



7 July 2023

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Dear Kate and Stephen

**OHAKEA: SURFACE WATER AND GROUNDWATER MONITORING FOR PFAS,
SEPTEMBER 2022**

1.0 Introduction

Monitoring for per- and polyfluoroalkyl substances (PFAS) concentrations in groundwater and surface water was conducted between 27 and 30 September 2022 in accordance with the RNZAF Base Ohakea PFAS Investigation: Long Term Monitoring Plan (LTMP) (PDP, 2020a). This is the fifth round of monitoring following the implementation of the LTMP (PDP, 2020a). Previous monitoring rounds, undertaken in October 2020, March 2021, October 2021 and March 2022 are reported in PDP (2020b), PDP (2021), PDP (2022a) and PDP (2022b) respectively.

The objectives of monitoring are to:

- Track the concentrations of PFAS in surface water and groundwater at representative locations over time to enable stakeholders to monitor plume development; and,
- Support validation of the groundwater model produced by PDP (PDP, 2019).

The scope of work included:

- The collection of groundwater samples from 19 groundwater wells or taps;
- The collection of surface water from 4 locations;
- The collection of 8 quality assurance/quality control (QA/QC) samples, including analysis of two duplicate samples; and
- Preparation of this report.

This letter reports the results of the monitoring undertaken at RNZAF Base Ohakea (“Ohakea” or the “base”) at these sample locations, including a comparison with the findings of previous monitoring rounds (PDP, 2020b; PDP, 2021; PDP, 2022a; PDP, 2022b).

2.0 Methodology

2.1 Sampling Methodology

Sampling was undertaken by PDP field staff between 27 and 30 September 2022. Sampling was undertaken in accordance with procedures in Sampling and Analysis of Per- and Poly-fluorinated Substances (Ministry for the Environment (MfE), 2018).

All samples were couriered to AsureQuality Laboratory under standard chain of custody documentation following collection. All samples were analysed by AsureQuality for a suite of PFAS compounds. Copies of the laboratory reports and chain of custody documentation are provided in Appendix A.

The groundwater monitoring locations are described in Table 1, and the surface water monitoring locations are described in Table 2. Refer to Figure 1 for the monitoring locations.

Table 1: Groundwater Monitoring Locations					
Location		HRC Bore ID	Sampling Point	Rationale	Sampled
RNZAF Base Ohakea	MW4	323153	Monitoring Well	Key source area (historic fire training area (FTA)).	27/09/22
	WS1	323085	Tap	Farm bore downgradient of FTA and near site boundary with a long existing monitoring record.	27/09/22
	GW6	-	Well	Open well downgradient of key source areas and historically elevated PFAS concentrations.	28/09/22
	MW6	-	Monitoring Well	Key source area (run-up pit).	27/09/22
	MW9	-	Monitoring Well	Key source area (diversion tank for hangar deluge systems).	27/09/22
	WS2	313096	Tap	North western plume edge (base drinking water supply).	28/09/22
	GW111.1	323183	Monitoring Well	Downgradient of FTA.	28/09/22
	GW111.2	323185	Monitoring Well	Downgradient of FTA. Deeper well (~40 m) to monitor the vertical extent of PFAS.	27/09/22
	GW111.3	323187	Monitoring Well	Downgradient of FTA. Deeper well (~95 m) to monitor the vertical extent of PFAS, targeting the deeper aquifer resource that may be used for groundwater abstraction.	27/09/22
	GW67	323173	Tap	North eastern plume edge.	28/09/22

Table 1: Groundwater Monitoring Locations					
Location		HRC Bore ID	Sampling Point	Rationale	Sampled
Other (non- NZDF) private and public land	GW31	323091	Tap	Eastern plume edge.	29/09/22
	GW53	-	Tap	Eastern plume edge.	29/09/22
	GW65	323019	Tap	Southern plume edge.	29/09/22
	GW106	323175	Monitoring Well	Plume is predicted to approach and then encompass the shallow well into the future.	29/09/22
	GW107	323177	Monitoring Well	Act as a sentinel monitoring location e.g., to monitor the predicted maximum lateral edge of the future plume.	30/09/22
	GW108	323179	Monitoring Well	Plume is predicted to approach and then encompass the shallow well into the future.	29/09/22
	GW109	323181	Monitoring Well	Plume is predicted to approach and then encompass the shallow well into the future.	28/09/22
	GW112.1	-	Monitoring Well	Well near the centre of the main plume.	28/09/22
	GW112.2	-	Monitoring Well	Well near the centre of the main plume. Deeper well (~55 m) to monitor the vertical extent of PFAS.	28/09/22

Table 2: Surface Water Monitoring Locations		
Location	Rationale	Sampled
SW6	Previous high PFAS concentrations leaving the base.	28/09/22
SW33	Resurgence of high PFAS concentrations on the Makowhai Stream downstream of the base. Accessible from the road.	28/09/22
SW36	Makowhai Stream just upstream from confluence with the Rangitikei River. To assess the maximum extent of PFAS in the Makowhai.	29/09/22
SW4	Upstream location to assess whether PFAS is present in the Makowhai before entering the base boundary.	28/09/22

2.2 Variations from the Monitoring Plan

There were no variations from the monitoring plan; all scheduled samples were collected during the September 2022 monitoring round.

2.3 Field Measurements

2.3.1 Water Level Measurement

A summary of the groundwater level measurements recorded in the monitoring wells as part of the groundwater sampling programme is presented in Appendix B.

Pressure transducer loggers were installed in all five of the nested wells (GW111.1, GW111.2, GW111.3, GW112.1 and GW112.2) during the October 2021 monitoring round, to continuously record groundwater pressures (levels) in the monitoring wells. The logger data was downloaded during the September 2022 monitoring round. The data has been reviewed however before a full assessment is undertaken, it is recommended that the vertical heights of the monitoring wells are surveyed relative to a common datum. This will allow an accurate assessment and comparison of the groundwater levels within each well.

2.3.2 Field Parameters

Using a YSI ProDSS multi-meter, and in accordance with the MfE (2018) guideline, field measurements were recorded for the following stabilisation criteria: electrical conductivity, pH, dissolved oxygen, temperature and turbidity. Prior to use, the ProDSS was calibrated for pH and electrical conductivity and checked periodically throughout the monitoring round. Field sheets for each sample location are presented in Appendix C.

2.4 Antecedent Weather Conditions and Flow Conditions

The preceding two weeks had a cumulative rainfall of 57.3 mm, with half that amount falling over a one-day period 13 days before the start of the monitoring period. The Rangitikei River and surrounding streams where surface water samples were collected were clear during the sampling round. The stream at SW4 and the drain at SW6 were observed to be flowing during the current monitoring round which allowed for samples to be collected.

2.5 Quality Assurance Sampling

As part of the sampling programme, the following QA/QC samples were collected:

- ◊ Two duplicate samples.
- ◊ Two equipment rinsate blanks. One for the surface water sampling equipment (mighty gripper) and one for the groundwater monitoring equipment (water level dipper).
- ◊ Two field blank samples.
- ◊ Two trip blank samples.

