Proposed changes to Level 3 Protozoa Treatment Rules

Where we propose a change to the rule type and reporting and compliance periods, we have made the text red to signify the change.

Existing Rule number	Existing requirement	Existing parameter	Proposed Rule number	Proposed requirement	Proposed parameter	Explanation	Question	Cost implications
T3 Protozo	oa Treatment Common Rules			T3.PZ.C Protozoa treatment common rules				
T3.26	All water passing through the treatment plant must pass through the coagulation, flocculation, and filtration process All water passing through the treatment plant must pass through the coagulation, flocculation, sedimentation, and filtration process.	Assurance CP: 1 Year RP: 1 Year (for all rules)	T3.PZ.C1	All drinking water supplied must— (a) pass through a treatment plant; and (b) If Class C or Class D source water is used, fully comply with the relevant protozoa monitoring rules to provide an effective barrier to protozoal contaminants each day.	Assurance CP: 1 Day RP: 1 Month	Consolidates multiple rules to create a single common rule for all protozoa treatment processes would increase reporting on this rule from annually to monthly (see G.RR.6) Groundwater from a depth of >30	N/A	Reduction in annual reporting requirements.
T3.42	All water passing through the treatment plant must pass through the coagulation, flocculation, sedimentation, and filtration process. All water passing through the treatment plant must pass					metres abstracted via a sanitary borehead does not need protozoa treatment because protozoa have not been found in water from this depth in New Zealand. Shallow groundwater and		
T3.63	through the coagulation, flocculation, sedimentation, and filtration process. All water passing through the treatment plant must pass					surface waters (i.e. Class C or Class D source water) are known to be at risk from protozoa contamination so do		
T3.73	through the cartridge filtration process. All water passing through the treatment plant must pass					need a protozoa barrier.		
T3.80	through the membrane filtration process. All water passing through the treatment plant must pass through the ozone process.							
T3.85	All water passing through the treatment plant must pass through the UV reactor(s) and be within the reactor's certified flow range for at least 95% of each day.							
T3.22	Drinking water supplies must have a protozoa barrier that provides treatment equal to or exceeding the log level of the water class identified by the Source Water Protozoa Log Credit Treatment Requirements.	Assurance CP: 1 Year RP: 1 Year	T3.PZ.C2	The following minimum levels of protozoa treatment must be met by treatment processes based on the source water class determined rule 8: (a) Class A: 0-log (protozoa treatment not required): (b) Class A (Interim): 0-log (protozoa treatment not required): (c) Class B: 0-log (protozoa treatment not required): (d) Class B (Interim): 0-log (protozoa treatment not required): (e) Class C: 3-log: (f) Class D: 4-log.	Assurance CP: 1 Year RP: 1 Year	This proposed rule aligns with the proposed source water classes (see Proposed changes to Level 3 source water classes). The principle here is that shallow groundwater and surface waters have a risk of protozoa contamination and the default of 4-log protozoa treatment is required to manage that risk. Suppliers that consider their supplies to have a lower risk can undertake an assessment and provide 3-log of protozoa treatment if they can demonstrate the risk is reduced	N/A	Neutral
Section 4.10.2	Treatment processes and log credit allocations The processes that can be used for protozoal treatment, and the log credits that can be achieved are: 1. Coagulation, flocculation and sedimentation process without filtration [0.5-Log] 2. Coagulation, flocculation and direct filtration [2.5-3.5-Log] 3. Coagulation, flocculation, sedimentation, and filtration [3-4-Log] 4. Second stage filtration [0.5-Log] 5. Slow sand filtration [2.5-Log] 6. Membrane filtration [up to 4.0-Log] 7. Cartridge filtration [2.0-Log] 8. Ozone [0.25 to 3.0-Log] 9. Ultraviolet light [up to 4-Log]	N/A	T3.PZ.C3	Class C and Class D source water must be treated to control protozoa to the level determined in rule T3PZ.2C by one or more of the following treatment processes: (a) coagulation and direct filtration (2.5-log): (b) coagulation, flocculation, sedimentation (includes dissolved air floatation), and filtration (3.0-log to 4-log): (c) cartridge filtration (2.0-log): (d) membrane filtration (up to 4.0-log): (e) ozone (0.25 to 3.0-log): (f) ultraviolet light (up to 4.0-log).	Assurance CP: 1 Year RP: 1 Year	 Consolidates explanatory material into a rule. Removes coagulation, flocculation and sedimentation process without filtration as a protozoa treatment option. We are not aware of any suppliers using this process without filtration. Removes the option to achieve 3 log and 3.5 log credits for the current coagulation, flocculation and direct filtration option. We don't anticipate this change will adversely impact any supplies, as we are not aware of any suppliers who use direct filtration without UV disinfection to achieve the required log credits. 	Do you agree with removing the coagulation, flocculation and sedimentation process without filtration process option? Do you agree with removing the current coagulation, flocculation and direct filtration process option for achieving 3 log and 3.5 log credits? Do you agree with removing the reference to flocculation in the current coagulation, flocculation and direct filtration process? Are you using coagulation and direct	We anticipate these proposed changes will not have cost implications for suppliers.

						 Removes the option to use flocculation in the current coagulation, flocculation and direct filtration process, as a direct filtration process does not usually have a flocculation step after the addition of a coagulant. Removes the second stage filtration option. We are not aware of any suppliers using second stage filtration to achieve log credits. Removes the slow sand filtration option. We are not aware of any suppliers using slow sand filtration to achieve log credits. 	filtration to achieve 3 log or 3.5 log credits? Do you agree with removing the second stage filtration process option? Do you agree with removing the slow sand filtration process option? Will removing these options create any challenges for your organisation?	
Section 4.10.2	The cumulative log credits of a process that includes filtration or sedimentation and a disinfection process can be calculated by adding the log credits of the qualifying processes that are used.	N/A	T3.PZ.C4	Where multiple treatment processes are used to meet log credit requirements, cumulative log credits can be calculated if the processes include— (a) one filtration process recognised under rule T3.PZ.3C (a) to (d); and (b) one disinfection process recognised under rule T3.PZ.3C (e) or (f).	Non- reporting CP: N/A RP: N/A	Currently, suppliers can use multiple treatment processes to meet log credit requirements, as they can add together the log credits of the qualifying processes. This proposed rule: • consolidates explanatory material into a rule • clarifies that only one filtration process and one disinfection process can be added together to meet the required log credits. E.g. UV (up to 4.0 log) may be combined with coagulation and direction filtration (2.5 log) to meet the required log credits.	N/A	N/A
T3.41- turb,	T3 Requirements for Coagulation, Flocculation and Direct Filtration Process limitations: T3 Requirements for Coagulation, Flocculation, Sedimentation and Filtration Process limitations: T3 Requirements for Membrane Filtration Process limitations: Water treatment plants that recycle waste streams (excluding water from rapid media filters being diverted during restart after backwash, often called 'filter to waste') must return the recycle stream so that it undergoes the full treatment process and provide flow equalisation such that the instantaneous total return rate does not exceed 10% of the plant inflow. Turbidity monitoring is required to demonstrate that the recycle water has received effective solids/liquid separation. If instantaneous total return rate flows of greater than 10% of the plant inflow are recycled, separate treatment of the recycled stream is required to inactivate or kill protozoa and bacteria before the waste stream is returned to the plant inlet.	Monitoring CP: 1 Day RP: 1 Year	T3.PZ.C5	The following requirements apply to recycled water: (a) untreated waste streams must not be recycled to the head of the plant: (b) water from rapid media filters that is diverted during restart (often referred to as 'filter to waste') may be retained and used for filter backwash or recycled with other waste streams: (c) water that is recycled from a treatment process must— (i) be returned to the intake of the plant so that it undergoes the full treatment process; and (ii) undergo effective solids liquid separation of waste streams prior to recycling; and (iii) have turbidity monitored to demonstrate that the recycled water has received effective solids/liquid separation; and (iv) not detrimentally affect treatment processes downstream of the recycling return point; and (v) be subject to flow equalisation so that— a. the mean total recycled water return rate does not exceed 10% of the plant inflow; or b. the volumetric ratio of recycle water to raw water does not exceed 10% prior to the first treatment barrier; and c. the 30-minute rolling average recycle rate does not exceed 10% for 95% of the time; and the 30-minute rolling average rate does not exceed 15% for more than 15 minutes.	Assurance CP: 1 Year RP: 1 Year	This proposed change: consolidates multiple rules and tables into a single rule would make this a common rule that applies to all protozoa treatment processes clarifies that water diverted as filter to waste can be either recycled or stored and used directly for backwash. This resolves an issue with the existing rules, which indicates that filter to waste water must be discarded when this is not the intention clarifies that untreated waste streams cannot be recycled to the head of the plant without treatment gives more flexibility to suppliers who cannot meet existing recycling requirements because of their plant design, by allowing more options for flow equalisation of recycled water flow rate changes the compliance period for this rule from one day to one year.	Do you agree with the proposed changes for managing recycled water at treatment plants?	There may be possible cost increases for some supplies.
