HAGENSBORG WATER SYSTEM

OPEN HOUSE

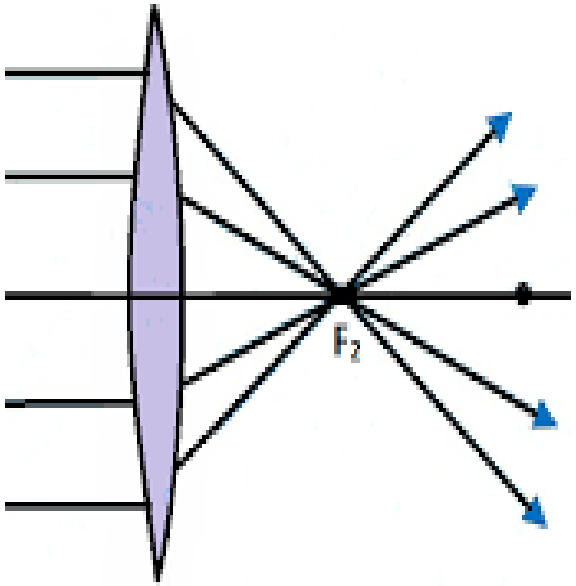
with Vancouver Coastal Health

Hear from Vancouver Coastal Health and the CCRD team about about the Hagensborg water system!

Tuesday, November 25, 2025
6:30 PM - 9:00 PM
Lobelco Hall

Presentation at 7:00 PM

Vancouver CoastalHealth



Presentation Focal Points:

- Roles & Responsibilities
- GARP Analysis of Wells
- Microbial Sampling
- Treatment Objectives & Treatment Installed
- Distribution System
- Next Steps

Pessimist:
“Half – empty”

Optimist:
“Half – full”

Optometrist:
“Half a glass of water”

Roles & Responsibilities

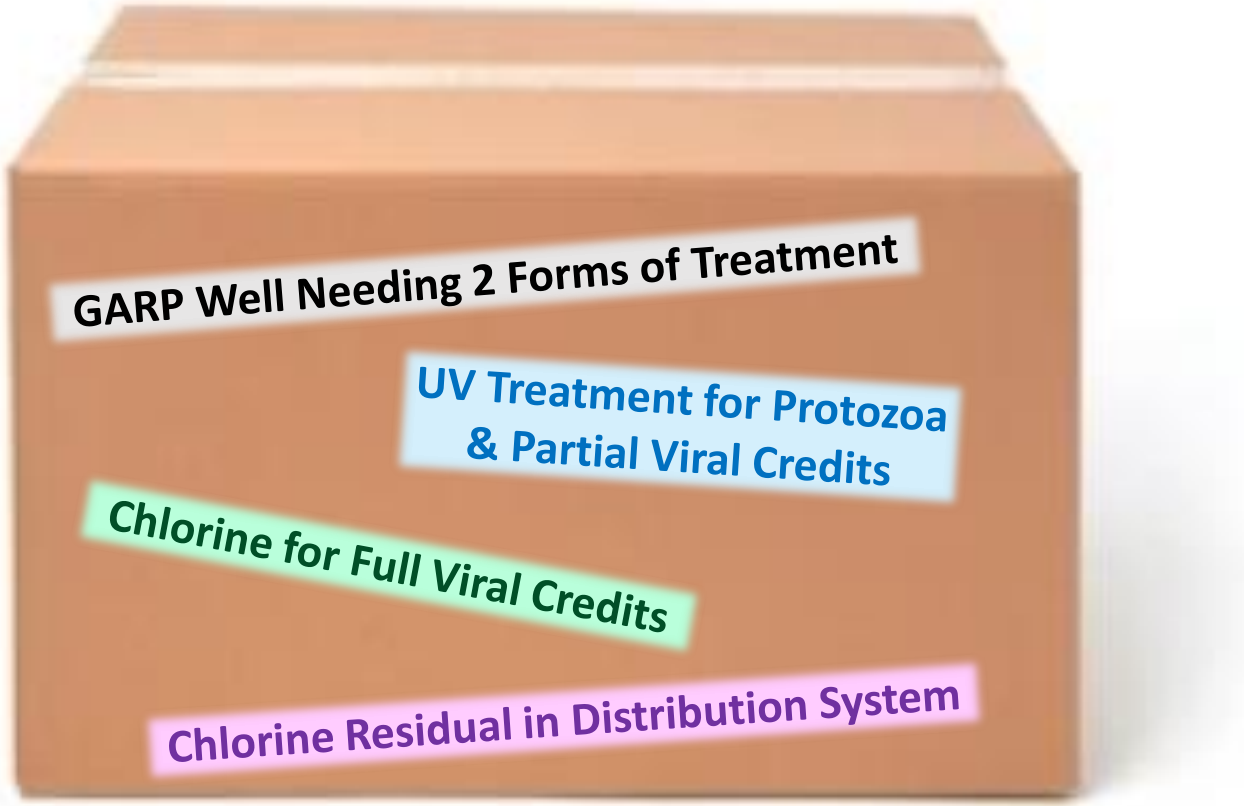
The Central Coast Regional District (CCRD)

