, day cares, etc. A transient water supply is one where people do not remain for long periods of time. Examples of transient water supplies include: restaurants, hotels, campgrounds, parks, sports facilities, etc.

If the registered supply is a transient system (e.g. restaurant, inn, B&B) and is regulated by another department, the other regulating department should be advised of the exceedence and schedule for corrective action.

4.4 Action Plan Components

The *Guidelines for Monitoring Public Drinking Water Supplies* allow the water

supply owner the flexibility to design an action plan that suits the needs of their supply. Action plans are developed on a case-by-case basis depending on the parameter that exceeds the MAC/IMAC, the cause of the problem, the type of water supply and other site-specific factors.

Preparing an action plan will typically involve determining why the water supply exceeds the drinking water guideline, selecting a corrective action, determining the schedule for carrying out the corrective action and collecting a confirmation water sample to demonstrate that corrective action has been successful. In some cases, a detailed action plan will be required to remediate a problem including enhanced water quality monitoring. In most cases, it is expected that the check list, complete with a description of the corrective action to be taken, will suffice. Section 34 of the *Water and Wastewater Facilities and Public Drinking Water Supplies Regulations* provides the authority to require corrective action as set out in the *Guidelines for Monitoring Public Drinking Water Supplies* or as required by the Minister or Administrator.

The water supply owner may need professional help from a qualified person to determine the cause of the problem and to identify the most appropriate corrective action. NSEL maintains a list of qualified public drinking water supply contractors on the website at www.gov.ns.ca/enla/water.

Where treatment is necessary, NSEL can not recommend specific brands of drinking water devices, but it strongly recommends that consumers use only devices that have been certified as meeting the appropriate NSF drinking water treatment unit standard. NSF standards have been designed to safeguard drinking water by helping to ensure material safety and performance of products that come into contact with drinking water. Where supplementary treatment is necessary to meet the health-related parameters listed in the *Guidelines for Canadian Drinking Water Quality*, the system owner should have regard to:

- NSF Standards 42 and 53: *Drinking Water Treatment Units - Aesthetic and Health Effects*
- NSF Standard 44: *Cation Exchange Water Softeners*
- NSF Standard 55: *Ultraviolet Microbiological Water Treatment Systems*
- NSF Standard 58: *Reverse Osmosis Drinking Water Treatment Systems*
- NSF Standard 62: *Drinking Water Distillation Systems*

4.4.1 Determine Why the Water Supply Exceeds the MAC or IMAC

It is important to determine the reason why the supply exceeds the health-related criteria (i.e. MAC or IMAC) so that the most appropriate corrective action can then be selected. Typical reasons why a supply

might exceed a MAC or IMAC include the presence of a nearby contaminant source (e.g., fuel oil spill, malfunctioning septic system, road salt runoff, etc.), naturally occurring substances present in the local geology (e.g., arsenic, uranium) or well construction problems (e.g., casing deterioration, allowing surface water to enter the well).

4.4.2 Select Corrective Action

When selecting a corrective action, the following options are typically used (options listed in order of preference): find and remove the source of contamination if possible; if the source cannot be eliminated, modify the well construction to prevent contamination from entering the well; water treatment; switch to an acceptable alternate potable water supply.

If water treatment is selected, it is recommended that the treatment system be certified by ANSI/NSF to treat for the specific parameters required and have appropriate removal efficiencies as discussed above. If point-of-use treatment is used to provide potable water at selected locations (e.g., kitchen sink, water fountains) then other non-treated locations (e.g. washroom sinks) should be posted as non-potable.

The use of bottled water as a corrective action will be considered on a case-by-case basis. The District Manager and MOH should be consulted to confirm the exposure pathway for the parameter that exceeds the health-related criteria. If bottled water is used for potable water then all taps must be posted as non-potable.

NSEL recommends the use of bottled water from a supplier who is a member of the Canadian Bottled Water Association (CBWA) or the International Bottled Water Association (IBWA) because they operate under a Code of Practice that includes water quality testing. Bottled water is considered a food commodity and, as such, must meet all of the requirements of the *Food and Drugs Act* and Regulations. The federal government is in the process of requiring suppliers of bottled water to test for the *Guidelines for Canadian Drinking Water Quality*.