N/A	N/A	N/A	T3.PZ.C6	The turbidity of filtered water leaving each media filter must be lower than the water entering that filter while it is in service.	Non- reporting CP: N/A RP: N/A	This proposed rule would require suppliers to ensure that filters are working effectively. Water leaving a filter when it is in operation must have lower turbidity than water entering the filter.	Do you agree with the inclusion of this rule about the turbidity of filtered water?	Possible small cost increases for some supplies with filters that are not effective.

						This proposed new rule would apply to all filtration processes.		
Section 4.10.2	If two filtration processes are used, the second filtration process is considered to be second stage filtration and can add only 0.5-Log to the cumulative log credits.	N/A	N/A	Removed	N/A	Currently, supplies can use two filtration processes to meet the required log credits. We propose removing this rule as we are not aware of any suppliers using second-stage filtration to meet required log credits.	N/A	Neutral
T3 Protozo Log]	al Rules for Coagulation, Flocculation and Sedimentati	on without Filtration [0.5-	Removed					
Т3.23	All water passing through the treatment plant must pass through the coagulation, flocculation and sedimentation process.	Assurance CP: 1 Year RP: 1 Year	N/A	Removed	N/A	We propose removing the rules set for the coagulation, flocculation and sedimentation process without filtration option, as we are not aware of any suppliers using this process without filtration.	N/A	Neutral
T3.24	The sedimentation process must achieve at least a 70% reduction in raw water turbidity each day, based on the arithmetic mean of the turbidity of the raw water and the water leaving the sedimentation process.	Monitoring CP: 1 Day RP: 1 Month	N/A	Removed	N/A	Removed	N/A	Neutral
T3.25 Table 23 T3.25-turb	T3 Requirements for Coagulation, Flocculation and Sedimentation without Filtration Parameters that need to be continuously monitored and where they need to be monitored: Parameter: Turbidity.	Monitoring CP: 1 Day RP: 1 Year	N/A	Removed	N/A	Removed.	N/A	Neutral
	Where it needs to be monitored: On the inlet and outlet of sedimentation process.							
T3.25- lmts	Process Limitations: Sedimentation includes dissolved air flotation. Water from any treatment processes must not be added to the raw water and recycled through the plant.	Assurance CP: 1 Year RP: 1 Year						
T3 Protozo	al Rules for Coagulation, Flocculation and Direct Filtrat	tion [2.5-Log]	T3.PZ.D Coa	agulation and direct filtration rules (2.5-Log)				
T3.29 Table 24	T3 Requirements for Coagulation, Flocculation and Direct Filtration Process Limitations:	Assurance CP: 1 year RP: 1 year	T3.PZ.D1	Filtration must be of a rapid media design (pressure or gravity).	Non- reporting CP: N/A RP: N/A	We propose removing the option to use flocculation in the current coagulation, flocculation and direct filtration process, as a direct filtration process does not usually have a flocculation step after the addition of a coagulant.	N/A	Neutral
T3.29- lmts	Filtration is of a rapid media design (pressure or gravity equivalent).					This proposed rule consolidates a table into a rule to make compliance more straightforward.		
T3.29 Table 24	T3 Requirements for Coagulation, Flocculation and Direct Filtration Parameters that need to be continuously monitored and where they need to be monitored:	Monitoring CP: 1 Day RP: 1 Year	T3.PZ.D2	The turbidity of filtered water must be continuously monitored on the outlet of each filter while it is in service.	Assurance CP: 1 Year RP: 1 Year	This proposed rule consolidates a rule and a table into a single rule. It also removes the requirement to monitor the service state of each filter.	N/A	Neutral
T3.29-turb	Parameter: Turbidity Where it needs to be monitored: On the outlet of each filter. Monitored when the filter is in service to supply, on any recycle streams to the plant inlet (if present).							
T3.29-sers	Parameter: Service State. Where it needs to be monitored: Each filter.							
	Where it needs to be monitored. Each litter.				1			21/4
T3.27	Turbidity must not exceed 0.3 NTU for more than 5% of each day. Turbidity must not exceed 0.5 NTU for the duration of any consecutive 15-minute period.	Monitoring CP: 1 Day RP: 1 Month (both Rules)	T3.PZ.D3	 The turbidity of filtered water leaving any filter must not exceed the following limits: (a) 0.3 NTU for more than 5% of the time the filter is in operation each day: (b) 0.5 NTU for the duration of any consecutive 15-minute period in each day. 	Monitoring CP: 1 Day RP: 1 Month	This rule consolidates two rules into a single rule.	N/A	N/A

		RP: 1 Year				been included in specific rules or		
						moved into the interpretations section.		
	al Rules for Coagulation, Flocculation, and Direct Filtra	tion [3.0-Log]	Removed					
T3.30	All water passing through the treatment plant must pass through the coagulation, flocculation, and filtration process.	Assurance CP: 1 Year RP: 1 Year	N/A	Removed	N/A	We propose removing the rule set for achieving 3.0 log credits with coagulation, flocculation and direct filtration. It will no longer be an option to achieve 3 or 3.5 log for the proposed coagulation and direction filtration option.	N/A	Neutral (see T3.PZ.C3)
T3.31	Turbidity must not exceed 0.15 NTU for more than 5% of each day.	Monitoring CP: 1 Day RP: 1 Month	N/A	Removed	N/A	Removed.	N/A	Neutral
T3.32	Turbidity must not exceed 0.5 NTU for the duration of any consecutive 15-minute period.	Monitoring CP: 1 Day RP: 1 Month	N/A	Removed	N/A	Removed.	N/A	Neutral
T3.33	All of the requirements in Table 24 must be met.	Assurance CP: 1 Year	N/A	Removed.	N/A	Removed.	N/A	Neutral
Table 24	As above	RP: 1 Year						
	al Rules for Coagulation, Flocculation, and Direct Filtra		Removed					
T3.34	All water passing through the treatment plant must pass through the coagulation, flocculation and filtration process.	Assurance CP: 1 Year RP: 1 Year	N/A	Removed.	N/A	We propose removing the rule set for achieving 3.5 log credits with coagulation, flocculation and direct filtration. It will no longer be an option to achieve 3 or 3.5 log for the proposed coagulation and direction filtration option.	N/A	Neutral (see T3.PZ.C3)
T3.35	Turbidity must not exceed 0.1 NTU for more than 5% of each day.	Monitoring CP: 1 Day RP: 1 Month	N/A	Removed.	N/A	Removed.	N/A	Neutral
T3.36	Turbidity must not exceed 0.3 NTU for the duration of any consecutive 15-minute period.	Monitoring CP: 1 Day RP: Monthly	N/A	Removed.	N/A	Removed.	N/A	Neutral
T3.37 Table 24	T3 Requirements for Coagulation, Flocculation and Direct Filtration	Assurance CP: 1 Year RP: 1 Year	N/A	Removed.	N/A	Removed.	N/A	Neutral
T3 Protozo	al Rules for Coagulation, Flocculation, Sedimentation,	and Filtration [3-Log]	T3.PZ.F Coa	gulation, flocculation, sedimentation and filtration rules [3-Log]				
T3.41 Table 25 T3.41-lmts	T3 Requirements for Coagulation, Flocculation, Sedimentation and Filtration Process Limitations: Filtration is of a rapid media design (pressure or gravity equivalent).	Assurance CP: 1 Year RP: 1 Year	T3.PZ.F1	Filtration must be of a rapid media design (pressure or gravity).	Non- reporting CP: N/A RP: N/A	This proposed rule consolidates a table into a rule. We also propose making this rule a non-reporting rule.	N/A	N/A
T3.41 Table 25	T3 Requirements for Coagulation, Flocculation, Sedimentation and Filtration Parameters that need to be continuously monitored and where they need to be monitored:	Monitoring CP: 1 Day RP: 1 Year	T3.PZ.F2	The turbidity of filtered water must be continuously monitored on the outlet of each filter while it is in service.	Assurance CP: 1 Year RP: 1 Year	 This proposed rule: consolidates a table into a rule would no longer require suppliers to monitor service 	N/A	N/A
T3.41-turb	Parameter: Turbidity Where it needs to be monitored: On the outlet of each filter. Monitored when the filter is in service to supply, on any recycle streams to the plant inlet (if present).					 state at each filter decreases the compliance period from one day to one year. 		
