Watercare
An Auckland Council Organisation

Watercare Services Limited
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25 February 2019

Travis Clayton
Email: fyi-request-9627-cf0360c2@requests.fyi.org.nz
Copy to: Democracy Services Auckland Council; Ministry of Health

Dear Travis

Request under the Local Government Official Information and Meetings Act 1987 – fluoride composition

Thank you for your email dated 19 February 2019 that was transferred to Watercare Services Limited (**Watercare**) in regards to the composition of fluoride. A response to your queries is provided below.

As stated previously Watercare obtains Hydrofluorosilicic Acid (**HFA**) from Ixom New Zealand. Please find attached the analysis data for the HFA supplied to Watercare by Ixom New Zealand. This analysis data confirms compliance with the Water New Zealand Good Practice Guide – Supply of Fluoride for Use in Water Treatment. The HFA supplied to Watercare is approximately 22% fluorosilicic acid and 78% water. The physical properties and trace elements included in this analysis are selected based on specific maximum acceptable values established in Drinking Water Standards for New Zealand 2005 (Revised 2018).

Watercare's 'Aa' grading confirms that the water supplied to our customers complies with Drinking Water Standards for New Zealand and that Watercare manages its water supply systems to a high standard. Watercare undertakes a comprehensive water quality monitoring programme to demonstrate compliance with Drinking Water Standards for New Zealand, the results of which are summarised in our Annual Water Quality reports which are available on our website under Reports and Publications (https://wslpwstoreprd.blob.core.windows.net/kentico-media-libraries-prod/watercarepublicweb/media/watercare-media-library/reports-and-publications/annual_water_quality_report_2017-18.pdf)

Guidance and information regarding the fluoridation of water supplies in New Zealand is provided by the Ministry of Health. If you wish to seek any further information we respectfully suggest you contact the Ministry of Health (https://www.health.govt.nz/our-work/preventative-health-wellness/fluoride-and-oral-health/water-fluoridation)"

Yours faithfully,

Priyan Perera
Head of Operations Excellence
Watercare Services Limited

Hill Laboratories
TRIED, TESTED **AND TRUSTED**

R J Hill Laboratories Limited
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Hamilton 3240 New Zealand

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Certificate of Analysis

Client:		**Lab No:**	2106555 FSASWPv1
Contact:		**Date Received:**	10-Jan-2019
		Date Reported:	16-Jan-2019
		Quote No:	91644
		Order No:	5500024675
		Client Reference:	Batch # M184/18 Q4 Comp
		Add. Client Ref:	Date of Manufacture: 09/01/19
		Submitted By:	

Sample Type: Fluorosilicic Acid

		Sample Name:	HFA Batch # M184/18 Q4 Comp 09-Jan-2019	Specifications	Outside Limit
		Lab Number:	2106555.1		
Fluorosilicic Acid					
Apparent Hazen Colour	Hazen units		30	maximum of 200	No
Turbidity	NTU		4.1	< 20 NTU.	No
Fluorosilicic acid (H_2SiF_6)	%		22.0	21.0 - 23.0%	No
Free Acidity (as HF)	%		0.23	< 1.0% w/w	No
Total Suspended Solids	g/m³		< 60	< 1,000 g/m³	No
Specific Gravity	20°C/20°C		1.20	1.20 - 1.23	No
Aluminium	mg/kg as rcvd		10.7	-	-
Antimony	mg/kg as rcvd		< 0.09	-	-
Arsenic	mg/kg as rcvd		0.6	-	-
Barium	mg/kg as rcvd		0.36	-	-
Beryllium	mg/kg as rcvd		< 0.05	-	-
Boron	mg/kg as rcvd		< 3	-	-
Cadmium	mg/kg as rcvd		0.04	-	-
Chromium	mg/kg as rcvd		< 0.3	-	-
Copper	mg/kg as rcvd		< 0.3	-	-
Iodine	mg/kg as rcvd		5.2	< 50 mg/kg	No
Iron	mg/kg as rcvd		16	-	-
Lead	mg/kg as rcvd		< 0.05	-	-
Manganese	mg/kg as rcvd		1.1	-	-
Mercury	mg/kg as rcvd		< 0.05	-	-
Molybdenum	mg/kg as rcvd		< 0.09	-	-
Nickel	mg/kg as rcvd		< 0.3	-	-
Phosphorus	mg/kg as rcvd		200	< 1,000 mg/kg	No
Selenium	mg/kg as rcvd		< 0.5	-	-
Silver	mg/kg as rcvd		< 0.05	-	-
Thallium	mg/kg as rcvd		< 0.03	-	-
Tin	mg/kg as rcvd		< 0.3	-	-
Uranium	mg/kg as rcvd		0.069	-	-
Zinc	mg/kg as rcvd		< 0.5	-	-

The Specification limits were supplied by the customer.