4.4.3 Action Plan Schedule

The owner shall submit an action plan to NSEL outlining the corrective measures that will be taken to remediate the situation. The action plan shall be prepared by a qualified professional, complete with a schedule for implementation of the corrective measures and copies of any water quality results. The action plan shall be submitted to NSEL within 30 calendar days from when the water supply is confirmed to exceed the health-related criteria (i.e. MAC or IMAC).

The proposed action plan must be acceptable to NSEL. The acceptance of the proposed action plan does not preclude the owner from having to take additional corrective measures if the proposed action plan is unsuccessful at remediating the problem or from having to submit a revised or new action plan.

Qualified professionals may include licensed hydrogeologists, licensed engineers or water treatment specialists.

4.4.4 Collect a Post-Corrective Action Sample

After completing the corrective action, raw and treated water samples must be collected to demonstrate the corrective action plan has successfully reduced levels below the health-related MAC/IMAC. The specific parameter(s) that required corrective action must be included in the regularly scheduled monitoring parameter list. For example, if a treatment system has been installed to remove arsenic then the regular monitoring plan must include an analysis for arsenic (raw and treated) to demonstrate the treatment system is working.

Where a treatment device is in place to remove any chemical or physical substances, the *Guidelines for Monitoring Public Drinking Water Supplies* require that two samples be collected when sampling, one sample from the raw water source and one sample from a point after treatment. The requirement to test the raw and treated water does not apply to groundwater supplies that only disinfect to meet bacteriological guidelines. If, however, another treatment device, such as a softener, is in place the raw and treated water must be sampled as part of the regular water quality monitoring requirements.

4.5 Check-list

The attached Action Plan Check-list will assist the water supply owner in developing an action plan. The Action Plan Check-list, confirmation sample results and a description of the corrective action to be taken, must be completed and submitted to the relevant NSEL District Office. In some cases, a detailed action plan complete with enhanced monitoring may be warranted. Section 34 of the *Water and Wastewater Facilities and Public Drinking Water Supplies Regulations* provides the authority to require enhanced monitoring as part of an action plan. The post-corrective action sample must be submitted before the water supply will be considered to be in compliance.

5. ADDITIONAL MATERIAL

The following flow charts have been developed to summarize the process:

- Summary of Operational Procedures for Registered Supplies - Microbiological Exceedences
- Summary of Operational Procedures for Registered Supplies - Chemical/Physical/Radiological Exceedences

The following signage has also been developed for use by owners of public drinking water supplies and NSEL:

- Signage for Bacterial Contamination
 - Posted by Nova Scotia Environment and Labour
 - Posted by Owner/Proprietaire
- Signage for Chemical Contamination
 - Posted by Nova Scotia Environment and Labour
 - Posted by Owner/Proprietaire

A detailed Action Plan Check-list and a Qualified Persons Report form have also been included for use where necessary.

Date: April 27, 2005

Original signed by
Bob Langdon, P. Eng
Executive Director
Environmental and Natural
Areas Management Division
NS Environment and Labour