T3.41-sers	Parameter: Service State. Where it needs to be monitored: Each filter.							
T3.39	Turbidity must not exceed 0.3 NTU for more than 5% of each day.	Monitoring CP: 1 Day RP: 1 Month	T3.PZ.F3	The turbidity of filtered water leaving any filter must not exceed the following limits: (a) 0.3 NTU for more than 5% of the time the filter is in operation each day: (b) 0.5 NTU for the duration of any consecutive 15-minute period in each	Monitoring CP: 1 Day RP: 1 Month	This proposed rule consolidates two rules into a single rule.	N/A	N/A
T3.40	Turbidity must not exceed 0.5 NTU for the duration of any consecutive 15-minute period.	Monitoring CP: 1 Day		day.				

		RP: 1 Month						
T3 Protozoa	al Rules for Coagulation, Flocculation, Sedimentation,	and Filtration [3.5-Log]		T3.PZ.F Coagulation, flocculation, sedimentation and filtration rules	s [3.5-Log]			
Table 25	T3 Requirements for Coagulation, Flocculation, Sedimentation and Filtration Process Limitations: Filtration is of a rapid media design (pressure or gravity equivalent).	Assurance CP: 1 Year RP: 1 year	T3.PZ.F4	Filtration must be of a rapid media design (pressure or gravity).	Non- reporting CP: N/A RP: N/A	This proposed rule consolidates a table into a rule. We also propose making this rule a non-reporting rule.	N/A	N/A
T3.45 Table 25 T3.45-turb	T3 Requirements for Coagulation, Flocculation, Sedimentation and Filtration Parameters that need to be continuously monitored and where they need to be monitored: Parameter: Turbidity Where it needs to be monitored: On the outlet of each filter. Monitored when the filter is in service to supply, on any	Monitoring CP: 1 Day RP 1 Year	T3.PZ.F5	The turbidity of filtered water must be continuously monitored on the outlet of each filter while it is in service.	Assurance CP: 1 Year RP: 1 Year	This proposed rule consolidates a table into a rule. We also propose making this rule an assurance rule.	N/A	N/A
T3.45-sers	recycle streams to the plant inlet (if present). Parameter: Service State. Where it needs to be monitored: Each filter.							
T3.43	Turbidity must not exceed 0.15 NTU for more than 5% of each day.	Monitoring CP: 1 Day RP: 1 Month	T3.PZ.F6	The turbidity of filtered water leaving any filter must not exceed the following limits: (a) 0.15 NTU for more than 5% of the time the filter is in operation each day: (b) 0.5 NTU for the duration of any consecutive 15-minute period in each day.	Monitoring CP: 1 Day RP: 1 Month	This proposed rule consolidates two rules into a single rule.	N/A	N/A
T3.44	Turbidity must not exceed 0.5 NTU for the duration of any consecutive 15-minute period.	Monitoring CP: 1 Day RP: 1 Month						
T3 Protozoa	al Rules for Coagulation, Flocculation, Sedimentation,	and Filtration [4-Log]	Coagulation	, flocculation, sedimentation and filtration rules [4-Log]				
T3.49 Table 25	T3 Requirements for Coagulation, Flocculation, Sedimentation and Filtration Process Limitations: Filtration is of a rapid media design (pressure or gravity equivalent).	N/A	T3.PZ.F7	Filtration must be of a rapid media design (pressure or gravity).	Non- reporting CP: N/A RP: N/A	This proposed rule consolidates a table into a rule.	N/A	N/A
T3.49 Table 25	T3 Requirements for Coagulation, Flocculation, Sedimentation and Filtration Parameters that need to be continuously monitored and where they need to be monitored:	Monitoring CP: 1 Day RP: 1 Year	T3.PZ.F8	The turbidity of filtered water must be continuously monitored on the outlet of each filter while it is in service.	Assurance CP: 1 Year RP: 1 Year	This proposed rule consolidates a table into a rule. We also propose making this rule an assurance rule.	N/A	N/A
T3.49-turb	Parameter: Turbidity Where it needs to be monitored: On the outlet of each filter. Monitored when the filter is in service to supply, on any recycle streams to the plant inlet (if present).							
T3.49-sers	Parameter: Service State. Where it needs to be monitored: Each filter.							
T3.47	Turbidity must not exceed 0.1 NTU for more than 5% of each day.	Monitoring CP: 1 Day RP: 1 Month	T3.PZ.F9	The turbidity of filtered water leaving any filter must not exceed the following limits: (a) 0.1 NTU for more than 5% of the time the filter is in operation each day:	Monitoring CP: 1 Day RP: 1 Month	This proposed rule consolidates two rules into a single rule.	N/A	N/A
T3.48	Turbidity must not exceed 0.3 NTU for the duration of any consecutive 15-minute period.	Monitoring CP: 1 Day RP: 1 Month		(b) 0.3 NTU for the duration of any consecutive 15-minute period in each day.				
T3 Protozoa	al Rules for Second Stage Filtration [0.5-Log]		Removed					
T3.50	All water passing through the treatment plant must pass through the second stage filtration process.	Assurance CP: 1 Year RP: 1 Year	N/A	Removed.	N/A	We propose removing this rule set as we are not aware of any suppliers using second-stage filtration to achieve required log credits.	N/A	Neutral
T3.51	Turbidity must not exceed 0.1 NTU for more than 5% of each day.	Monitoring CP: 1 Day RP: 1 Month	N/A	Removed.	N/A	Removed.	N/A	Neutral

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T3.52	Turbidity must not exceed 0.3 NTU for the duration of any consecutive 15-minute period.	Monitoring CP: 1 Day RP: 1 Month	N/A	Removed.	N/A	Removed.	N/A	Neutral
T0 F0	T2 Demuisements for Consend Stage Filtration	Manitaring	N/A	Domested	NI/A	Damayad	N/A	Noutral
T3.53	T3 Requirements for Second Stage Filtration	Monitoring	N/A	Removed.	N/A	Removed.	IN/A	Neutral
Table 26	Parameters that need to be continuously monitored and where they need to be monitored:	CP: 1 Day RP: 1 Year						
T3.53-turb	Parameters: Turbidity	Monitoring	N/A	Removed.	N/A	Removed.	N/A	Neutral
	Where it needs to be monitored: On the outlet of each filter,	CP: 1 Day						
	monitored when the filter is in service to supply.	RP: 1 Year						
		THE FEBRUARY						
T3.53-sers	Parameters: Service State.	Monitoring	N/A	Removed.	N/A	Removed.	N/A	Neutral
	Each filter.	CP: 1 Day						
		RP: 1 Year						
T0 F0	To De maine use at a few Consend Charle Filhmatics	A	N1/A	Damas and	N/A	Danasarad	N/A	Nautual
T3.53- lmts	T3 Requirements for Second Stage Filtration	Assurance	N/A	Removed.	IN/A	Removed.	N/A	Neutral
	Process Limitations:	CP: 1 Year						
	A second filtration stage consists of media or granular	RP: 1 Year						
	activated carbon, other fine grain media in a separate stage after granular media filtration with preceding coagulation.							