- The purveyor of the drinking water
- Responsible for the treatment and delivery of potable water that meets the requirements set out in the Act and Regulations.

Vancouver Coastal Health (VCH) - Health Protection Team

- Consists of Drinking Water Officers (DWOs); Public Health Engineers (PHEs); Medical Health Officers (MHOs)
- Oversee drinking water systems to help ensure the public has potable water for drinking and domestic use that meets the requirements of the applicable provincial legislation (BC Drinking Water Protection Act and Drinking Water Protection Regulation).

Previous Presentation



Questions from Community

Well Not Requiring Treatment

UV Treatment alone to reduce Pathogens

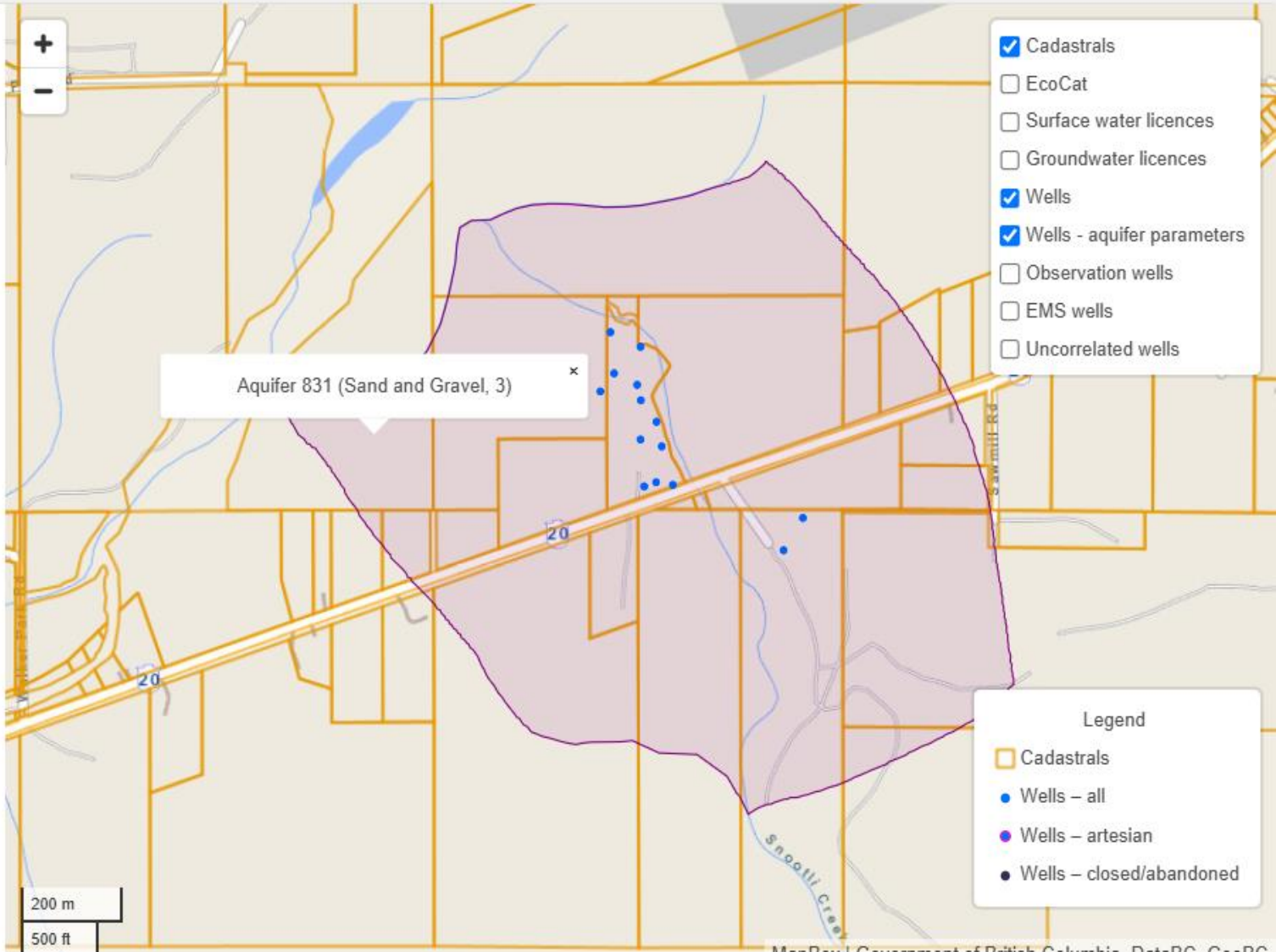
No Chlorine Residual in Distribution System