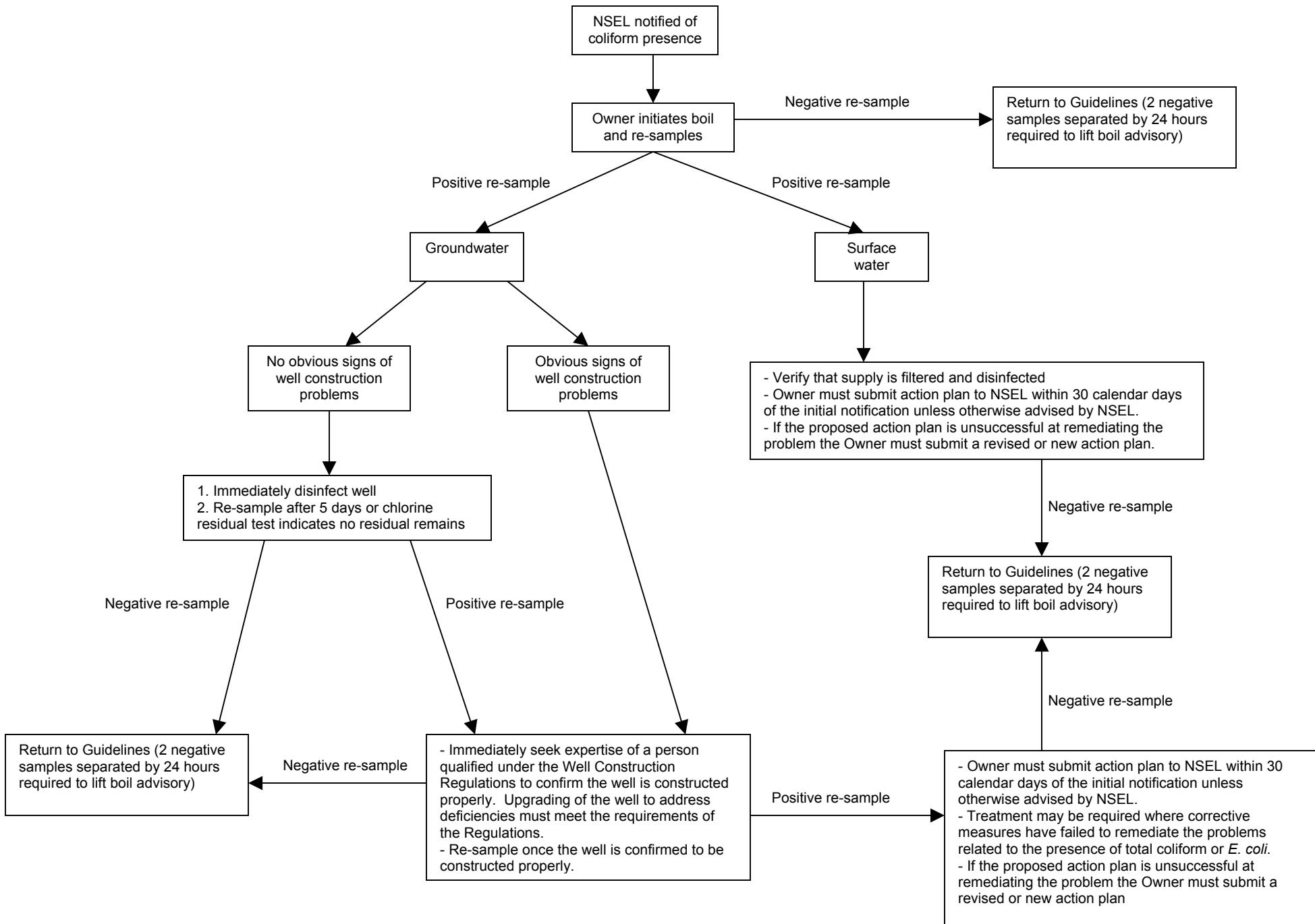
Original signed by
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Executive Director
Environmental Monitoring and
Compliance Division
NS Environment and Labour

Action Plan Check-list
for Registered Public Drinking Water Supplies Exceeding Chemical, Physical and Radiological Guidelines