	5							
								
13 Protozo	al Rules for Slow Sand Filtration [2.5-Log]		Removed					
T3.54	All water passing through the treatment plant must pass	Assurance	N/A	Removed.	N/A	We propose removing the rule set for	N/A	Neutral
	through the slow sand filtration process.	CP: 1 Year				slow sand filtration as we are not aware		
		RP: 1 Year				of any suppliers using this process to		
		III. I ICai				achieve log credits.		
T3.55	The filter must not dry out.	Assurance	N/A	Removed.	N/A	Removed.	N/A	Neutral
		CP: 1 Year						
		RP: 1 Year						
To To		_	N/A		21/4		NI/A	
T3.56	Disinfecting chemicals must not be dosed so that they leave a residual disinfectant upstream of the filter beds.	Assurance	N/A	Removed.	N/A	Removed.	N/A	Neutral
	a residuat distributant apstroam of the fitter sous.	CP: 1 Year						
		RP: 1 Year						
T3.57	Following filter maintenance, when a filter is brought back	Assurance	N/A	Removed.	N/A	Removed.	N/A	Neutral
	into operation, water must be discharged to waste until the	CP: 1 Year						
	filtration process has been demonstrated to be effective.	RP: 1 Year						
		RP: I Year						
T3.58	The filters must be operated at a surface loading rate of less	Assurance	N/A	Removed.	N/A	Removed.	N/A	Neutral
	than 0.35 m³/m²/h.	CP: 1 Year						
		RP: 1 Year						
-	-		AL CA		N1/2		N1/A	N
T3.59	The temperature of the water entering the filter must not drop below 6°C at any time.	Monitoring	N/A	Removed.	N/A	Removed.	N/A	Neutral
	a.ep solon o o acany amo.	CP: 1 Day						
		RP: 1 Year						
T3.60	Turbidity must not exceed 0.5 NTU for more than 5% of each	Monitoring	N/A	Removed.	N/A	Removed.	N/A	Neutral
	day.	CP: 1 Day						
		RP: 1 Month						
T3.61	Turbidity must not exceed 1.0 NTU for the duration of any	Monitoring	N/A	Removed.	N/A	Removed.	N/A	Neutral
	consecutive 15-minute period.	CP: 1 Day						
		RP: 1 Month						
TO 00	To De maior me ante de molte de la Elimana		NI/A	Domestic d	NI/A	Personal	NI/A	Nantus
T3.62	T3 Requirements for Slow Sand Filtration	Monitoring	N/A	Removed.	N/A	Removed.	N/A	Neutral
Table 27	Parameters that need to be continuously monitored and	CP: 1 Day						
	where they need to be monitored:	RP: 1 Year						
T3.62-	Parameters: Temperature	Monitoring	N/A	Removed.	N/A	Removed.	N/A	Neutral
temp		_	17/4	nomovou.	IW/A	nomovod.	IWA	Noutiat
	Where it needs to be monitored: Water entering the filtration stage.	CP: 1 Day						
	· · · · · · · · · · · · · · · · · · ·	RP: 1 Year						

T3.62-turb	Parameters: Turbidity Where it needs to be monitored: On the outlet of each filter, monitored when the filter is in service to supply.	Monitoring CP: 1 Day RP: 1 Year	N/A	Removed.	N/A	Removed.	N/A	Neutral
T3.62-flow	Parameters: Flow Where it needs to be monitored: On the outlet of each filter	Monitoring CP: 1 Day RP: 1 Year	N/A	Removed.	N/A	Removed.	N/A	Neutral
T3.62 Table 27	T3 Requirements for Slow Sand Filtration Values that need to be continuously monitored:	Monitoring CP: 1 day RP: 1 year	N/A	Removed.	N/A	Removed.	N/A	Neutral
T3.62-surf	Surface loading rate.	Monitoring CP: 1 day RP: 1 year	N/A	Removed.	N/A	Removed.	N/A	Neutral
T3.62 Table 27	T3 Requirements for Slow Sand Filtration Process limitations:	Monitoring CP: 1 day RP: 1 year	N/A	Removed.	N/A	Removed.	N/A	Neutral
T3.62-recy	Water treatment plants that recycle waste streams must return the recycle stream so that it undergoes the full treatment process and provide flow equalisation such that the instantaneous total return rate does not exceed 10% of the plant inflow. Turbidity monitoring is required to demonstrate that the recycle water has received effective solids/ liquid separation. If flows of greater than 10% are recycled, separate treatment of the recycled stream is required to inactivate or kill protozoa and bacteria before the waste stream is returned to the plant inlet.	Monitoring CP: 1 day RP: 1 year	N/A	Removed.	N/A	Removed.	N/A	Neutral
T3 Protozo	al Rules for Cartridge Filtration [2.0-Log]		T3.PZ.X Cart	ridge filtration rules [2-Log]				
T3.64	Rapid pressure fluctuations on either side of the cartridges must be avoided. Pumps must not be connected directly to the discharge side of a cartridge filter. After filtration, the filtrate must pass to a tank if there is subsequent pumping. The equipment is operated within the flow range for which it was certified at all times.	Assurance CP: 1 Year RP: 1 Year Assurance CP: 1 Year RP: 1 Year	T3.PZ.X1	 The following requirements must be met where cartridge filtration is used: (a) pumps must not be connected directly to the discharge side of any cartridge filter: (b) where pumping occurs after filtration, the filtrate must first discharge directly to a tank: (c) differential pressure must be measured across each cartridge filter and must not exceed the cartridge filter manufacturer's specifications: 	Assurance CP: 1 Year RP: 1 Year (Combinatio n of multiple rules)	This proposed rule consolidates multiple related rules into a single rule to make compliance easier.	N/A	N/A
T3.69	Differential pressure across cartridges must be measured and kept within the manufacturer's recommendations at all times.	Assurance CP: 1 Year RP: 1 Year		(d) the flow through any filters, measured on the inlet or outlet of each filtration housing, must be within the manufacturer's design specifications for the treatment processes at all times:(e) the minimum differential pressure must always exceed the differential pressure established at commissioning with a new cartridge:				
T3.70	The minimum differential pressure must always exceed the differential pressure established at commissioning with a new cartridge and must be kept within the manufacturer's recommendations.	Assurance CP: 1 Year RP: 1 Year		(f) individual cartridges must be able to be clearly identified in relation to the manufacturer and the part number that relates to the validation/certification.				
T3.71	Individual cartridges must be able to be clearly identified in relation to the manufacturer and the part number that relates to the validation/certification.	Assurance CP: 1 Year RP: 1 Year						
T3.72 Table 28	T3 Requirements for Cartridge Filtration Parameters that need to be continuously monitored and where they need to be monitored:	Monitoring CP: 1 Day RP: 1 Year						
T3.72-pres	Parameters: Differential Pressure. Where it needs to be monitored: Across each filtration housing.							
T3.72-flow	Parameters: Flow. Where it needs to be monitored: On the inlet or outlet of each filtration housing.							
T3.72-sers	Parameters: Service State.							
	Where it needs to be monitored: Each filtration unit.							

Part Content		Parameters that need to be continuously monitored and where they need to be monitored:	RP: 1 Year		(b) be continuously monitored on the outlet of each filtration housing.	RP: 1 Year	This proposed rule consolidates a table into a rule. We also propose making this		
Page		Where it needs to be monitored: On the combined inlet to					rule an assurance rule.		