All QA/QC samples were collected in accordance with the methodology outlined in MfE (2018). All analysis of the QA/QC samples was undertaken by AsureQuality Laboratory in Wellington. The results of the QA/QC sampling are reported in Appendix D and further discussed in Section 3.3.

3.0 Sample Results and Comparison with Selected Guideline Values

3.1 Selected Guideline Values

Table 3 below shows the reference guideline values against which the results have been compared.

In the period since the previous monitoring round in March 2022, there have been some updates to relevant guidelines and regulations. The *Water Services (Drinking Water Standards for New Zealand) Regulations 2022* came into effect on 14 November 2022. The updated standards include maximum allowable values (MAVs) for PFOA and the sum of PFOS+PFHxS. These MAVs are the same as the guideline values previously used in this monitoring report, therefore the PFOA and Sum of Total PFOS + PFHxS guideline concentrations have not changed from criterion in previous reports. The reference in Table 3 has been updated to reflect these new standards.

The ANZG 2018 draft default guideline values (DGVs) for PFOS in freshwater for 99%, 95%, 90% and 80% species protection were updated in May 2023. The draft DGVs for PFOA have not been updated. The updated draft DGVs have increased compared to the previous values. The draft DGVs and the reference in Table 3 has been updated to reflect these new guidelines.

The draft PFAS National Environmental Management Plan (NEMP) version 3.0 has been released (November 2022) for consultation. The relevant guidelines provided in the current version 2.0 of the NEMP are the same as those provided in the draft version 3.0. For the purposes of this report, the current NEMP version 2.0 is used, however it is noted that the ecological water quality guideline values provided in Table 5 of the NEMP 3.0 recommend a comparison to the Australian and New Zealand Guidelines for Fresh and Marine Water Quality (ANZG (formerly ANZECC)) exposure scenario for 99% species protection for slightly to moderately disturbed ecosystems. Therefore, the results from the September 2022 monitoring round have also been compared to the 99% species protection values. This is a more conservative guideline value than has historically been used in previous reports. The recently updated draft DGV for 99% species protection for Total PFOS is 0.0091 µg/L.

Table 3: Environmental and Human Health Guidelines – Water

Media	Sum of Total PFOS + PFHxS	PFOA	Total PFHxS	Total PFOS	Source
Drinking Water	0.07 µg/L	0.56 µg/L	-	-	Drinking water standard ¹
Ecological Freshwater Guideline 95% ecosystem protection	-	220 µg/L ²	-	0.48 µg/L ³	ANZG
Ecological Freshwater Guideline – 99% ecosystem protection	-	19 µg/L ²	-	0.0091 µg/L ³	ANZG

Notes:

1. *Water Services (Drinking Water Standards for New Zealand) Regulations 2022, for PFOA, and Sum of Total PFOS + PFHxS.*
2. *Australian and New Zealand Guidelines for Fresh and Marine Water Quality – technical draft guideline values as reproduced in PFAS National Environmental Management Plan Version 2.0 – Table 5. The Heads of EPAs Australia and New Zealand (HEPA), January 2020.*
3. *ANZG 2023, Toxicant default guideline values for aquatic ecosystem protection: Perfluorooctane sulfonate (PFOS) in freshwater. Australian and New Zealand Guidelines for Fresh and Marine Water Quality. CC BY 4.0. Australian and New Zealand Governments and Australian state and territory governments, Canberra, ACT, Australia.*

3.2 Sample Results and Comparison to Guideline Values

The analysis and discussion of sample results relates to concentrations of total perfluorooctane sulfonate (PFOS), total perfluorohexane sulfonate (PFHxS), the Sum of Total PFOS + PFHxS and perfluorooctanoic acid (PFOA), these are the compounds for which there is an applicable New Zealand and/or Australian guideline. When discussed as a collective, these will herein be referred to as ‘the core PFAS compounds’. The sample analytical results for the core PFAS compounds are presented in Tables 4 and 5 with sample locations and results shown in Figure 2.

3.2.1 Groundwater Monitoring Wells

The results of the laboratory analyses for the core PFAS compounds in groundwater samples collected in September 2022 are provided in Table 4. PFAS results from all sampling rounds, and for all compounds in the laboratory PFAS suite, are presented in Table E-1, Appendix E.

Table 4: Groundwater Monitoring Results (September 2022 Sampling Round)

Location	Core PFAS Compounds (µg/L)		
	Sum of Total PFOS + PFHxS	PFOA	Total PFOS
WS1	0.22	0.029	0.051
WS2	0.0069	0.0015	0.0033
MW4	2.7	0.37	2.0
GW6	0.039	0.0030	0.015
MW6	15	1.0	5.9
MW9	1.2	0.30	0.68
GW111.1	0.40	0.084	0.23
GW111.2	<0.0010	<0.0010	<0.0010
GW111.3	<0.0010	<0.0010	<0.0010
GW31	<0.0010	<0.0010	<0.0010
GW53	<0.0010	<0.0010	<0.0010
GW65	<0.0010	<0.0010	<0.0010
GW67	<0.025	<0.025	<0.025
GW106	<0.0010	<0.0010	<0.0010
GW107	<0.0010	<0.0010	<0.0010
GW108	<0.0010	<0.0010	<0.0010
GW109	<0.0010	<0.0010	<0.0010
GW112.1	0.47	0.086	0.19
GW112.2	<0.0010	<0.0010	<0.0010

Table 4: Groundwater Monitoring Results (September 2022 Sampling Round)

Guideline Values	Sum of Total PFOS + PFHxS	PFOA	Total PFOS
Drinking Water ¹	0.07 µg/L	0.56 µg/L	-
Ecological Freshwater Guideline 95% ecosystem protection	-	220 µg/L ²	0.48 µg/L ³
Ecological Freshwater Guideline 99% ecosystem protection	-	19 µg/L ²	0.0091 µg/L ³

Notes:

1. *Water Services (Drinking Water Standards for New Zealand) Regulations 2022 (June 2022).*
2. *Australian and New Zealand Guidelines for Fresh and Marine Water Quality – technical draft guideline values as reproduced in PFAS National Environmental Management Plan Version 2.0 – Table 5. The Heads of EPAs Australia and New Zealand (HEPA), January 2020.*
3. *ANZG 2023, Toxicant default guideline values for aquatic ecosystem protection: Perfluorooctane sulfonate (PFOS) in freshwater. Australian and New Zealand Guidelines for Fresh and Marine Water Quality. CC BY 4.0. Australian and New Zealand Governments and Australian state and territory governments, Canberra, ACT, Australia.*

For the September 2022 monitoring round a total of 19 groundwater samples were collected.

