



Weekly Webinar Series

Source water testing
Bacterial rules

3 November 2021

The background is a solid teal color with a repeating pattern of overlapping, curved, arrow-like shapes. These shapes are arranged in a way that creates a sense of movement and depth, with some appearing to point towards the center and others away from it. The overall effect is a dynamic and textured background.

Welcome

Ko wai, ko au, ko tātou

Ko te wai ahau, ko ahau te wai.

He whakaaturanga tātau nō te wai.

Ko te ora te wai ko te ora o te tangata.

He taonga te wai me tiaki.

Ko wai tātou.

Ko wai tātou.

I am wai, wai is me.

We are reflections of our wai.

The health of te wai is the health of te tangata.

Wai is a taonga that must be protected.

Ko wai tātou.

We are wai. Wai is us.



What we will cover today

- **Current state**
 - Ray McMillan, Head of Regulatory – update on the Water Services Act and commencement
- **Topics:**
 - Jim Graham, Principal Advisor, Drinking Water – Source water testing, bacterial rules
- **Pātai / questions:**
 - Opportunity to answer any further pātai / questions you might have



The background is a solid teal color with a subtle, repeating pattern of a maze or labyrinth. The maze lines are slightly darker than the background, creating a textured effect. The pattern consists of various paths and dead ends, filling the entire frame.

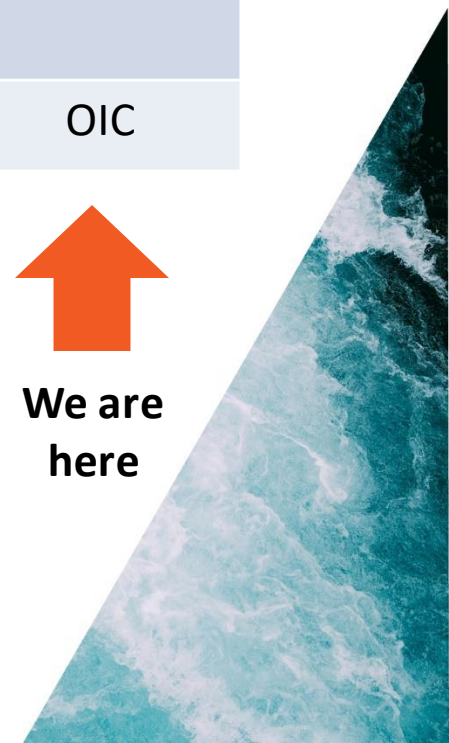
Current state

Water Services Act and commencement

1	2	3	4	5	6	7	8
Introduction	1st reading	Health Select Committee	2nd reading	Committee of the whole	3rd reading	Royal assent	Commencement
28.07.20	08.12.20	10.08.21	21.09.21	23.09.21	28.09.21	4.10.21	OIC



We are here



Water Services Act

- The Ministry of Health will remain the drinking water regulator until the Water Services Act commences, likely to be 15 November 2021.
- Taumata Arowai will assume responsibility for drinking water regulation from this date once confirmed.
- Taumata Arowai wastewater and stormwater functions will not commence until the end of the first two years of its operation, to ensure we can prioritise drinking water regulation.



Public consultation

- The following drafts for Acceptable Solutions and the New Rules and Standards have been updated and are available on our website (taumataarowai.govt.nz/for-water-suppliers):
 - Draft Drinking Water Acceptable Solutions for Roof Water Supplies
 - Draft Drinking Water Acceptable Solutions for Bore and Spring Water Supplies
 - Draft Drinking Water Acceptable Solutions for Rural Agriculture supplies
 - Draft Drinking Water Standards
 - Draft Aesthetic Values
 - Draft Drinking Water Quality Assurance Rules
- The Water Services Act places clear obligations on Taumata Arowai to consult on these drafts. We welcome your feedback during public consultation, which is likely to be early in 2022.
- The existing Ministry of Health Drinking-water Standards for New Zealand will apply until the new Drinking Water Quality Assurance Rules come into effect, which is likely to be **1 July 2022**.