Filtral content is a state of content of the filtral content of the state of content of content of the state of content of the state of content of content of the state of content of content of the state of content	T3.65		CP: 1 Day	T3.PZ.X3	(a) not exceed 1.0 NTU for more than 5% of the time the filter is in operation each day; and	CP: 1 Day RP: 1 Month	· ·	N/A	Neutral
Particular Procuration Control Procured	T3.66		CP: 1 Day		period; and (c) not exceed the turbidity of the cartridge feed water for the duration of any consecutive 15-minute period (exceedances of not more than 2% are	n of multiple			
Security Processed Proce	T3.67	the turbidity of the cartridge feed water for the duration of	CP: 1 Day						
13.72 cold in contract voluntion (voluntion) (voluntio			N/A						
T3.74 Direct integrity costs must be performed on each membrane fitted or unit at least daily indiringful to midnight in the born is reviewed at any point to unit plus the day. T3.75 Normalization in the specific property of the specific property of the following the day in the born is reviewed at any point to unit plus the day. T3.76 If the turbidity of the membrane fitted exceeds 0.1 NTU for more fitted in the graph to the specific property of the specific property to st. T3.76 If the turbidity of the membrane fitted exceeds 0.1 NTU for more fitted in lingify test. T3.77 If the turbidity of the membrane fitted in the specific property to st. T3.78 If the membrane fitted in the specific property that is a selected and the specific property to st. T3.79 If the membrane fitted in the specific property that is a selected property to st. T3.79 If the turbidity of the membrane fitted in the specific property that is a selected and the specific property to st. the specific property to	Table 28	 Cartridge Validation/ Certification: Each cartridge must have a certified Cryptosporidium (oo)cyst removal efficiency of at least 3-log and be certified to one of the following: 1. the USEPA (2010)'s Long Term 2 Enhanced Surface Water Treatment Rule: Toolbox Guidance Manual Part 8: Bag and Cartridge Filters. 2. the (oo)cyst reduction conditions of Drinking Water Treatment Units: Health effects, NSF/ANSI 53 (NSF, ANSI 2002). 3. The (oo)cyst removal requirements of a standard recognised by Taumata Arowai as being equivalent (e.g., AS/NZS 4348:1995 in conjunction with AS/NZS 	CP: 1 Year	T3.PZ.X4	 removal efficiency of at least 3-log and be certified/validated to one of the following: (a) the USEPA (2010) Long Term 2 Enhanced Surface Water Treatment Rule: Toolbox Guidance Manual Part 8: Bag and Cartridge Filters: (b) the (oo)cyst reduction conditions of Drinking Water Treatment Units: 	CP: 1 Year	into a rule. We also propose removing the option for filtration cartridges that must be certified to standard recognised by the Authority as being equivalent (AS/NZS 4348:1995 in conjunction with AS/NZS	removal of the option to use AS/NZS 4348:1995 in conjunction with AS/NZS 3497:1998	N/A
titutation until at least daily mindight to midright; the membrane filtration until at least daily mindight; to midright; to middight; the membrane filtration until has been in service at any point during the day. 73.76 No mentione unit may be used while it has failed its direct. Assurance (CP: 1 Year Monitoring Windows) and the filtrate exceeds 0.1 NTU for more than 15 consecutive minutes the membrane filtrate ox spright; test must be performed on any membrane unit if the turbidity of the membrane minutes the membrane unit may be used while if has failed its direct integrity test must be performed on any membrane unit if the turbidity of filtrate from the total spring the seconds 0.1 NTU for more than 15 consecutive minutes the membrane unit may be used in the time; the seconds of the continued to supply until if has passed a mention of the continued to supply until if has passed a mention of the continued to supply until if has passed a mention of the continued to supply until if has passed a mention of the continued to supply until if has passed and not returned to service. 73.79 If the membrane unit has been out of service for maintained on service and the time; the service for maintained on the continued with the membrane unit may be used if it has failed at direct integrity test. 73.79 Ta sequirements for Membrane Filtration 73.79 Ta sequirements for Membrane Filtration 73.79 Parameters: Turbidity. 75.79-turb Parame	T3 Protozo	oal Rules for Membrane (microfiltration/ultrafiltration) Fi	ltration [up to 4.0-Log]	T3.PZ.M Me	mbrane (microfiltration/ultrafiltration) filtration rules [up to 4-Log]				
T3.76 If the turbidity of the membrane filtrate exceeds 0.1 NTU for more than 15 consecutive minutes the membrane unit has been out of service for maintenance or any other reason for more than 6 hours, a direct integrity test must be completed before the unit is returned to surple and the control of the membrane unit has been out of service for maintenance or any other reason for more than 6 hours, a direct integrity test must be completed before the unit is returned to service. T3.79 T3 Requirements for Membrane Filtration Parameters that need to be continuously monitored and where they need to be monitored: T3.79-turb Parameters Turbidity Where it needs to be monitored: On the combined inlet to the membrane process, and on the outer of each membrane process.	T2 74		A	T3 P7 M1	The following requirements must be met where membrane filtration is used:	Assurance	· · ·	N/A	N/A
### If the membrane unit has been out of service for maintenance or any other reason for more than 6 hours, a direct linegify test must be completed before the unit is returned to service. #### 19ear #### 19e		filtration unit at least daily (midnight to midnight) if the membrane filtration unit has been in service at any point during the day. No membrane unit may be used while it has failed its direct	CP: 1 Day RP: 1 Year Assurance	-	at least daily if the membrane filtration unit has been in service at any point during the day (midnight to midnight):(b) direct integrity tests must be performed on any membrane unit that has been out of service for maintenance, or any other reason, for more than 6	CP: 1 Year RP: 1 Year (Combinatio n of multiple	_		
Table 29 Parameters that need to be continuously monitored and where they need to be monitored: T3.79-turb Parameters: Turbidity. Where it needs to be monitored: On the combined inlet to the membrane process, on and on the outlet of each membrane filtration unit (rack, train, or cell) when in service to supply and on any recycle streams to the plant inlet (if present). T3.79-sers Parameters: Service State. Where it needs to be monitored: Each membrane filtration	T3.75	filtration unit at least daily (midnight to midnight) if the membrane filtration unit has been in service at any point during the day. No membrane unit may be used while it has failed its direct integrity test. If the turbidity of the membrane filtrate exceeds 0.1 NTU for more than 15 consecutive minutes the membrane unit must be run to waste and not returned to supply until it has	CP: 1 Day RP: 1 Year Assurance CP:1 Year RP: 1 Year Monitoring CP: 1 Day		 at least daily if the membrane filtration unit has been in service at any point during the day (midnight to midnight): (b) direct integrity tests must be performed on any membrane unit that has been out of service for maintenance, or any other reason, for more than 6 hours before the unit is returned to service: (c) direct integrity tests must be performed on any membrane unit if the turbidity of filtrate from that unit exceeds 0.1 NTU for more than 15 minutes: (d) no membrane unit may be used if it has failed its direct integrity test: 	CP: 1 Year RP: 1 Year (Combinatio n of multiple	_		
where they need to be monitored: RP: 1 Year T3.79-turb Parameters: Turbidity. Where it needs to be monitored: On the combined inlet to the membrane process, and on the outlet of each membrane filtration unit (rack, train, or cell) when in service to supply and on any recycle streams to the plant inlet (if present). T3.79-sers Parameters: Service State. Where it needs to be monitored: Each membrane filtration	T3.75	filtration unit at least daily (midnight to midnight) if the membrane filtration unit has been in service at any point during the day. No membrane unit may be used while it has failed its direct integrity test. If the turbidity of the membrane filtrate exceeds 0.1 NTU for more than 15 consecutive minutes the membrane unit must be run to waste and not returned to supply until it has passed a direct integrity test. If the membrane unit has been out of service for maintenance or any other reason for more than 6 hours, a direct integrity test must be completed before the unit is	CP: 1 Day RP: 1 Year Assurance CP:1 Year RP: 1 Year Monitoring CP: 1 Day RP: 1 Month Assurance CP: 1 Year		 at least daily if the membrane filtration unit has been in service at any point during the day (midnight to midnight): (b) direct integrity tests must be performed on any membrane unit that has been out of service for maintenance, or any other reason, for more than 6 hours before the unit is returned to service: (c) direct integrity tests must be performed on any membrane unit if the turbidity of filtrate from that unit exceeds 0.1 NTU for more than 15 minutes: (d) no membrane unit may be used if it has failed its direct integrity test: (e) turbidity of filtered water of each membrane unit (rack, train or cell) must 	CP: 1 Year RP: 1 Year (Combinatio n of multiple	_		
Where it needs to be monitored: On the combined inlet to the membrane process, so and on the outlet of each membrane filtration unit (rack, train, or cell) when in service to supply and on any recycle streams to the plant inlet (if present). T3.79-sers Parameters: Service State. Where it needs to be monitored: Each membrane filtration	T3.75 T3.76 T3.78	filtration unit at least daily (midnight to midnight) if the membrane filtration unit has been in service at any point during the day. No membrane unit may be used while it has failed its direct integrity test. If the turbidity of the membrane filtrate exceeds 0.1 NTU for more than 15 consecutive minutes the membrane unit must be run to waste and not returned to supply until it has passed a direct integrity test. If the membrane unit has been out of service for maintenance or any other reason for more than 6 hours, a direct integrity test must be completed before the unit is returned to service. T3 Requirements for Membrane Filtration	CP: 1 Day RP: 1 Year Assurance CP:1 Year RP: 1 Year Monitoring CP: 1 Day RP: 1 Month Assurance CP: 1 Year RP: 1 Year Monitoring		 at least daily if the membrane filtration unit has been in service at any point during the day (midnight to midnight): (b) direct integrity tests must be performed on any membrane unit that has been out of service for maintenance, or any other reason, for more than 6 hours before the unit is returned to service: (c) direct integrity tests must be performed on any membrane unit if the turbidity of filtrate from that unit exceeds 0.1 NTU for more than 15 minutes: (d) no membrane unit may be used if it has failed its direct integrity test: (e) turbidity of filtered water of each membrane unit (rack, train or cell) must 	CP: 1 Year RP: 1 Year (Combinatio n of multiple	_		