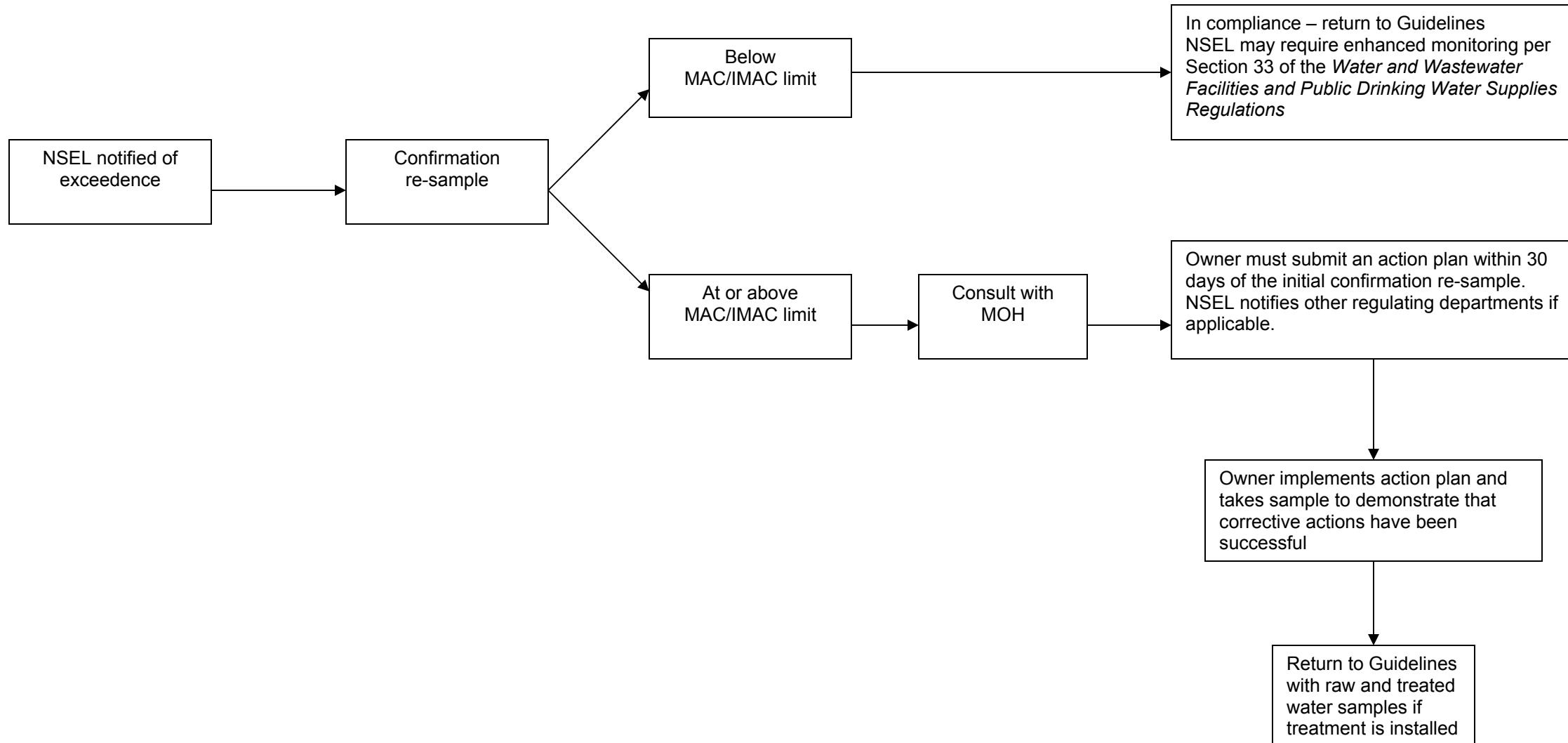
Supply Information	Supply Name: Registration#:	Location:	Contact Person:		
Contaminant Information	Parameter:	1	2	3	
	Guideline - MAC/IMAC (mg/L)				
	Sample 1 - Initial Sample Result (mg/L)				
	Sample 2 - Confirmation Sample Result (mg/L)				
	Action Plan Required (Yes/No)*				
Identify Cause	Check (✓)				
		Contaminant source near the water supply (e.g., oil spill, septic, etc). (Describe)			
		Naturally occurring contaminant.			
		Well construction problems. (Describe)			
		Other. (Describe)			
Corrective Action		Remediate contaminant source. (Describe)			
		Well construction modifications. (Describe)			
		Water Treatment. (Describe)			
		Switch to another source. (Describe)			
		Other. (Describe)			
Schedule	Date that action plan will be completed by:				
Post-Corrective Action Sample	Post-corrective action sample to be collected for: (list parameters)			Date sample will be collected:	

* If the confirmation sample exceeds the guideline, an action plan is required.

Summary of Operational Procedures for Registered Supplies - Microbiological Exceedences



Summary Operational Procedures for Registered Supplies - Chemical/Physical/Radiological Exceedences



BACTERIAL CONTAMINATION

NOTICE / AVIS

**Not For Drinking or Cooking
Unless Boiled**

*** BOIL FIRST ***

*** Rolling Boil for 1 Minute or More ***



**L'eau N'est pas Pour
Boire ou Faire la Cuisine**

*** BOUILLIR EN PREMIER ***

*** Bouillir Pour 1 Minute ou Plus Lorsque L'eau Commence a Bouiller ***

Posted By:

Nova Scotia Environment and Labour

Avis de la:

Owner / Propriétaire

CONTAMINATION BACTÉRIENNE

BACTERIAL CONTAMINATION

NOTICE / AVIS

**Not For Drinking or Cooking
Unless Boiled**

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*** Bouillir Pour 1 Minute ou Plus Lorsque L'eau Commence a Bouiller ***