Summary of Methods

The following table(s) gives a brief description of the methods used to conduct the analyses for this job. The detection limits given below are those attainable in a relatively clean matrix. Detection limits may be higher for individual samples should insufficient sample be available, or if the matrix requires that dilutions be performed during analysis.
Unless otherwise indicated, analyses were performed at Hill Laboratories, 28 Duke Street, Frankton, Hamilton 3204.

Sample Type: Fluorosilicic Acid

Test	Method Description	Default Detection Limit	Sample No

Sample Type: Fluorosilicic Acid			
Test	**Method Description**	**Default Detection Limit**	**Sample No**
TMAH Digestion	Tetramethylammonium hydroxide micro digestion, filtration. P.A.Fecher, I.Goldman and A.Nagengast. Journal of Analytical Atomic Spectrometry, 1998, **13**, 977-982.	-	1
Sample dilution for ICP-MS analysis	Dilution of sample in preparation for ICP-MS analysis.	-	1
Apparent Hazen Colour	Determined on original sample without filtration or centrifugation, determination by Lovibond colorimeter. APHA 2120 B (modified) 23rd ed. 2017.	5 Hazen units	1
Turbidity	Analysis using a Hach 2100N, Turbidity meter. APHA 2130 B 23rd ed. 2017.	0.05 NTU	1
Fluorosilicic acid (H_2SiF_6)	Titration of ionizable hydrogen in a chilled solution from which the fluorosilicate ions have been precipitated as potassium fluorosilicate. ANSI / AWWA B703-11.	0.10 %	1
Free Acidity (as HF)	Titration of hot solution from Fluorosilicic acid titration with standard sodium hydroxide to the neutral point of bromothymol blue. ANSI / AWWA B703-11.	0.10 %	1
Total Suspended Solids	Filtration using Whatman 934 AH, Advantec GC-50 or equivalent filters (nominal pore size 1.2 - 1.5µm), gravimetric determination. APHA 2540 D (modified) 23rd ed. 2017.	3 g/m³	1
Specific Gravity	Calculation: weight of sample / weight of equivalent volume of water at ambient temperature (approx. 20°C), gravimetry (measuring cylinder).	0.01 20°C/20°C	1
Aluminium	Analysed as received (following dilution), ICP-MS, screen level. APHA 3125 B 23rd ed. 2017.	0.05 mg/kg as rcvd	1
Antimony	Analysed as received (after acid preservation, if required), ICP-MS, screen level. APHA 3125 B 23rd ed. 2017.	0.004 g/m³	1
Antimony	Analysed as received (following dilution), ICP-MS, screen level. APHA 3125 B 23rd ed. 2017.	0.004 mg/kg as rcvd	1
Arsenic	Analysed as received (after acid preservation, if required), ICP-MS, screen level. APHA 3125 B 23rd ed. 2017.	0.02 g/m³	1
Arsenic	Analysed as received (following dilution), ICP-MS, screen level. APHA 3125 B 23rd ed. 2017.	0.016 mg/kg as rcvd	1
Barium	Analysed as received (after acid preservation, if required), ICP-MS, screen level. APHA 3125 B 23rd ed. 2017.	0.11 g/m³	1
Barium	Analysed as received (following dilution), ICP-MS, screen level. APHA 3125 B 23rd ed. 2017.	0.0016 mg/kg as rcvd	1
Beryllium	Analysed as received (after acid preservation, if required), ICP-MS, screen level. APHA 3125 B 23rd ed. 2017.	0.002 g/m³	1
Beryllium	Analysed as received (following dilution), ICP-MS, screen level. APHA 3125 B 23rd ed. 2017.	0.0016 mg/kg as rcvd	1
Boron	Analysed as received (after acid preservation, if required), ICP-MS, screen level. APHA 3125 B 23rd ed. 2017.	0.10 g/m³	1
Boron	Analysed as received (following dilution), ICP-MS, screen level. APHA 3125 B 23rd ed. 2017.	0.08 mg/kg as rcvd	1
Cadmium	Analysed as received (after acid preservation, if required), ICP-MS, screen level. APHA 3125 B 23rd ed. 2017.	0.0010 g/m³	1
Cadmium	Analysed as received (following dilution), ICP-MS, screen level. APHA 3125 B 23rd ed. 2017.	0.0008 mg/kg as rcvd	1
Chromium	Analysed as received (after acid preservation, if required), ICP-MS, screen level. APHA 3125 B 23rd ed. 2017.	0.010 g/m³	1
Chromium	Analysed as received (following dilution), ICP-MS, screen level. APHA 3125 B 23rd ed. 2017.	0.008 mg/kg as rcvd	1
Copper	Analysed as received (after acid preservation, if required), ICP-MS, screen level. APHA 3125 B 23rd ed. 2017.	0.010 g/m³	1
Copper	Analysed as received (following dilution), ICP-MS, screen level. APHA 3125 B 23rd ed. 2017.	0.008 mg/kg as rcvd	1
Total Iodine	Sample digestion with aqueous TMAH at 90°C. Analysis by ICP-MS. APHA 3125 B 23rd ed. 2017.	0.0010 g/m³	1
Iodine	Analysed as received (following dilution), ICP-MS, screen level. APHA 3125 B 23rd ed. 2017.	0.0008 mg/kg as rcvd	1
Iron	Analysed as received (after acid preservation, if required), ICP-MS, screen level. APHA 3125 B 23rd ed. 2017.	0.4 g/m³	1
Iron	Analysed as received (following dilution), ICP-MS, screen level. APHA 3125 B 23rd ed. 2017.	0.4 mg/kg as rcvd	1
Lead	Analysed as received (after acid preservation, if required), ICP-MS, screen level. APHA 3125 B 23rd ed. 2017.	0.002 g/m³	1
Lead	Analysed as received (following dilution), ICP-MS, screen level. APHA 3125 B 23rd ed. 2017.	0.0016 mg/kg as rcvd	1
Manganese	Analysed as received (after acid preservation, if required), ICP-MS, screen level. APHA 3125 B 23rd ed. 2017.	0.010 g/m³	1