Where it needs to be monitored: Each membrane filtration	T3.75 T3.76 T3.78	filtration unit at least daily (midnight to midnight) if the membrane filtration unit has been in service at any point during the day. No membrane unit may be used while it has failed its direct integrity test. If the turbidity of the membrane filtrate exceeds 0.1 NTU for more than 15 consecutive minutes the membrane unit must be run to waste and not returned to supply until it has passed a direct integrity test. If the membrane unit has been out of service for maintenance or any other reason for more than 6 hours, a direct integrity test must be completed before the unit is returned to service. T3 Requirements for Membrane Filtration Parameters that need to be continuously monitored and	CP: 1 Day RP: 1 Year Assurance CP:1 Year RP: 1 Year Monitoring CP: 1 Day RP: 1 Month Assurance CP: 1 Year RP: 1 Year Monitoring CP: 1 Day		 at least daily if the membrane filtration unit has been in service at any point during the day (midnight to midnight): (b) direct integrity tests must be performed on any membrane unit that has been out of service for maintenance, or any other reason, for more than 6 hours before the unit is returned to service: (c) direct integrity tests must be performed on any membrane unit if the turbidity of filtrate from that unit exceeds 0.1 NTU for more than 15 minutes: (d) no membrane unit may be used if it has failed its direct integrity test: (e) turbidity of filtered water of each membrane unit (rack, train or cell) must 	CP: 1 Year RP: 1 Year (Combinatio n of multiple	_		
UIIII.	T3.75 T3.76 T3.78 T3.79 Table 29	filtration unit at least daily (midnight to midnight) if the membrane filtration unit has been in service at any point during the day. No membrane unit may be used while it has failed its direct integrity test. If the turbidity of the membrane filtrate exceeds 0.1 NTU for more than 15 consecutive minutes the membrane unit must be run to waste and not returned to supply until it has passed a direct integrity test. If the membrane unit has been out of service for maintenance or any other reason for more than 6 hours, a direct integrity test must be completed before the unit is returned to service. T3 Requirements for Membrane Filtration Parameters that need to be continuously monitored and where they need to be monitored: Parameters: Turbidity. Where it needs to be monitored: On the combined inlet to the membrane process, 50 and on the outlet of each membrane filtration unit (rack, train, or cell) when in service to supply and on any recycle streams to the plant inlet (if	CP: 1 Day RP: 1 Year Assurance CP:1 Year RP: 1 Year Monitoring CP: 1 Day RP: 1 Month Assurance CP: 1 Year RP: 1 Year Monitoring CP: 1 Day		 at least daily if the membrane filtration unit has been in service at any point during the day (midnight to midnight): (b) direct integrity tests must be performed on any membrane unit that has been out of service for maintenance, or any other reason, for more than 6 hours before the unit is returned to service: (c) direct integrity tests must be performed on any membrane unit if the turbidity of filtrate from that unit exceeds 0.1 NTU for more than 15 minutes: (d) no membrane unit may be used if it has failed its direct integrity test: (e) turbidity of filtered water of each membrane unit (rack, train or cell) must 	CP: 1 Year RP: 1 Year (Combinatio n of multiple	_		
T3.79 T3 Requirements for Membrane Filtration N/A	T3.75 T3.76 T3.78 T3.79 Table 29 T3.79-turb	filtration unit at least daily (midnight to midnight) if the membrane filtration unit has been in service at any point during the day. No membrane unit may be used while it has failed its direct integrity test. If the turbidity of the membrane filtrate exceeds 0.1 NTU for more than 15 consecutive minutes the membrane unit must be run to waste and not returned to supply until it has passed a direct integrity test. If the membrane unit has been out of service for maintenance or any other reason for more than 6 hours, a direct integrity test must be completed before the unit is returned to service. T3 Requirements for Membrane Filtration Parameters that need to be continuously monitored and where they need to be monitored: On the combined inlet to the membrane filtration unit (rack, train, or cell) when in service to supply and on any recycle streams to the plant inlet (if present). Parameters: Service State.	CP: 1 Day RP: 1 Year Assurance CP:1 Year RP: 1 Year Monitoring CP: 1 Day RP: 1 Month Assurance CP: 1 Year RP: 1 Year Monitoring CP: 1 Day		 at least daily if the membrane filtration unit has been in service at any point during the day (midnight to midnight): (b) direct integrity tests must be performed on any membrane unit that has been out of service for maintenance, or any other reason, for more than 6 hours before the unit is returned to service: (c) direct integrity tests must be performed on any membrane unit if the turbidity of filtrate from that unit exceeds 0.1 NTU for more than 15 minutes: (d) no membrane unit may be used if it has failed its direct integrity test: (e) turbidity of filtered water of each membrane unit (rack, train or cell) must 	CP: 1 Year RP: 1 Year (Combinatio n of multiple	_		

Table 29	Parameters that need to be non-continuously monitored and							
	where they need to be monitored:							
	Parameters: Membrane Integrity. Where it needs to be monitored: Each membrane filtration							
	unit.							
T3.77	Filtrate turbidity must not exceed 1 NTU at any time.	Monitoring	T3.PZ.M2	Filtered water from each membrane unit must not exceed the following limits:	Monitoring	This rule consolidates two rules into a single rule.	N/A	N/A
		CP: 1 Day		(a) 0.1 NTU for more than 15 consecutive minutes:	CP: 1 Day	Single rule.		
		RP: 1 Month	_	(b) 1.0 NTU at any time.	RP: 1 Month			
T3.76	See above	See above						
T3.79	T3 Requirements for Membrane Filtration	Assurance	T3.PZ.M3	Membranes must be certified/validated/verified to comply with NSF/ANSI	Assurance	This rule consolidates a table into a	N/A	N/A
Table 29	Membrane Validation/Certification:	CP: 1 Year		61: Drinking Water System Components – Health Effects and NSF/ANSI 419 Public Drinking Water Equipment Performance – Filtration or equivalent.	CP: 1 Year	rule.		
		RP: 1 Year			RP: 1 Year			
T3.79-cert	Membranes must be certified to comply with NSF/ANSI 61: Drinking Water System Components – Health Effects and NSF/ANSI 419 Public Drinking Water Equipment Performance – Filtration or equivalent.							
T3.79	T3 Requirements for Membrane Filtration	Assurance	T3.PZ.M4	Membranes must be operated—	Assurance	This rule consolidates a table into a	N/A	N/A
Table 29	Membrane Validation/ Certification	CP: 1 Year		(a) to achieve only the log credits that validation specifies; and	CP: 1 Year	rule.		
		RP: 1 Year		(b) according to the operational requirements under which the membranes have been validated; and	RP: 1 Year			
T3.79-cert	The maximum number of log credits (up to a maximum of 4.0) that a membrane filtration process is eligible to receive			(c) so that when a direct integrity test is undertaken, a 3 µm hole affects the				
	for protozoa removal depends on third party certification of			membrane filtration unit's response to the test.				
	the log removal that the filter plant can deliver. The manufacturer's certificate (or validation) must specify the							
	operational requirements under which the membrane units must be operated to meet the specification and the integrity							
	testing procedure that the water supplier must carry out to demonstrate that the plant is operating at the claimed log							
	credit rating at 3-micron resolution.							
T3.79	T3 Requirements for Membrane Filtration	N/A	N/A	Removed	N/A	Removed.	N/A	N/A
Table 29	Process Limitations:							
	Membrane filtration includes microfiltration and ultrafiltration.							
Footnote 50	This may be source water turbidity before coagulation when membrane filtration is the only process. It may be the	N/A	N/A	Removed	N/A	We propose removing this rule and instead provide guidance related to	N/A	Neutral
	average of turbidity from in-service pre-treatment units.					turbidity.		
T3.79	T3 Requirements for Membrane Filtration	Monitoring	N/A	Removed	N/A	We propose removing this rule and	N/A	Neutral
Table 29	Parameters that need to be non-continuously monitored and where they need to be monitored:	CP: 1 Day				instead provide guidance related to continuous monitoring.		
	Direct Integrity test requirements:	RP: 1 Year						
	The test is applied in such a manner that a 3 µm hole affects							
	the response from the test. The test can verify the log removal value claimed for the							
	membrane process.							
T3 Protozoa	al Rules for Ozone Disinfection [0.25 to 3.0-Log]		T3.PZ.Z Ozo	ne Rules [0.25 to 3.0-Log]				
T3.84	All of the monitoring requirements in Table 31 must be met.	Monitoring CP: 1 Day	T3.PZ.Z1	Drinking water treated by ozone disinfection must be continuously monitored for the following:	Assurance CP: 1 Year	This rule consolidates a rule, table and footnote into a single rule to make	N/A	Neutral
T3.84	T3 Requirements for Ozone Disinfection	RP: 1 Month		(a) ozone residual at the outlet of the contact tank (alternative monitoring	RP: 1 Year	compliance more straightforward. We also propose changing this rule from a		
Table 31	Parameters that need to be continuously monitored and where they need to be monitored:			sites may be used if the water supplier can demonstrate that they improve the accuracy of the monitoring information):		monitoring rule to an assurance rule.		
	whole they heed to be mounted.		-	(b) turbidity at a point immediately before or after the contact tank:				
T3.84- ozon	Parameters: Ozone residual.	Monitoring		(c) flow at the—				
	Where it needs to be monitored: Water immediately before or after the contact tank.53	CP: 1 Day RP: 1 Month		(i) outlet of the contact tank; or				
T3.84-	Parameters: Temperature.	Tu . I Pionul		(ii) inlet of the contact tank, if a high-level outlet weir is installed:(d) temperature of water leaving the contact tank:				
temp	Where it needs to be monitored: Water leaving the contact			(e) the water level in the contact tank:				
	tank.			(f) T10 Contact Time:				
T3.84-	Parameters: Turbidity.			(g) C.t.				
turbidity	Where it needs to be monitored: Water leaving the contact							
	tank.							