The analytical results are summarised as follows:

- The Sum of Total PFOS + PFHxS was reported above the NZ Drinking Water Standard of 0.07 µg/L at six locations. These include: WS1 (0.22 µg/L), MW4 (2.7 µg/L), MW6 (15 µg/L), MW9 (1.2 µg/L), GW111.1 (0.40 µg/L), and GW112.1 (0.47 µg/L). None of these wells are currently used for drinking water supply.
- GW31 was below the Drinking Water Standard for the first time since monitoring began in 2018.
- The concentration of PFOA in MW6 (1.0 µg/L) exceeded the NZ Drinking Water Standard of 0.56 µg/L.
- Total PFOS exceeded the ANZ WQG for the protection of 99% of freshwater species (0.0091 µg/L) in seven locations. These include MW4 (2.0 µg/L), MW6 (5.9 µg/L), MW111.1 (0.22 µg/L), MW112.1 (0.19 µg/L), MW9 (0.68 µg/L), WS1 (0.051 µg/L) and, GW6 (0.015 µg/L).
- Groundwater samples exceeded the ANZ WQG for the protection of 95% of freshwater species (0.48 µg/L) at three locations. These include: MW4 (2.0 µg/L), MW6 (5.9 µg/L) and MW9 (0.68 µg/L).
- The core PFAS compounds were detected at concentrations above the laboratory limit of reporting (LOR) but below the relevant guideline values at two locations, WS2, and GW6.
- The core PFAS compounds were not reported (i.e., below the laboratory LOR) at eleven locations (GW111.2, GW111.3, GW31, GW53, GW65, GW67, GW106, GW107, GW108, GW109, and GW112.2).
- The minor detections of perfluorobutanoic acid (PFBA) that were reported in monitoring wells GW67 and GW108 in the March 2022 monitoring round are not evident in the September 2022 round, with all PFAS compounds being below the LOR (note, PFBA is not one of the core PFAS compounds for which there is an applicable guideline).

3.2.2 Surface Water

The results of the laboratory analyses for the core PFAS compounds in surface water samples collected in September 2022 are provided in Table 5. PFAS results from all sampling rounds, and for all compounds in the laboratory PFAS suite, are presented in Table E-2, Appendix E.

Table 5: Surface Water Monitoring Results (September 2022 Sampling Round)			
	Core PFAS Compounds (µg/L)		
Location	Sum of Total PFOS + PFHxS	PFOA	Total PFOS
SW4	<0.0010	<0.0010	<0.0010
SW6	3.4	0.51	1.8
SW33	0.10	0.015	0.048
SW36	0.056	0.0079	0.024
Guideline Values	Sum of Total PFOS + PFHxS	PFOA	Total PFOS
Ecological Freshwater Guideline 95% ecosystem protection	-	220 µg/L ¹	0.48 µg/L ²
Ecological Freshwater Guideline 99% ecosystem protection	-	19 µg/L ¹	0.0091 µg/L ²

Notes:

1. Australian and New Zealand Guidelines for Fresh and Marine Water Quality – technical draft guideline values as reproduced in PFAS National Environmental Management Plan Version 2.0 – Table 5. The Heads of EPAs Australia and New Zealand (HEPA), January 2020.
2. ANZG 2023, Toxicant default guideline values for aquatic ecosystem protection: Perfluorooctane sulfonate (PFOS) in freshwater. Australian and New Zealand Guidelines for Fresh and Marine Water Quality. CC BY 4.0. Australian and New Zealand Governments and Australian state and territory governments, Canberra, ACT, Australia.

For the September 2022 monitoring round four (no. 4). surface water samples were collected.

The analytical results are summarised as follows:

- SW33 and SW36 reported concentrations of PFOS above the ANZ WQG for the protection of 99% of freshwater species.
- The concentration of Total PFOS in SW6 (1.8 µg/L) exceeded the 95% protection scenario. The 95% protection scenario is considered the most relevant guideline at the location of SW6 as this is a stormwater drain and is therefore considered a highly disturbed system.
- The core PFAS compounds were detected at concentrations above the LOR but below the 95% ecosystem protection guideline values at two locations, SW33 and SW36.
- The core PFAS compounds were not reported (i.e., below the laboratory LOR) at SW4.
- PFBA and PFPeA were detected at low concentrations in SW4 (0.008 µg/L and 0.0018 µg/L respectively) during the September 2022 monitoring round (these compounds are not one of the core PFAS compounds for which there is an applicable guideline).

3.3 Quality Assurance/Quality Control Programme

To determine the precision of the sampling and laboratory analysis, the similarity between the laboratory duplicates and blind field duplicate samples was quantified by calculating the Relative Percent Difference (%RPD) for each individual parameter detected in both the primary and duplicate samples. It is important to recognise that the results are from the laboratory analysis of chemicals that are present at very low concentrations and as such, the variation in the results may be attributed in part to the analytical method rather than sample collection methodology. The results of the QA/QC assessment are presented in Appendix D, and a summary is provided below.

- %RPDs for the PFAS compounds in the field duplicates ranged from 0 to 24% which is within the acceptable %RPD for duplicate samples.
- No PFAS compounds were detected above the laboratory LOR in the field blank samples, the trip blank samples or the equipment rinsate blanks.
- The results of the QA/QC assessment meet the data quality objectives for the sampling programme.

4.0 Discussion

4.1 Groundwater

In general, PFAS concentrations for the September 2022 monitoring round are within the historical ranges previously recorded at these locations. Time series plots showing a comparison of the sum of PFOS + PFHxS over time at select sampling locations is provided on Figure 3A.

4.1.1 On-base Monitoring Locations

With respect to previous monitoring at and downgradient of key PFAS source areas:

- Concentrations of the core PFAS compounds at GW6 remain at similar levels to those recorded historically.
- Concentrations of the core PFAS compounds at MW6 remain at similar levels to those recorded in the March 2022 monitoring.
- Concentrations of the core PFAS compounds at WS1 are slightly higher than previous rounds (being the highest recorded since sampling began at this location in 2018), but they are considered to be consistent with previous results.
- At MW9, concentrations of the core PFAS compounds have reduced slightly from those observed during October 2021 and March 2022.
- At WS2 and MW4, concentrations of the core PFAS compounds remain within their historical ranges.
- This was the fourth monitoring round at GW111.1 and GW111.3 and the fifth round at GW111.2.
 - The Sum of Total PFOS + PFHxS in GW111.1 (0.4 µg/L) has increased slightly compared to the March 2022 monitoring round but is below the peak concentration (0.59 µg/L) detected in October 2021.
 - PFAS was not reported above the LOR in GW111.2
 - All PFAS compounds in GW111.3 were reported below the LOR, which is in agreement with the predicted groundwater conditions at this location. The previous two monitoring rounds (October 2021 and March 2022) reported low levels of the Sum of Total PFHxS + PFOS in GW111.3. The source of PFAS during these sampling events is unknown and these results are not in line with the model predictions. Additional sampling rounds (as prescribed by the LTMP) will provide more information on PFAS concentrations at this location.