Posted By:

Nova Scotia Environment and Labour

Avis de la:

Owner / Propriétaire

CONTAMINATION BACTÉRIENNE

CHEMICAL CONTAMINATION

NOTICE / AVIS

Not For Drinking or Cooking



L'eau N'est pas Pour
Boire ou Faire la Cuisine

Posted By:



Nova Scotia Environment and Labour

Avis de la:



Owner / Propriétaire

CONTAMINATION CHIMIQUE

CHEMICAL CONTAMINATION

NOTICE / AVIS

Not For Drinking or Cooking



L'eau N'est pas Pour
Boire ou Faire la Cuisine

Posted By:

Nova Scotia Environment and Labour

Avis de la:

Owner / Propriétaire

CONTAMINATION CHIMIQUE

WATER SUPPLY INVESTIGATION QUALIFIED PERSONS REPORT

Qualified Person: _____ **Date:** _____

Company Name _____

Date: _____

and Address: _____

Telephone: _____

License Number:

Well owner Name:

Street Address:

Mailing Address:

Telephone:

1. **General Description of User/Owners Complaint:** _____

3. **General**

(a) When was well constructed? (Please provide well log if available)

(b) By whom was well constructed? _____

(c) For whom was well constructed? _____

(d) Has water ever been tested for bacteria? Yes No
If yes, by whom? (owner, health inspector, etc.) _____
Approximate date tested _____

(e) Has water ever been tested for chemical quality? Yes No
If yes, by whom? _____

- Approximate date of testing _____
- (f) Static Water level in well _____
- (g) Have any water shortages or changes in water quality been experienced recently? _____ Yes _____ No _____
If so, describe _____
- (h) Any other problems with the water supply?

- (i) Please provide a description of water system. (e.g. type of pump, pressure tank, pressure switch setting, treatment units and previous changes or repairs to the system).

- (j) Depth of intake (pump setting) in well _____
- (k) If the pump and associated piping have been removed from the well, measure any zones of iron/manganese staining indicating seasonal high and low water levels.

- (l) Size and type of water storage tank _____
4. **If Dug Well:**
- (a) Depth of well _____
- (b) Diameter of well _____
- (c) Well yield at time of construction _____
- (d) Construction of well:
Well crocks on top of rock _____
Well crocks only _____
Rock lined well only _____
Other (specify) _____
- (e) Are joints between crocks sealed? _____
- (f) Does well have cover? _____
If so, specify type (e.g. wooden, concrete) _____
- (g) How far above ground surface is top of well? _____
- (h) Does well have concrete apron? _____
- (i) How much water used so far today? _____

5. **If Well Point:** (a) Diameter _____
(b) Depth _____
6. **If Drilled Well:** (a) Well depth _____
(b) Well diameter _____
(c) Well yield at time of construction _____
(d) Depth of casing _____
(e) Does the well have a pitless adapter/sanitary seal? _____
(f) Does well have a vent? _____
(g) Where is vent located? _____
(h) Is top of the well above ground, in a separate building,
underground or in home? _____
(i) Any problems in last five years which required repair by the well
contractor?
Yes _____ No _____

If yes, please specify problem(s) _____

7. **On-site Sewage Disposal System:**

- (a) Provide details on the system construction and installation date.

- (b) Has the system been properly maintained?

(c) Are there any obvious signs the system may be malfunctioning?

(d) What is the distance to the well?

(e) Is the well up gradient or down gradient?

8. **Pump Testing:** *Please provide draw down and recovery records (and pumping rate) if a pump test has been conducted. Pumping should continue for a minimum of 1 hour if possible, even if the water level stabilizes prior to that time, and a recovery period of 1 hour should be used. Prior to start of pump test at least three static water level measurements (0, 5, & 10 minutes) must be recorded to verify true static level. Also indicate location of measuring point.*

9. **Summary of water quality / well yield investigation:**

(e.g. is the problem attributable to the well construction, pumping equipment or the on-site sewage disposal system ?)

10. **Qualified Person Recommendations** (attach well log / sketch if available)

I CERTIFY the information contained in this report is accurate and true to the best of my knowledge, information and belief.

DATE

QUALIFIED PERSONS SIGNATURE

DATE

WELL OWNERS SIGNATURE