Vancouver CoastalHealth

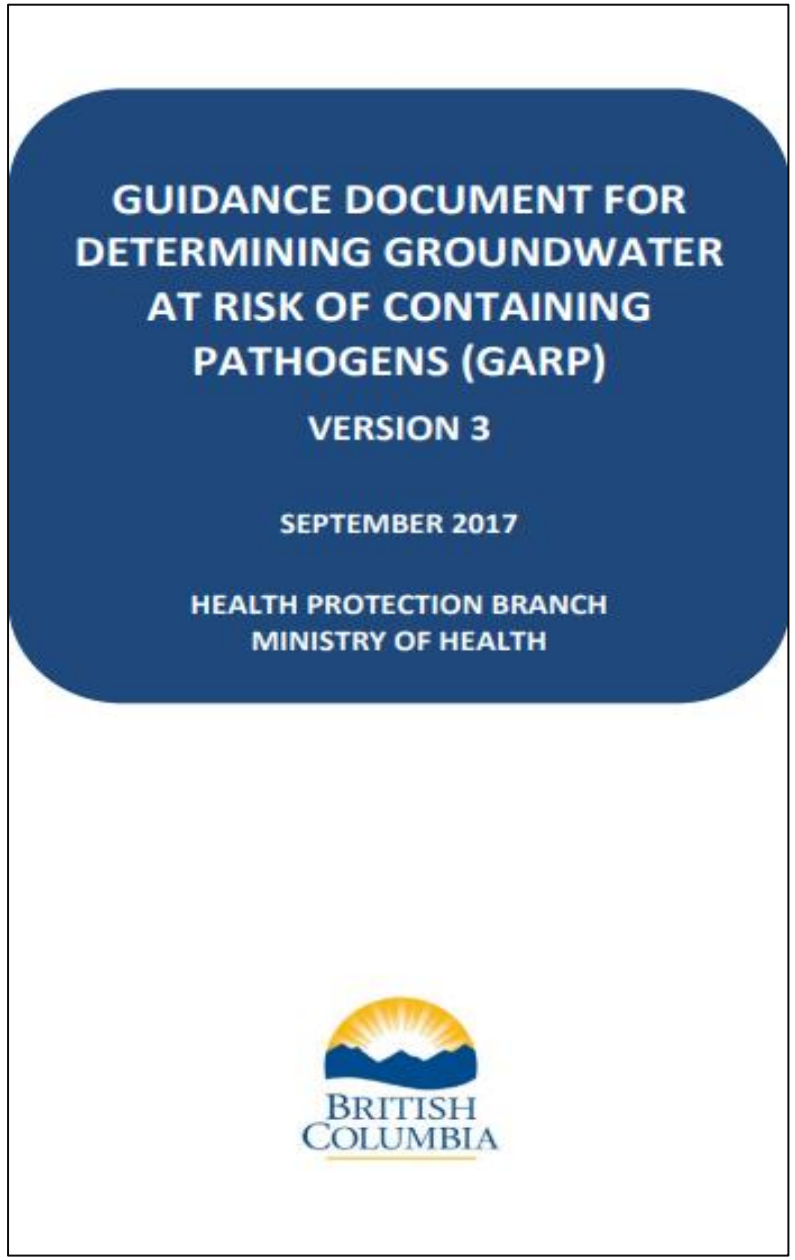
Vancouver CoastalHealth

Aquifer 831 Summary

Aquifer number	831
Year of mapping	2007
Aquifer name	
Litho stratigraphic unit	Alluvial deposits
Descriptive location	S of Bella Coola R./ E of Bella Coola
Vulnerability	High
Material type	Sand and Gravel
Subtype	Unconfined sand and gravel - alluvial or colluvial fan
Quality concerns	None
Productivity	High
Size (km²)	1.1
Calculated well density	Moderate



https://apps.nrs.gov.bc.ca/gwells/aquifers/831



GARP Assessment

- Assesses the level of potential risk that a ground water source may become, or may already be, contaminated by pathogens
- Establishes a scientifically defensible basis for the discussion, planning and resolution of public health-related concerns
- Often performed by Professional Hydrogeologists
- Intended to inform regulatory decisions by PHE, DWO
- Three assessment levels: Level 1,2,3
- Level 1 further broken down into 3 Stages

Stage 1: Hazard Screening and Assessment

HAZARDS Water Supply System Well	SCREENING		ASSESSMENT		NOTES
	NOT PRESENT	PRESENT (Complete Assessment)	AT RISK (Water source potentially GARP)	AT LOW RISK	
A. Water Quality Results					
A1: Exhibits recurring presence of total coliform bacteria, fecal coliform bacteria, or *Escherichia coli* (*E. coli*).					
A2: Has reported intermittent turbidity or has a history of consistent turbidity greater than 1 NTU.					
B. Well Location					
B1: Situated inside setback distances from possible sources of contamination as per section 8 of the HHR.					
B2: Has an intake depth <15 m below ground surface that is located within a natural boundary of surface water or a flood prone area. (Fig 1)					