4.1.2 Off-base Monitoring Locations

Wells GW31, GW112.1 and GW112.2 are located within the main plume approximately 1 km downgradient of the base:

- At GW31, all PFAS compounds were reported below the LOR. This is the first time this has occurred since monitoring began at this location in February 2018. During the previous seven monitoring rounds, the Sum of Total PFOS and PFHxS has consistently been reported above the drinking water standard. This result is unexpected and the reason for it is currently unknown. At the time of sampling PDP were advised by the land owner that the site had switched to the new Sanson reticulated water system. The sample was collected from the same sampling location as previous rounds and it was assumed that this connects to the now disused bore at the site, however, the sampling point may be impacted by the introduction of the new reticulated water system. Follow up with the landowner is recommended to confirm if the source of water at the sampling location has changed since previous monitoring rounds; this is discussed more in Section 5.0.
- This was the fourth monitoring round at GW112.1 and GW112.2.
 - Similar to the March 2022 monitoring round, the core PFAS compounds were reported above the LOR (Sum of Total PFOS + PFHxS of 0.47 µg/L, total PFOS of 0.19 µg/L and PFOA of 0.086 µg/L) in the shallow well GW112.1 (screened from 3.5 to 9.5 m bgl). This remains in general agreement with, albeit lower than, the output from the PFAS groundwater model which predicted concentrations of the Sum of Total PFOS + PFHxS at this location and depth of ~0.8 µg/L to 1.4 µg/L.
 - PFAS compounds in GW112.2 were all reported below the LOR. This is consistent with the results from the March 2022 sampling round. This further confirms the theory that the anomalous sample results in March 2021 were likely the result of the inadvertent switching of samples GW112.1 and GW112.2 either in the field or in the laboratory.

Wells GW106, GW108 and GW109 have been installed downgradient of the main plume to monitor plume migration. The plume is predicted to approach and then encompass these wells into the future.

- No PFAS compounds have been reported in any monitoring rounds to date at GW106, GW108 and GW109.
- At GW108, a PFBA concentration was detected in the March 2021 and March 2022 monitoring rounds. The concentrations of PFBA detected at GW108 are only slightly above the LOR and PFBA has not been detected in the September monitoring rounds. Consequently, it is not certain that these results are representative of the groundwater conditions at this location. The PFAS plume (as Sum of Total PFOS + PFHxS) is modelled to reach GW108 in the future and it is possible that the detection of PFBA is an indicator of the leading edge of the plume, or it may be from another source.

Wells GW53, GW65, GW67 and GW107 are sampled to monitor lateral plume extent:

- At GW53, GW65 and GW107 no PFAS has been reported in any monitoring rounds to date.
- At GW67, all PFAS compounds were reported below the LOR¹ during the current monitoring round. This is in agreement with previous rounds as the last time the core PFAS compounds were detected at GW67 was in May 2018 and September 2018.

¹ The LOR for the current round was generally higher compared to previous rounds (<0.025 µg/L in comparison to <0.001 µg/L).

A comparison of the sampling results to the PFAS groundwater model (PDP, 2019) developed for the area continues to show relatively good agreement. The September 2022 results agree with the model prediction for GW106 (no PFAS detected); GW112 (PFAS present in the shallow aquifer but not the deeper aquifers) and GW111, (PFAS present in the shallow aquifer but not the deeper aquifer). As noted in Section 4.1.1, very low concentrations of PFAS were detected in GW111.3 during the previous monitoring rounds. These results are unexpected and given the results from the current monitoring round, may be the result of sampling or laboratory related errors. Additional sampling as scheduled under the LTMP is required to determine actual groundwater conditions at this location.

PFBA historically detected in GW108 in the March 2021 and 2022 monitoring rounds was not reported in this monitoring round, nor the October 2021 monitoring round. While it is possible that the low PFBA detected during the summer monitoring rounds may be the beginning of the PFAS plume encroaching on this location as theorised by the model, it is not certain at this stage. Further monitoring as scheduled under the LTMP is required to determine actual groundwater conditions at this location.

4.2 Transect

A comparison of select PFAS concentrations along a transect running northeast – southwest from the Base to GW106 has been undertaken. This direction generally follows the predicted shallow groundwater flow path². Figure 4 shows the location of the transect A-A' and provides a plot showing the change in concentration of the sum of PFOS + PFHxS at select wells in the vicinity of this transect. The transect commences at GW67 which is immediately up hydraulic gradient from the Base, then passes through the fire training area (MW4, cross and downgradient WS1), the shallow wells GW111.1 and GW112.1 before terminating at GW106. The last five rounds of sampling are shown (note that there are only four rounds of data for GW106, GW111.1 and GW112.1). As expected, the plot shows the concentration of the sum of PFOS + PFHxS generally decreases with distance away from the Base.

4.3 Surface Water

A comparison of the concentration of total PFOS over time at select surface water sampling locations is provided on Figure 3B. Depending on the environment at the sample location, either the ANZ WQG for the protection of 95% or 99% of freshwater species is shown on the time series plots. Thus, at SW6 which is a stormwater drain, the 95% draft DGV is shown. At all other locations the 99% draft DGV is shown.

The concentrations of the core PFAS compounds in the sample collected from SW33 in September 2022 are slightly higher than those reported during the March 2022 monitoring round but are within the historical range for this sample location.

Low concentrations of the core PFAS compounds continue to be measured at SW36, after concentrations were reported above the laboratory LOR for the first time in March 2021

The core PFAS compounds were below the laboratory LOR at SW4, the upgradient sample location. Detections of the core PFAS compounds above the laboratory LOR have only been reported in one monitoring round (March 2021) when the sample was collected from a stagnant pool. All samples collected when the stream has been flowing have been below the laboratory LOR.

The concentrations of the core PFAS compounds in SW6 are similar to those reported in March 2022 and they are within the historical ranges for this location.

The results from the September 2022 surface water sampling round are generally in agreement with those predicted by the PFAS groundwater model.

² It is important to keep in mind that the exact groundwater flow path is unknown and is likely to change seasonally depending on hydrologic conditions.

5.0 Summary and Recommendations

Monitoring for per- and poly-fluoroalkyl substances (PFAS) in groundwater and surface water was conducted between 27 and 30 September 2022 in accordance with the RNZAF Base Ohakea PFAS Investigation: Long Term Monitoring Plan (PDP, 2020a). Nineteen groundwater and four surface water samples were collected from locations on, and adjacent to the base. In summary:

- The results from the September 2022 monitoring round are consistent with the results from the March 2022 monitoring round with the exception of GW31.
- PFAS has been detected at concentrations above the guideline values in seven groundwater samples collected in September 2022:
 - One off-base groundwater sample (GW112.1) exceeds the NZ Drinking Water Standard (this groundwater well is not currently being used for drinking water supply) and the ANZ WQG ecological guideline value for the protection of freshwater species at the 99% level.
 - Five on-base groundwater samples exceed the NZ Drinking Water Standard (none of the wells are used for drinking water supply) and the ANZ WQG for the protection of freshwater species at the 99% level. Three of these samples also exceed the ANZ WQG for the protection of freshwater species at the 95% level.

A comparison of the September 2022 monitoring results with those from previous monitoring rounds shows the current concentrations are generally within the historical ranges recorded for these locations. An exception to this is the sample from GW31 which reported all PFAS compounds below the LOR. This is the first time this has occurred since monitoring began in 2018 and the result is unexpected; historically groundwater samples from this location have exceeded the drinking water standard for the Sum of Total PFOS + PFHxS. At the time of sampling PDP were advised by the landowner that the property had been switched to the new Sanson reticulated water system. The sample was collected from the same sampling location (a tap located outside the bore shed) as previous rounds and it was assumed that this connects to the now disused bore at the site, however, the sampling point may be impacted by the introduction of the new reticulated water system. It is recommended that the landowner is contacted to confirm if there has been any change to the source of water at this location.