Sample Type: Fluorosilicic Acid			
Test	**Method Description**	**Default Detection Limit**	**Sample No**
Manganese	Analysed as received (following dilution), ICP-MS, screen level. APHA 3125 B 23rd ed. 2017.	0.008 mg/kg as rcvd	1
Mercury	Analysed as received (after acid preservation, if required), ICP-MS, screen level. APHA 3125 B 23rd ed. 2017.	0.002 g/m³	1
Mercury	Analysed as received (following dilution), ICP-MS, screen level. APHA 3125 B 23rd ed. 2017.	0.0016 mg/kg as rcvd	1
Molybdenum	Analysed as received (after acid preservation, if required), ICP-MS, screen level. APHA 3125 B 23rd ed. 2017.	0.004 g/m³	1
Molybdenum	Analysed as received (following dilution), ICP-MS, screen level. APHA 3125 B 23rd ed. 2017.	0.004 mg/kg as rcvd	1
Nickel	Analysed as received (after acid preservation, if required), ICP-MS, screen level. APHA 3125 B 23rd ed. 2017.	0.010 g/m³	1
Nickel	Analysed as received (following dilution), ICP-MS, screen level. APHA 3125 B 23rd ed. 2017.	0.008 mg/kg as rcvd	1
Phosphorus	Analysed as received (after acid preservation, if required), ICP-MS, screen level. APHA 3125 B 23rd ed. 2017.	0.4 g/m³	1
Phosphorus	Analysed as received (following dilution), ICP-MS, screen level. APHA 3125 B 23rd ed. 2017.	0.4 mg/kg as rcvd	1
Selenium	Analysed as received (after acid preservation, if required), ICP-MS, screen level. APHA 3125 B 23rd ed. 2017.	0.02 g/m³	1
Selenium	Analysed as received (following dilution), ICP-MS, screen level. APHA 3125 B 23rd ed. 2017.	0.016 mg/kg as rcvd	1
Silver	Analysed as received (after acid preservation, if required), ICP-MS, screen level. APHA 3125 B 23rd ed. 2017.	0.002 g/m³	1
Silver	Analysed as received (following dilution), ICP-MS, screen level. APHA 3125 B 23rd ed. 2017.	0.0016 mg/kg as rcvd	1
Thallium	Analysed as received (after acid preservation, if required), ICP-MS, screen level. APHA 3125 B 23rd ed. 2017.	0.0010 g/m³	1
Thallium	Analysed as received (following dilution), ICP-MS, screen level. APHA 3125 B 23rd ed. 2017.	0.0008 mg/kg as rcvd	1
Tin	Analysed as received (after acid preservation, if required), ICP-MS, screen level. APHA 3125 B 23rd ed. 2017.	0.010 g/m³	1
Tin	Analysed as received (following dilution), ICP-MS, screen level. APHA 3125 B 23rd ed. 2017.	0.008 mg/kg as rcvd	1
Uranium	Analysed as received (after acid preservation, if required), ICP-MS, screen level. APHA 3125 B 23rd ed. 2017.	0.0004 g/m³	1
Uranium	Analysed as received (following dilution), ICP-MS, screen level. APHA 3125 B 23rd ed. 2017.	0.0004 mg/kg as rcvd	1
Zinc	Analysed as received (after acid preservation, if required), ICP-MS, screen level. APHA 3125 B 23rd ed. 2017.	0.02 g/m³	1
Zinc	Analysed as received (following dilution), ICP-MS, screen level. APHA 3125 B 23rd ed. 2017.	0.016 mg/kg as rcvd	1

These samples were collected by yourselves (or your agent) and analysed as received at the laboratory.

Samples are held at the laboratory after reporting for a length of time depending on the preservation used and the stability of the analytes being tested. Once the storage period is completed the samples are discarded unless otherwise advised by the client.

Carole Rodgers-Carroll BA, NZCS
Client Services Manager - Environmental