B3: Has an intake depth between the high-water mark and surface water bottom (or < 15 m below the normal water level), and located within, or less than 150 m from the natural boundary of any surface water. (Fig 2)					
B4: Located within 300 m of a source of probable enteric viral contamination without a barrier to viral transport.					
C. Well Construction					
C1: Does not meet GWPR (Part 3 Div. 3) for surface sealing.					
C2: Does not meet GWPR (Part 4) and WSA (section 54) for well caps and covers					
C3: Does not meet GWPR (section 63) and DWPA (Section 16) for floodproofing.					
C4: Does not meet GWPR (Part 3 and Part 7) for wellhead protection.					
D. Aquifer Type and Setting					
D1: Has an intake depth <15 m below ground surface.					
D2: Is situated in a highly vulnerable, unconfined, unconsolidated or fractured bedrock aquifer.					

Stage 1: Hazard Screening & Assessment

Evaluates 13 different potential hazards in 4 categories

A. Water Quality Results
   - bacteriological & turbidity *

B. Well Location
   - setback distances to probable contamination *
   - proximity to surface water & flood risk

C. Well Construction
   - surface sealing, well caps and covers
   - wellhead completion & floodproofing

D. Aquifer Type & Setting
   - intake depth
   - vulnerable aquifer

* Status may change over time as potential hazards change

Vancouver CoastalHealth

Stage 2: GARP Determination

■ At Risk (GARP) ☐ At Risk (GARP-viruses only) ☐ At Low Risk

If "at risk", the water supplier should undertake one or more mitigation measures (see options below).

If "at risk", because information is unavailable or inconclusive for any hazards in the checklist, consider moving to Level 2 or 3 investigation.

If "at low risk", indicate only "Move to Stage 4: Long-term Monitoring" below.