With the exception of GW31, discussed above, the surface water and groundwater results from the September 2022 monitoring round are in relatively good agreement with the PFAS groundwater model predictions (PDP, 2019a).

Low concentrations of PFOS have previously been reported in GW111.2 (October 2021) and GW111.3 (October 2021 and March 2022). The presence of PFAS in these deeper wells does not fit with the model predictions. However, results from the current round of sampling did not report PFAS above the LOR in GW111.2 or GW111.3. This is consistent with the model predictions at these locations. Additional sampling rounds (as scheduled in the LTMP) will allow a better understanding of the PFAS concentrations and will help to determine if the previous detections of PFAS are representative of the aquifer at these depths.

GW108 has historically reported PFBA during the March 2022 and March 2023 monitoring rounds. PFBA was not reported above the laboratory LOR during the current monitoring round. The model predicts movement of the plume towards GW108 and the detections may reflect seasonal variation in PFAS concentrations in the groundwater. However, it is not clear at this stage that these detections are representative of the shallow groundwater conditions.

No changes to the LTMP are recommended at this time. However, it is recommended that the vertical heights of the nested monitoring wells (GW111.1, GW111.2, GW111.3, GW112.1 and GW112.2) are surveyed relative to a common datum. This will allow an accurate assessment and comparison of the groundwater levels within each well.

6.0 References

- ANZ WQG, 2018. *Australian and New Zealand Guidelines for Fresh and Marine Water Quality*.
<https://www.waterquality.gov.au/anz-guidelines/guideline-values/default/water-quality-toxicants/search>
- HEPA, 2020. *PFAS National Environmental Management Plan Version 2.0*. Heads of EPAs Australia and New Zealand, January 2020.
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- Water Services (Drinking Water Standards for New Zealand) Regulations 2022.

7.0 Limitations

This report has been prepared by Pattle Delamore Partners Limited (PDP) on the basis of information provided by New Zealand Defence Force and Horizons Regional Council. PDP has not independently verified the provided information and has relied upon it being accurate and sufficient for use by PDP in preparing the report. PDP accepts no responsibility for errors or omissions in, or the currency or sufficiency of, the provided information.

This report has been prepared by PDP on the specific instructions of New Zealand Defence Force and Horizons Regional Council for the limited purposes described in the report. PDP accepts no liability if the report is used for a different purpose or if it is used or relied on by any other person. Any such use or reliance will be solely at their own risk.

This assessment is limited to collection and analysis of groundwater and surface water samples from discrete sampling locations. Interpretations of subsurface conditions, including contaminant concentrations, are not guaranteed at distance away from the specific points of sampling.

This document has been prepared based on the September sampling and analysis round and the results from laboratory analysis. The site conditions as described in this document have been interpreted from, and are subject to, this information and its limitations and accordingly PDP does not represent that its interpretation accurately represents the full site conditions.

The laboratory test results provide an approximation of the concentration of the tested analytes and are subject to the inherent limitations of the laboratory techniques used for the tests.

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Yours faithfully

PATTLE DELAMORE PARTNERS LIMITED

Prepared by



Bryn Taiapa

Senior Environmental Geologist

Reviewed by



James Conway

Service Leader – Contaminated Land

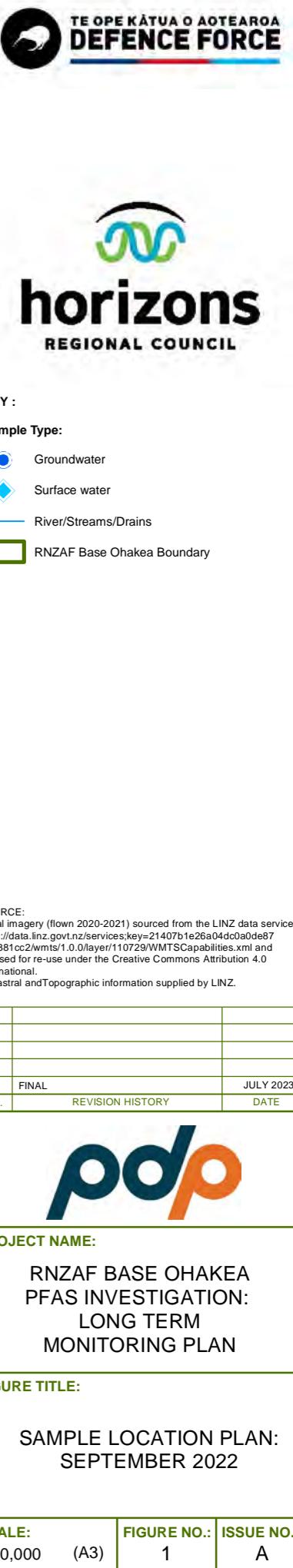
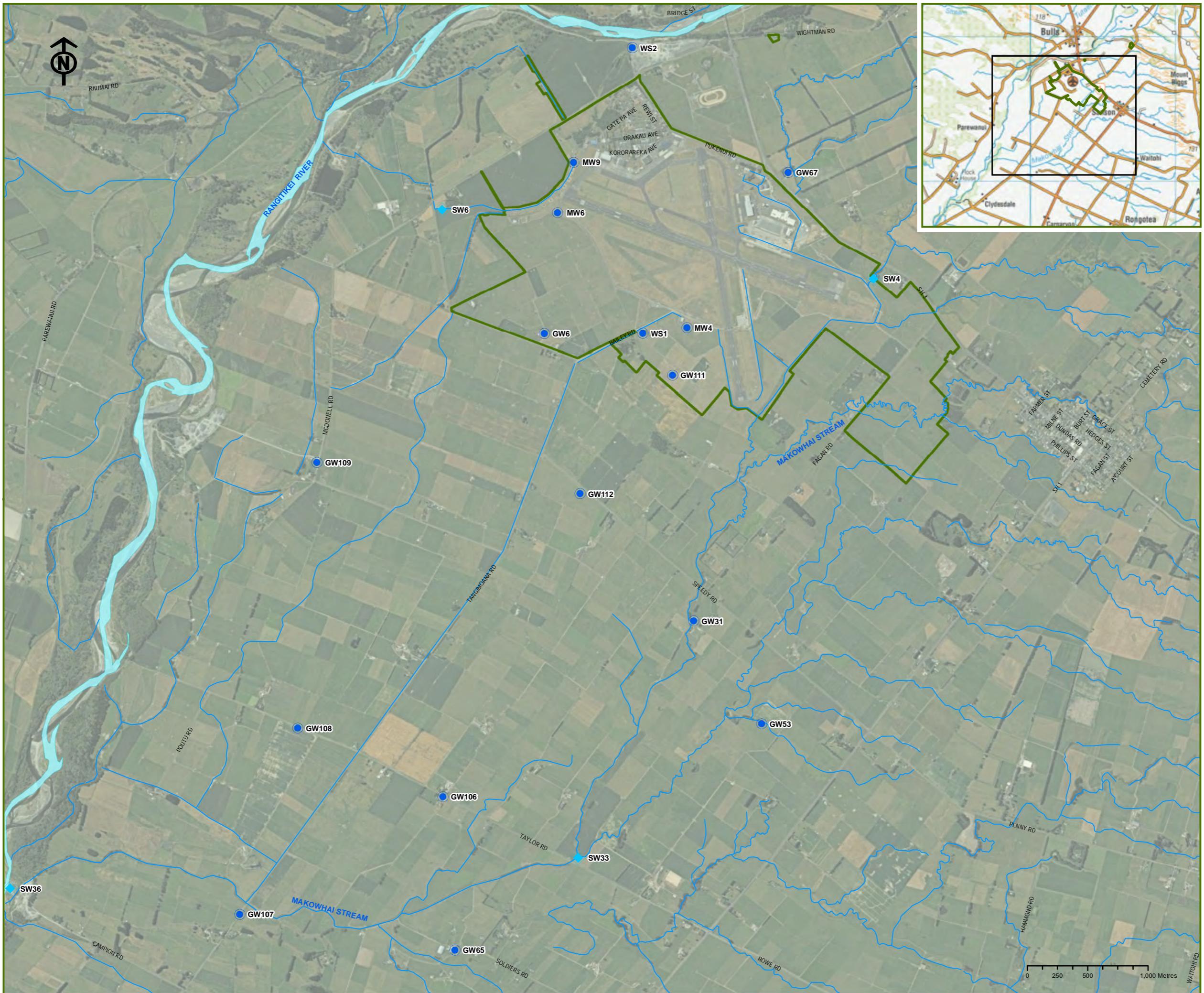
Approved by