Source water testing

Rule type codes and complexity levels

- **Rule type codes**

- G = General rules
- S = Source water rules
- T = Treatment rules
- D = Distribution rules
- WC = Water Carrier Service Rules
- PTE = Planned Temporary Event Drinking Water Supplies Rules

- **Rules complexity levels**

- 1 = simple
- 2 = moderate
- 3 = complex



Rules modules

G		
S 1	T 1	D 1
S 2	T 2	D 2
S 3	T 3	D 3
WC	PTE	



Rules modules

G		
S 1	T 1	D 1
S 2	T 2	D 2
S 3	T 3	D 3
WC	PTE	



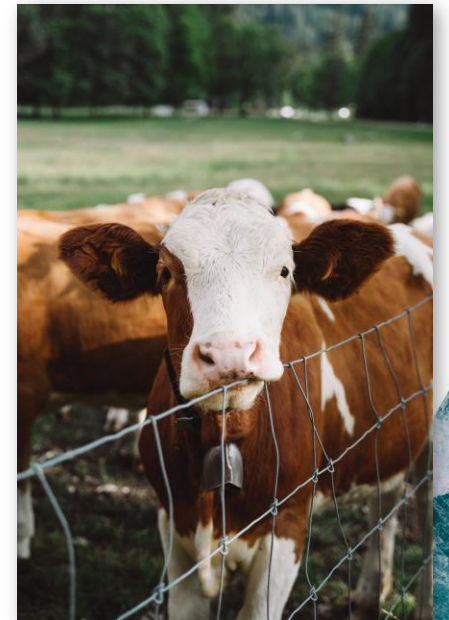
What do the S3 Source Water Rules require?

- Determination of Protozoa log treatment requirements
- Determination of sanitary bore head status for supplies using bores
- Monitoring of determinands/parameters
- Cyanobacteria risk categorisation
- Preparation of a cyanobacteria/cyanotoxin response plan if risk is determined to be medium or high
- Cyanotoxin monitoring twice weekly if cyanotoxin levels exceed 50% of the MAV



Source water type protozoa treatment log credit requirements

- **Class 1:** < 30m depth, sanitary bore head *E. coli* total coliforms absent 3 years (0 log treatment)
- **Interim Class 1:** daily for a month, weekly for 3 years
- **Class 2:** between 30m and 10m depth, sanitary bore head (3 log treatment)
- **Class 3:** less than 10m depth, sanitary bore head, spring and surface waters (4 log treatment)
- **Class 4:** 4 log treatment maybe reduced to 3 log SWRMP indicates low protozoa risk



Sanitary bore head requirements

- Above ground
- Sealed casing
- Concrete apron
- All apertures sealed
- Air vents etc screen 0.5m above ground
- Protected from unauthorised access
- Fence to exclude farm animals by 5m
- Backflow prevention
- Inspected monthly



Determinands / parameters monitored at each source

- **Bacterial:** *E. coli* and total coliform
- **Physio-chemical:**
 - health-significant, aesthetics (monthly)
 - metallic with MAVs (annually)
 - non-metallic with MAVs (annually)
 - major water components (annually)
- **Radiological:** (every 5 years)



Parameters monitored in raw water from each source or combined sources

- **Physio-chemical:**
 - conductivity
 - pH
 - turbidity
 - Continuously
- Can be combined sources at treatment plant



Bacterial rules

Rules modules

G		
S 1	T 1	D 1
S 2	T 2	D 2
S 3	T 3	D 3
WC	PTE	



Rules modules

G		
S 1	T 1	D 1
S 2	T 2	D 2
S 3	T 3	D 3
WC	PIE	



Four Options for Bacterial Disinfection

- Disinfection with Chlorine
- Disinfection with Ozone
- Disinfection with UV
- Disinfection with Chlorine Dioxide



Disinfection with chlorine

- C.t value 15 min.mg/L
- No less than 0.2mg/L
- T10 at least 5 mins
- Turbidity 1.0 NTU for at least 95% of the day
- Turbidity must not exceed 2.0 NTU for any 15 min period
- FAC, pH, turbidity, flow – continuously monitored
- Calculations FAC, C.t



Disinfection with ozone

- C.t 1.2mg.min/L – 95% of the day
- Turbidity must not exceed 5.0 NTU for any 15 min period
- Ozone residual, turbidity, flow, contact tank level – continuously monitored
- Calculations, C.t



Disinfection with UV light

- 40 mJ/cm²
- UVI not less than 80% for any 15 min period
- Turbidity must not exceed 5.0 NTU for any 15 min period
- UVT not less than 95% for more than 5% of the day
- UVT not less than 80% for any 15 min period
- UVI, turbidity, UVT, flow – continuously monitored
- Calibration / validation



Pātai | Questions?