	Parameters: Flow. Where it needs to be monitored: Water leaving the contact tank unless there is a high-level outlet weir in which case water entering the contact tank is acceptable. A calculated outlet flow based on inlet flow and contact level change is also an acceptable approach.													
T3.84-leve	Water level in the contact tank (if used).	-												
T3.84	T3 Requirements for Ozone Disinfection	Monitoring												
	Values that need to be continuously monitored:	CP: 1 Day												
	T10 Contact Time.	RP: 1 Month												
	C.t (Ozone x T10 Contact Time).													
Footnote	Additional monitoring sites may be used in addition to the contact tank entry or exit point if the water supplier can demonstrate that they improve the accuracy of the monitoring information	N/A												
	The C.t and water temperature required for the log credit claimed (Table 30) must be achieved for more than 95% of each day.	Monitoring T3 CP: 1 Day RP: 1 Month	3.PZ.Z2	(a) turb	idity of wate duration of	er leaving any cons	g the conta ecutive 15	act tank m 5-minute p	nust not ex period:	fection is used: xceed 5.0 NTU for dit claimed (Table	Monitoring CP: 1 Day RP: 1 Month	This rule consolidates several rules, footnote and a table into a single rule and table. We propose increasing reporting	N/A	N/A
	The C.t and water temperature must not be less than 80% of the values required for the log credit claimed (Table 30) for the duration of any consecutive 15-minute period.	Monitoring CP: 1 Day RP: 1 Year		1) m drin (c) the	ust be achi king water t C.t and wate	eved for i o be disti er tempera	more than ributed to ature must	95% of the consume t not be le	ne time the rs each da ss than 809	e plant is producing		frequency from annually to monthly for turbidity monitoring requirements. This responds to feedback we have received from some suppliers that reporting		
	Turbidity must not exceed 5.0 NTU for the duration of any consecutive 15-minute period.	Monitoring CP: 1 Day RP: 1 Year	able 1	cons	ecutive 15-r	minute pe	eriod. ryptospor	ridium ina	activation	by ozone valid for		more frequently would reduce the burden of annual reporting by spreading analysis and reporting throughout the year.		
	The C.t data in this table are valid for ozone concentrations in the range 0.2-5.0mg/L	N/A		g ,	Vater temp C.t values emperatur	between	the indic							
	C.t values between the indicated temperatures may be determined by interpolation.	N/A		A1+	nterpolatio	_			25					
	T3 C.t values ⁵¹ (min.mg/L) for <i>Cryptosporidium</i> inactivation by ozone	Monitoring CP: 1 Day		0.2 5	5.8 4.0	2.5	1.6	1.0	0.6					
	Log Water Temperature (oC) ₅₂ Cre	RP: 1 Year		0.5	2 7.9	4.9	3.1	2.0 1	.2					
	dit 1 5 10 15 20 25			1.0 2	23 16	9.9	6.2	3.9 2	2.5					
	0.25 5.8 4.0 2.5 1.6 1.0 0.6			1.5	35 24	15			3.7					
	0.5 12 7.9 4.9 3.1 2.0 1.2			2.0 4		20			l.9					
	1.0 23 16 9.9 6.2 3.9 2.5													
	1.5 35 24 15 9.3 5.9 3.7			2.5		25			5.2					
				3.0	69 47	30	19	12 7	7.4					
	2.0 46 32 20 12 7.8 4.9													
	2.5 58 40 25 16 9.8 6.2													
	3.0 69 47 30 19 12 7.4													
T3 Protozoa	l Rules for Ultraviolet Light Disinfection [up to 4-Log]	Ta	3.PZ.U UV F	Rules [u _l	to 4-Log									
T3.90	UVT must not be less than 80% of the lowest UVT for which the reactor has been certified for the duration of any consecutive 15-minute period. ⁵⁵	Monitoring T3 CP: 1 Day RP: 1 Year	3.PZ.U1		and be oper				_	required from the nated UV validation	Assurance CP: 1 Year RP: 1 Year	This proposed rule consolidates a rule, footnote and a table into a single rule and proposes having a definition of designated UV validation standard in	N/A	N/A
T3.90 Footnote 55	These requirements do not apply to UV disinfection systems that automatically adjust the UV dose as the UVT of the water flowing through the reactor varies.	N/A										the interpretations section. We also propose changing this rule from a monitoring rule to an assurance rule.		
T3.91	T3 Requirements for UV Disinfection	Assurance												
Table 32	UV certification/ validation:	CP: 1 Year												
T3.91-cert	The equipment must be certified to meet the required log credit using at least one of:	RP: 1 Year												
	 the Ultraviolet Disinfection Guidance Manual (USEPA 2006b) – variable log credits. 													

	 DVGW Technical Standard W294 (DVGW 2006). ÖNORM M 5873-1: 2020 01 01. ¹ NSF/ANSI 55 (2019) for Class A systems (for populations of up to 5,000) – 3 log. 							
Table 32 Footnote 58	UV reactors installed before 1 January 2020 can be certified to öNORM M5873 (Osterreichisches Normungsinstitut 2001).	N/A						
T3.90	See above	See above	T3.PZ.U2	Drinking water treated by UV light must be continuously monitored for the	Assurance	This proposed rule consolidates a table	N/A	N/A
T3.91	T3 Requirements for UV Disinfection	Monitoring		following: (a) UVT, at a point where water enters or leaves the UV reactor(s)	CP: 1 Year	and footnote into a rule. We also propose making this rule an assurance rule.		
Table 32	Parameters that need to be continuously monitored and where they need to be monitored:	CP: 1 Day RP: 1 Year		(b) turbidity, at a point before the water enters or leaves the UV unit(s) including upstream filter monitoring if there is no other process between	RP: 1 Year			
T3.91-uvt	Parameters: UVT. Where it needs to be monitored: Water entering or leaving			the filters and the UV unit(s): (c) UVI or UV dose, at the same point in the UV unit as that used for certification/validation:				
	the UV reactor(s). ⁵⁶	_		(d) flow, at a point representative of water entering or leaving the units, which meets the relevant certification/validation requirements.				
Footnote 56	These requirements do not apply to UV disinfection systems that automatically adjust the UV dose as the UVT of the water flowing through the reactor varies.							
T3.91-turb	Parameters: Turbidity.							
	Where it needs to be monitored: Water entering or leaving the UV reactor(s). Can include upstream filter monitoring if there is no other process between the filters and the UV reactors							
T3.91-uvi	Parameters: UVI or UV dose.	-						
	For UV units certified to Ultraviolet Disinfection Guidance Manual (USEPA 2006b) monitored UVI, UVT and flow must be used to calculate dose.							
	For UV units certified to DVGW Technical Standard W294 (DVGW 2006) or ÖNORM M 5873-1: 2020 01 01 ⁵⁷ monitored flow must be used for UVI control or the reactor run at full power. UVI and UVT must be more than the validated value for the respective flow.							
	For UV units certified to NSF/ANSI 55 Class A (NSF, ANSI n.d.); (for populations of up to 5000) – 3-log a fault must be generated when any parameter exceeds the certified value.							
	Where it needs to be monitored: The same point in the reactor as that used for certification/validation.							
Footnote 57	Or UV reactors certified to öNORM M5873 (Osterreichisches Normungsinstitut 2001).							
T3.91-flow	Parameters: Flow. Where it needs to be monitored: At a point representative of water entering or leaving the reactor(s).							