Nerena Rhodes

Technical Director – Contaminated Land

Copy to: Huma Saeed
 Scientist - Groundwater
 Horizons Regional Council
 PALMERSTON NORTH





KEY :

- Above relevant guidelines**
 - Groundwater
 - ◆ Surface water
- Below relevant guidelines**
 - Groundwater
 - ◆ Surface water
- River/Streams/Drains
- RNZAF Base Ohakea Boundary
- < LOR Below laboratory limit of reporting.
- Concentration Exceeds Relevant Guideline

NOTE: Groundwater wells are not currently used for drinking water supply.

GUIDELINES USED:
 1. Water Services (Drinking Water Standards for New Zealand) Regulations 2022.
 2. ANZG 2023, Toxicant default guideline values for aquatic ecosystem protection: Perfluorooctane sulfonate (PFOS) in freshwater. Australian and New Zealand Guidelines for Fresh and Marine Water Quality. Australian and New Zealand Governments and Australian state and territory governments, Canberra, ACT, Australia.

SOURCE:
 Aerial imagery (flown 2020-2021) sourced from the LINZ data service
<https://data.linz.govt.nz> and licensed for re-use under the Creative Commons Attribution 4.0 International.
 Cadastral and Topographic information supplied by LINZ.

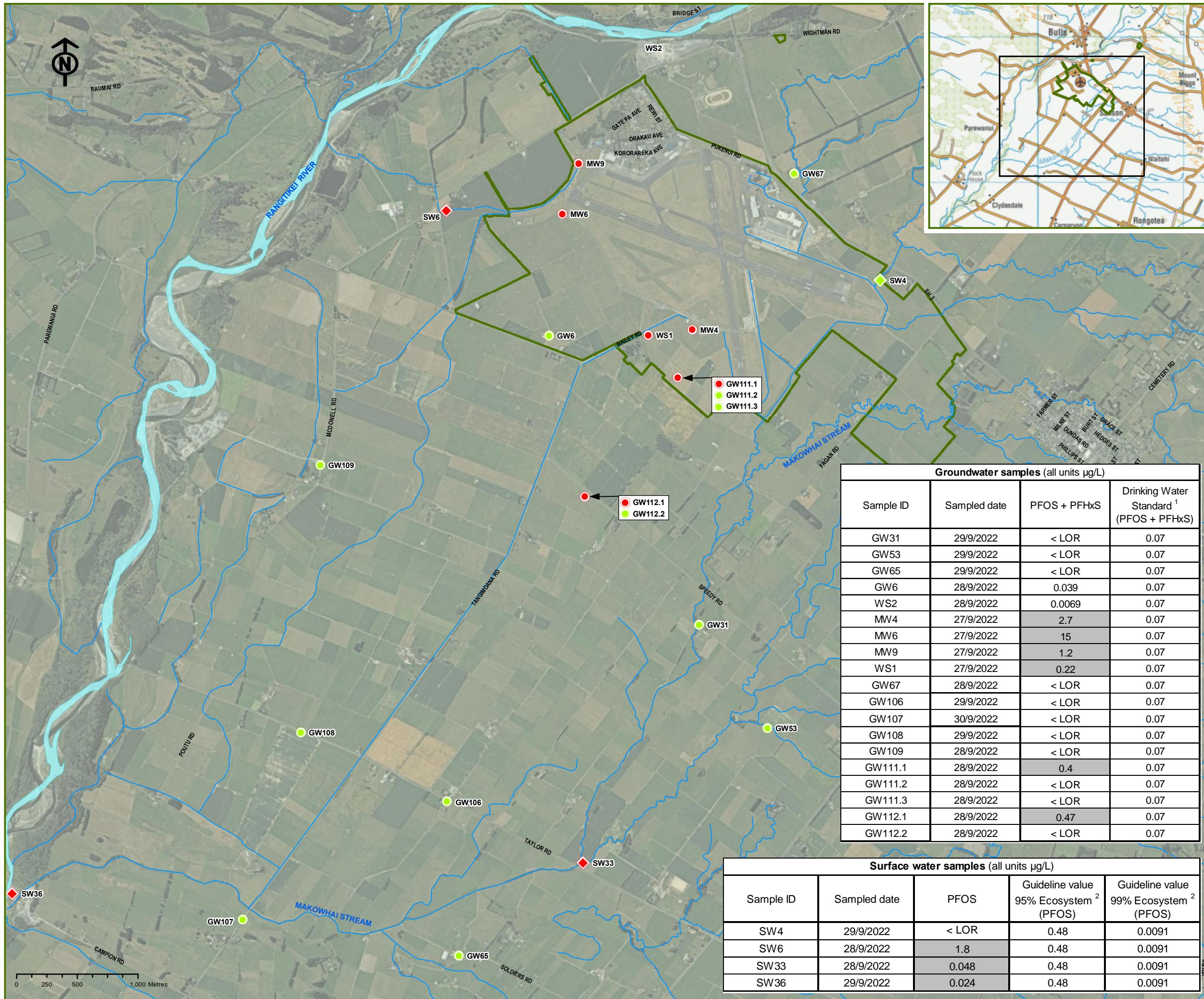
A	FINAL	JUNE 2023
A	ISSUED FOR REVIEW	SEP 2022
NO.	REVISION HISTORY	DATE



PROJECT NAME:
RNZAF BASE OHAKEA PFAS INVESTIGATION: LONG TERM MONITORING PLAN

FIGURE TITLE:
SAMPLE EXCEEDENCES SEPTEMBER 2022

SCALE: 1:30,000 **FIGURE NO.:** A3 **ISSUE NO.:** A





horizons
REGIONAL COUNCIL

MAP KEY :

Sample Type:

● Groundwater

— River/Streams/Drains

■ RNZAF Base Ohakea Boundary

CHART KEY:

■ Sum of PFOS+PFHxS ($\mu\text{g/L}$)

— NZ Drinking Water Standards (2022) for the sum of PFOS+PFHxS ($\mu\text{g/L}$)

NOTE:
1. Only sample locations with five or more sampling rounds have been shown.