Stage 3: Risk Mitigation

Recommended Options:

■ Treatment to meet provincial drinking water objectives

☐ Treatment to meet only the provincial water objectives for viruses

☐ Provide alternate source of water

☐ Well Alteration / correct significant deficiencies in well construction.*

☐ Relocate the well

☐ Eliminate source(s) of contamination

☐ Level 2 or 3 investigation

■ Move to Stage 4 Long-term Monitoring

☐ Other

Comments: WIN64971 is completed in an unconfined sand and gravel aquifer. The aquifer has a high vulnerability according to aquifer classification performed by BCECCS. Kala opines that WIN64971 is a GARP well. _____

Completed by: _____ Date: March 20, 2024

Vancouver CoastalHealth

Bacteriological Sampling

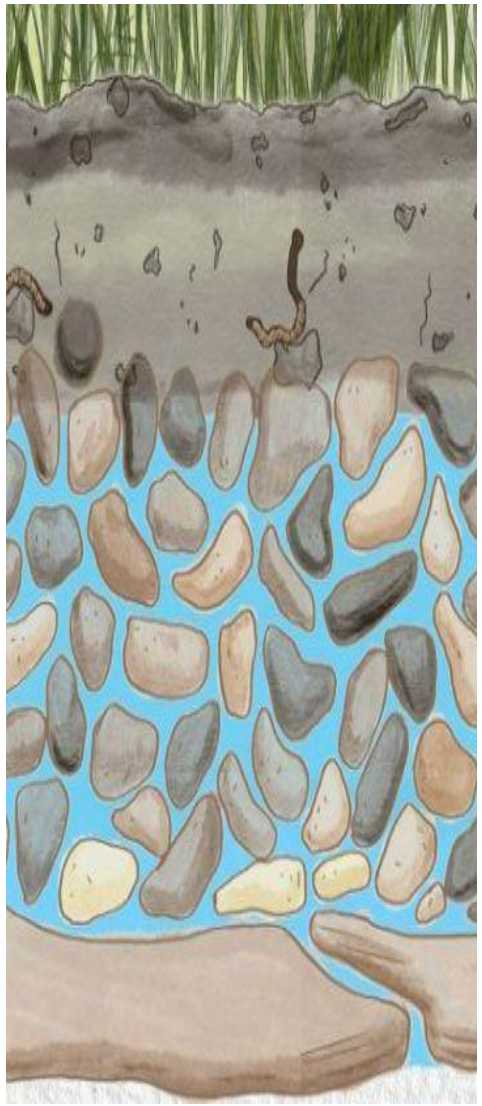
*Water quality monitoring results alone cannot determine if a well is at low risk of containing pathogens and are not intended to be interpreted in isolation from the other hazards**

- Incidences of contamination are random events.
- Only testing for bacteria.
- Viruses and protozoa have higher survival rates in the environment than bacteria
- Viruses and protozoa more resilient against treatment than bacteria
- Takes approximately 150 samples of sources without detection to have meaningful results

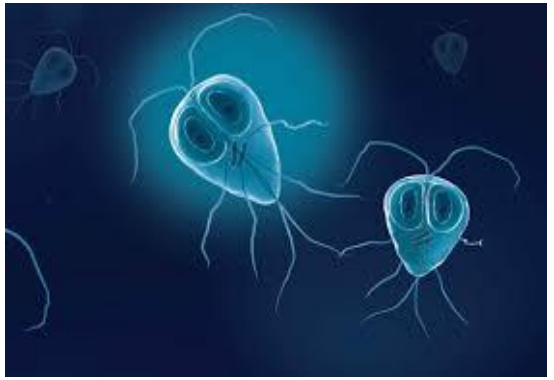
In short: sampling may tell you when water is <u>not</u> potable however sampling on its own can not tell you that water is safe to consume

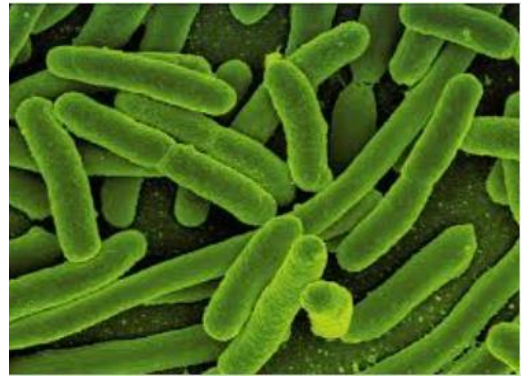
Vancouver CoastalHealth

*GUIDANCE DOCUMENT FOR DETERMINING GROUNDWATER AT RISK OF CONTAINING PATHOGENS (GARP) VERSION 3



Ground Water Treatment Objectives – GARP Well





4 log (99.99%) reduction of viruses

3 log (99.9%) reduction of protozoan (oo)cysts

2 forms of treatment providing log reduction

1 NTU or less for turbidity

0 Coliforms (indicator bacteria)

Vancouver CoastalHealth

Disinfection Credits with UV

Viruses:

Credit varies based on the potential sources of contamination

- Animal origin –> rotavirus is the target organism –> 2 log credit
- Human origin –> adenovirus is the target organism -> 0.5 log credit

Protozoa:

Full treatment obtained with this UV unit when UV Transmittance (UVT) exceeds minimum level set

Bacteria:

Treatment occurs at very low UV doses

Note: Treatment occurs only while water is in the treatment unit

Vancouver CoastalHealth

Disinfection Credits – Primary Chlorination

Viruses:

- Does not vary based on the potential sources of contamination
- 2 to 4 log credits obtained when required chlorine concentration and minimum contact time (CT) achieved

Protozoa:

- Minimal effect on giardia cysts
- No effect on cryptosporidium oocyts

Bacteria:

- Treatment occurs with same CT as viruses

Note: Treatment can continue past the required CT

Vancouver CoastalHealth

Secondary Disinfection

In addition to primary disinfection, the disinfection residual will also act as a secondary disinfectant in the distribution system

Levels are monitored at the distal ends of the distribution system

Proposed Initial Sampling – 4 Types

Daily:

- Ensuring UV units are functioning correctly
- Chlorine levels as water enters reservoir
- End points of distribution lines

Weekly:

- Routine bacteriological samples
- Representative sites in distribution system

Quarterly:

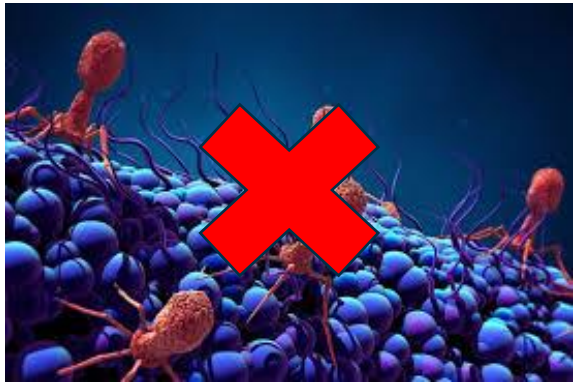
- Disinfection by-products

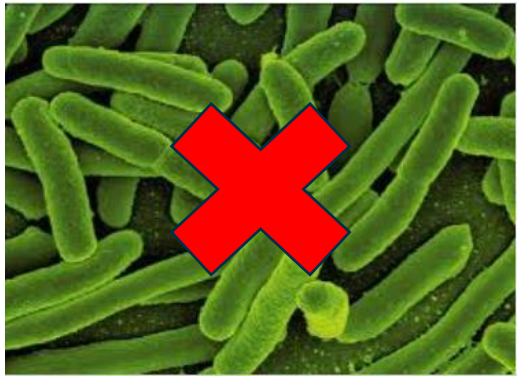
Annually:

- Geochemical tests
- Frequency extended if results stable

Vancouver CoastalHealth

Ground Water Treatment Objectives Achieved





Water Advisory / Closure

Facility Details	
Name: Hagensborg Waterworks District WS	Type: WS2
City: Hagensborg	

Advisory / Closure Details	
Start Date: Dec-18-1992	Date:
Officer: Phil Muirhead	
Advisory Type: Boil Water Notice	Reason: Untreated drinking water at risk of containing pathogens
Comments: Untreated surface water	

- ✔ 4 log (99.99%) reduction of viruses
- ✔ 3 log (99.9%) reduction of protozoan (oo)cysts
- ✔ 2 forms of treatment providing log reduction
- ✔ 1 NTU or less for turbidity
- ✔ 0 Coliform

= Removal of system wide Boil Water Advisory

Vancouver CoastalHealth

What's Ahead?


Source Protection
Governance
Operations & Monitoring
Regulations & Guidelines
SAFE DRINKING WATER
Finance & Management
Treatment
Certification
Distribution

Thanks & Acknowledgements

Community & Leadership:

- Working through the challenges of upgrading an existing water system
- Hosting and attending these public meetings
- Being involved with your water system
- Engaging in meaningful dialog

Fin

Any questions can be directed to:

phil.muirhead@vch.ca

Vancouver CoastalHealth