T3.85	All water passing through the treatment plant must be within the reactor's certified flow range for at least 95% of each day.	Assurance CP: 1 Year RP: 1 Year	T3.PZ.U3	Water flow rate must be within the UV units certified flow range for the claimed log credit at least 95% of the time the UV unit is operating each day.	Assurance CP: 1 Year RP: 1 Year	We propose minor wording changes to this rule. There is no change in requirements for suppliers.	N/A	N/A
T3.86	The UV dose must meet or exceed that required to achieve the	Monitoring	T3.PZ.U4	A reduction equivalent dose of not less than that the validated dose for the	Monitoring	This proposed rule consolidates two	N/A	Neutral
	claimed log credit for at least 95% of each day.	CP: 1 Day		log credits claimed must be achieved for not less than 95 % of the time the plant is producing drinking water each day.	CP: 1 Day	rules into a single rule. We also propose changing this rule from an assurance		
		RP: 1 Year			RP: 1 Month	rule to a monitoring rule, as this rule sets out prescribed monitoring requirements.		
T3.87	The UV dose must not be less than that required to achieve	Monitoring	T3.PZ.U5	The reduction equivalent dose delivered by a UV unit must not be less than the	Monitoring	We propose increasing reporting	N/A	Decrease in annual
	the claimed log credit for the duration of any consecutive 15-minute period.	CP: 1 Day RP: 1 Year		validated dose for the protozoa log credits claimed for the duration of any consecutive 15-minute period.	CP: 1 Day RP: 1 Month	frequency from annually to monthly. This responds to feedback we have received from some suppliers that reporting more frequently would reduce the burden of annual reporting by spreading analysis and reporting throughout the year.		reporting requirements.
		Monitoring	T3.PZ.U6	Turbidity of water entering the UV unit(s) when it is in service must not	Monitoring	We propose minor wording changes to	N/A	Possible small cost

The UV dose must meet or exceed that required to achieve the claimed log credit for at least 95% of each day. UVT must meet or exceed 95% of the UVT for which the reactor has been certified for at least 95% of each day. 54	Monitoring CP: 1 Day RP: 1 Month Monitoring CP: 1 Day RP: 1 Year	T3.PZ.U7	UV units validated to USEPA UVDGM must calculate dose using— (a) UVI and flow, if set-point dose approach is used; or (b) UVI, flow, and UVT, if calculated dose approach used.	Non-reporting CP: N/A RP: N/A	This proposed rule: sets out requirements for calculating dose for UV units validated to USEPA UVDGM clarifies that UVT only needs to be monitored if a supplier is using a calculated dose approach changes this rule from an	N/A	N/A
					assurance rule to a non-reporting rule. Previously, UVT was monitored separately and needed to meet a set limit. UV units now read UVT and adjust dose accordingly, so required monitoring of UVT itself is not required if the appropriate UV dose is being applied. Validation means that the necessary dose will be applied. We plan to develop guidance on UV treatment to help suppliers understand their requirements.		
These requirements do not apply to UV disinfection systems that automatically adjust the UV dose as the UVT of the water flowing through the reactor varies.	See above. N/A	T3.PZ.U8	UV units validated to DVGW; ÖNORM; or DIN must— (a) use monitored flow for UVI control; or (b) be run at full power; and (c) UVI and UVT must be more than the validated value for the respective flow.	Non-reporting CP: N/A RP: N/A	 sets out UVI and UVT requirements for UV units validated to DVGW, ÖNORM; or DIN adds the DIN standard as a possible option for suppliers changes this rule from an assurance rule to a non-reporting rule. We propose including a definition of designated UV validated standard in the interpretation section of the Rules. 	N/A	N/A
For UV units certified to NSF/ANSI 55 Class A (NSF, ANSI n.d.); (for populations of up to 5000) – 3-log a fault must be generated when any parameter exceeds the certified value.	Assurance CP: 1 Year RP: 1 Year	T3.PZ.U9	UV units validated to NSF/ANSI 55 – Class A must generate a fault when any parameter exceeds the validated value.	Non- reporting CP: N/A RP: N/A	This proposed rule is intended to align the protozoa rules with existing requirements for bacteria treatment. We also propose changing this rule from an assurance rule to a non-reporting rule.	N/A	N/A
T3 Requirements for UV Disinfection UV sensor checking and standardisation: Duty UVI sensors must be checked at least monthly against the reference sensor. If the difference between the two readings exceeds the manufacturer's specified limits, then the duty UVI sensor must be replaced. Reference UVI sensor must be standardised at least annually in accordance with	Monitoring CP:1 Month RP: 1 Year	T3.PZ.U10	UVI sensors must meet the following requirements: (a) duty UVI sensors must be— (i) checked at least every month against the reference sensor; and (ii) replaced if the difference between the duty and reference readings exceeds the manufacturer's specified limits: (b) a reference UVI sensor must— (i) have been purchased in the last 12 months; or (ii) be standardised at least annually in accordance with the USEPA UVDGM or other traceable procedure: (c) after 12 months of use, the reference sensor can be used as a duty sensor	Assurance CP: 1 Year RP: 1 Year	This proposed rule consolidates a table into a rule.	N/A	N/A
For land.	UV units certified to NSF/ANSI 55 Class A (NSF, ANSI); (for populations of up to 5000) – 3-log a fault must be erated when any parameter exceeds the certified value. Requirements for UV Disinfection sensor checking and standardisation: y UVI sensors must be checked at least monthly against reference sensor. If the difference between the two dings exceeds the manufacturer's specified limits, then duty UVI sensor must be replaced. Reference UVI sensor to be standardised at least annually in accordance with Ultraviolet Disinfection Guidance Manual (USEPA 2006b) ther traceable procedure. Alternatively, after 12 months supplier can use the reference sensor as a duty sensor purchase a new standardised sensor for use as a	DVV units certified to NSF/ANSI 55 Class A (NSF, ANSI 3); (for populations of up to 5000) – 3-log a fault must be erated when any parameter exceeds the certified value. Requirements for UV Disinfection Sensor checking and standardisation: WIVI sensors must be checked at least monthly against reference sensor. If the difference between the two lings exceeds the manufacturer's specified limits, then duty UVI sensor must be replaced. Reference UVI sensor sit be standardised at least annually in accordance with Ultraviolet Disinfection Guidance Manual (USEPA 2006b) ther traceable procedure. Alternatively, after 12 months supplier can use the reference sensor as a duty sensor	DVV units certified to NSF/ANSI 55 Class A (NSF, ANSI); (for populations of up to 5000) – 3-log a fault must be erated when any parameter exceeds the certified value. Requirements for UV Disinfection Sensor checking and standardisation: Wonitoring CP: 1 Year Monitoring CP:1 Month RP: 1 Year V UVI sensors must be checked at least monthly against reference sensor. If the difference between the two lings exceeds the manufacturer's specified limits, then duty UVI sensor must be replaced. Reference UVI sensor it be standardised at least annually in accordance with Ultraviolet Disinfection Guidance Manual (USEPA 2006b) their traceable procedure. Alternatively, after 12 months supplier can use the reference sensor as a duty sensor purchase a new standardised sensor for use as a	Assurance (CP: 1 Year RP: 1 Year T3.PZ.U9 UV units validated to NSF/ANSI 55 Class A must generate a fault when any parameter exceeds the certified value. RP: 1 Year T3.PZ.U9 UV units validated to NSF/ANSI 55 – Class A must generate a fault when any parameter exceeds the validated value. RP: 1 Year T3.PZ.U10 UVI sensors must meet the following requirements: (a) duty UVI sensors must be— (i) checked at least every month against the reference sensor; and (ii) replaced if the difference between the duty and reference readings exceeds the manufacturer's specified limits; then duty UVI sensor must be replaced. Reference UVI sensor the standardised at least annually in accordance with ultravoled Disintection Guidance Manual (USEPA 2006b) ther traceable procedure. Alternatively, after 12 months supplier can use the reference sensor as a duty sensor sensor and a new standardised sensor for use as a	UV units certified to NSF/ANSI 55 Class A (NSF, ANSI proposed to the certified value). Assurance CP: 1 Year RP: 1 Year Wonitoring CP: 1 Year RP: 1 Year RP: 1 Year Wonitoring CP: 1 Year RP: 1 Year (i) checked at least every month against the reference sensor; and (ii) replaced if the difference between the duty and reference readings exceeds the manufacturer's specified limits; then to be standardised at least annuality in accordance with Ultraviolat Disinfection Guidance Manual (USEPA 2006b) their traceable procedure. Alternatively, after 12 months of use, as a duty sensor purchase a new standardised sensor for use as a chury sensor and a new standardised sensor must be calibrated with the USEPA UVDGM or other instrumentation must be calibrated with the USEPA UVDGM and a new standardised sensor must be used as a duty sensor and a new standardised sensor must be used as a reference sensor.	adds the DIN standard as a possible option for suppliers change this rule from an assurance rule to a non-reporting rule. *** *** *** *** *** ** ** **	are flowing through the reactor varies. If tw. If tw