2. The NZ Drinking Water Standard is only shown for sample locations that are currently, or were historically used as a potable supply.

SOURCE:
Aerial imagery (flown 2020-2021) sourced from the LINZ data service
<https://data.linz.govt.nz> and licensed for re-use under the Creative Commons Attribution 4.0 International.
Cadastral and Topographic information supplied by LINZ.

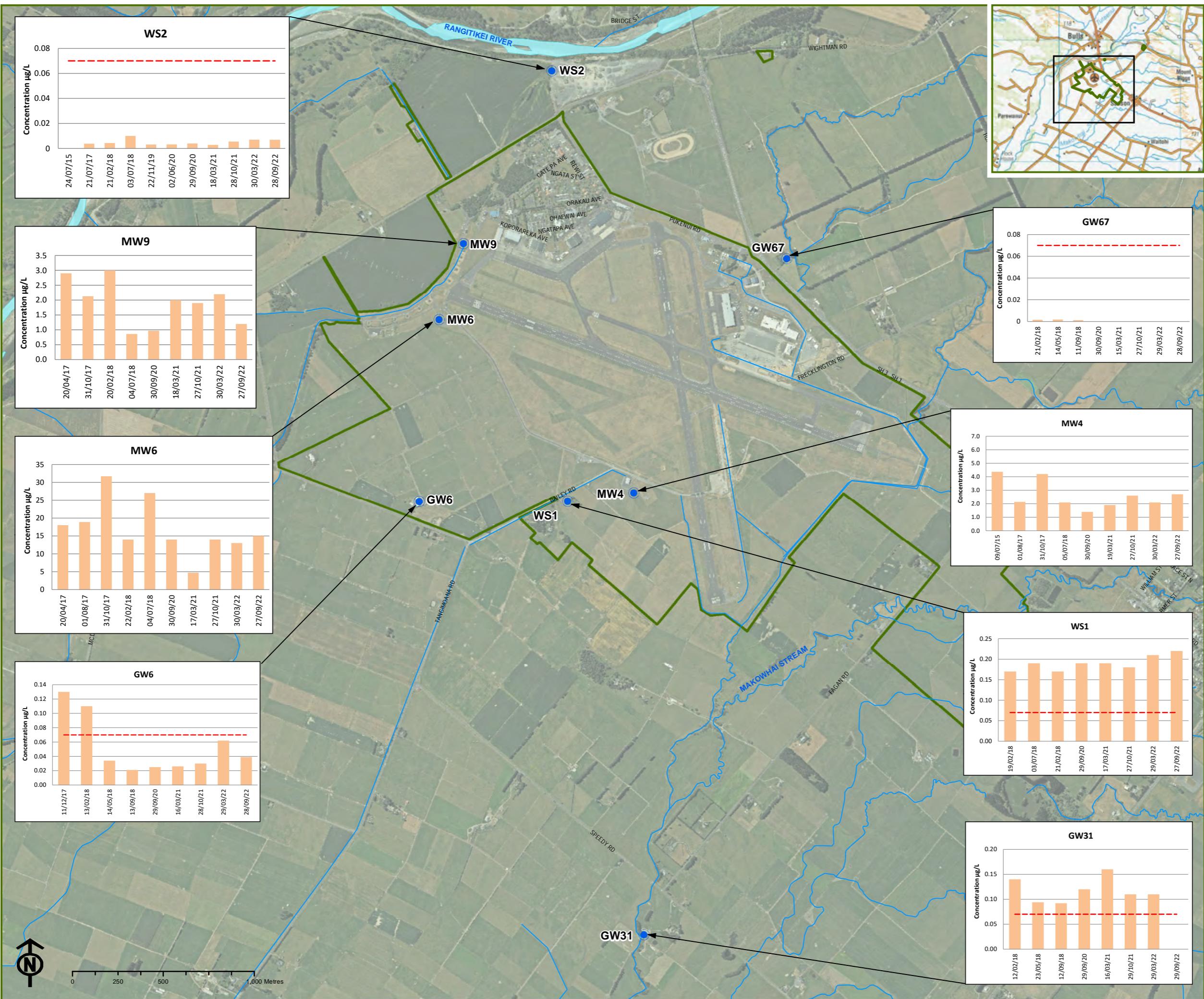
A	FINAL	JULY 2023

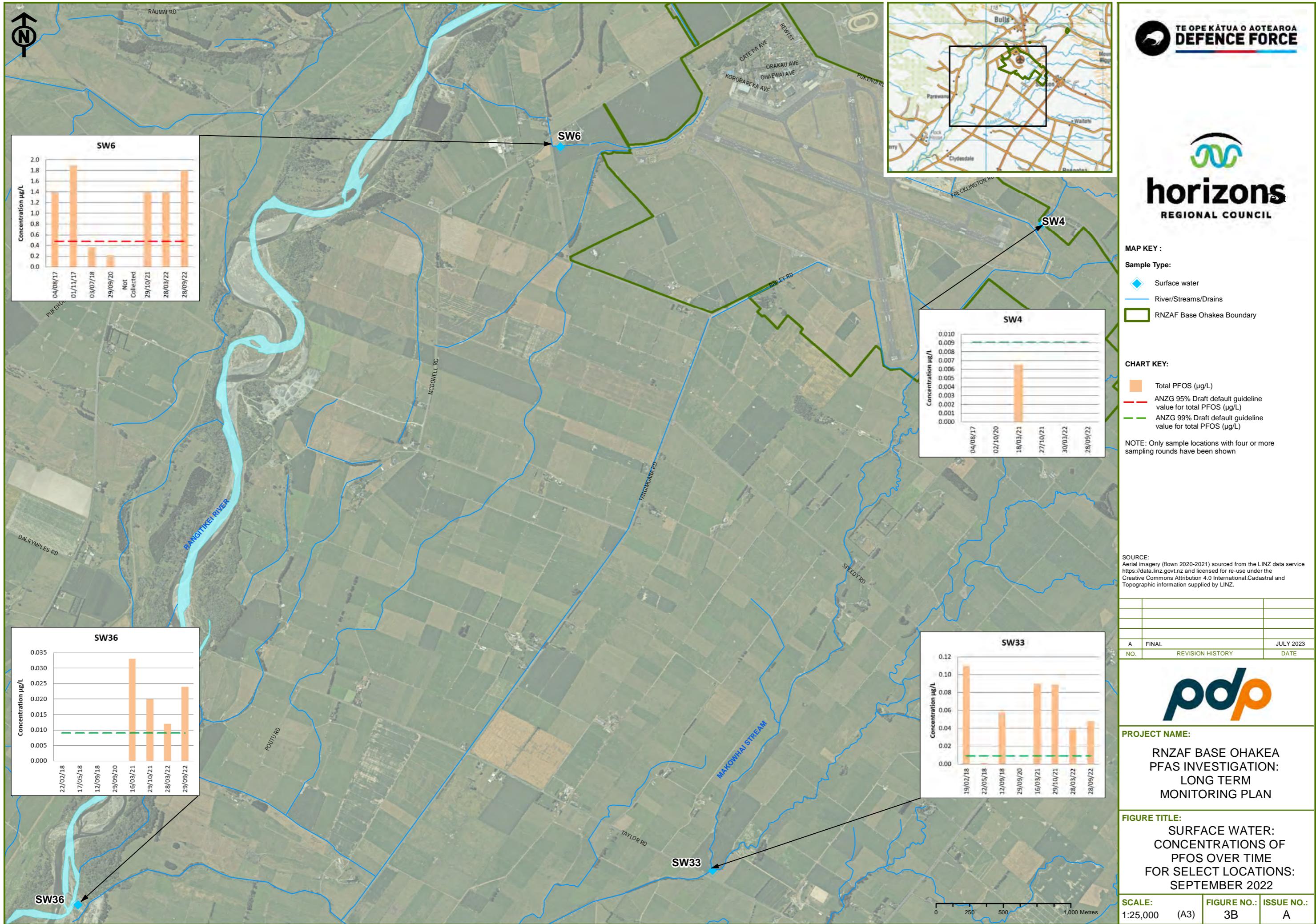


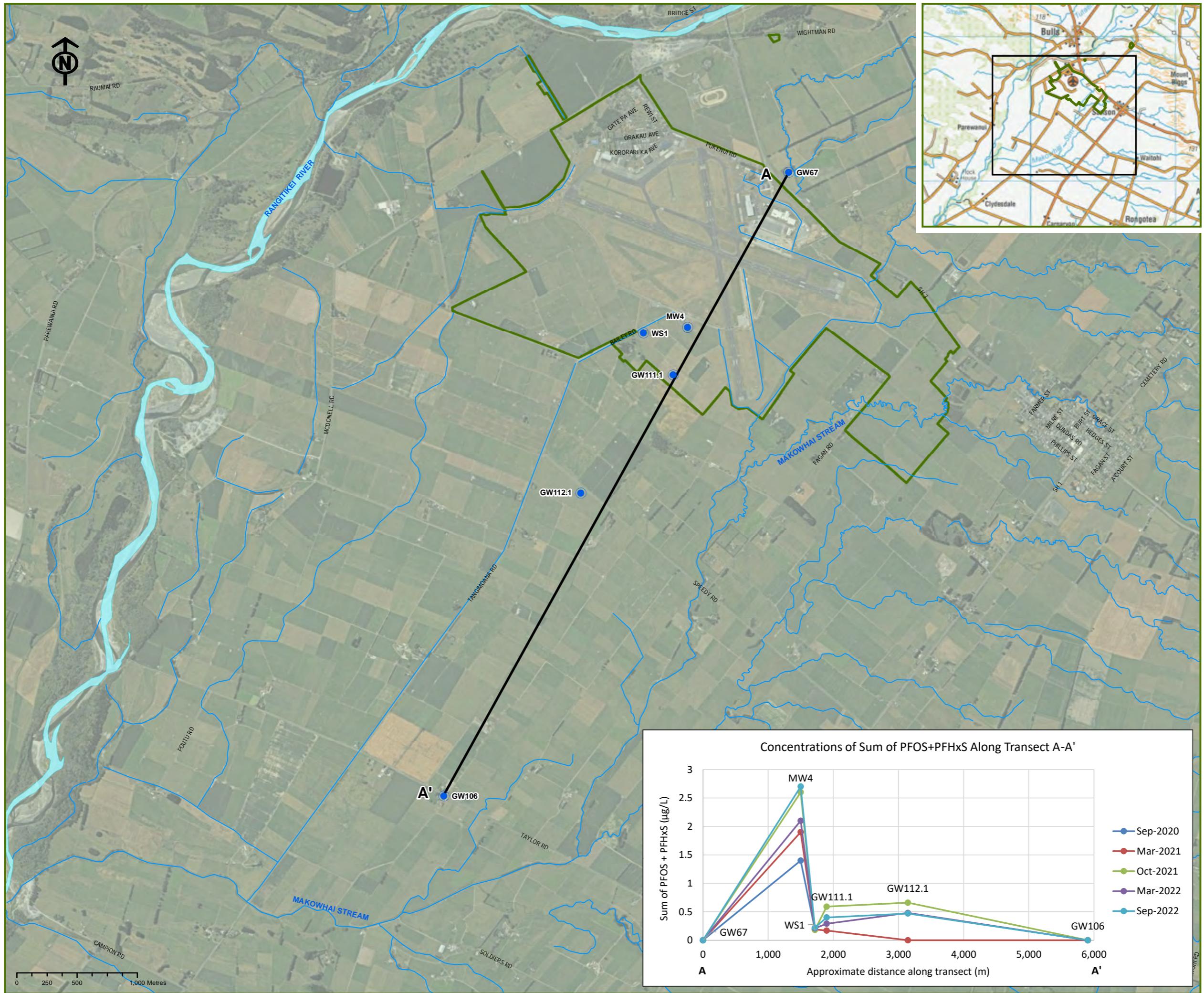
PROJECT NAME:
RNZAF BASE OHAKEA
PFAS INVESTIGATION:
LONG TERM
MONITORING PLAN

FIGURE TITLE:
GROUNDWATER:
CONCENTRATIONS OF
PFOS+PFHXS OVER TIME
FOR SELECT LOCATIONS:
SEPTEMBER 2022

SCALE: 1:20,000 (A3) FIGURE NO.: 3A ISSUE NO.: A







Appendix A: Laboratory Reports

Certificate of Analysis

Submission Reference: A02744122
Final Report

Bryn Taiapa
Pattle Delamore Partners Limited
P O Box 9528
Auckland 1149
New Zealand

PO Number: OHA_PFAS

Report Issued: 12-Oct-2022

AsureQuality Reference: 22-262804

Sample(s) Received: 29-Sep-2022 08:30

Testing Period: 30-Sep-2022 to 12-Oct-2022

Date of analysis is available on request.

Results

The tests were performed on the samples as received.

Customer Sample Name: OHA_FTA_MW4_9_270922		Lab ID: 22-262804-1	
Sample Condition: Acceptable	Sampled Date: 27-Sep-2022		
Test	Result	Unit	Method Reference
Poly- and Perfluorinated Alkyl Substances (PFAS) in Non Potable Water - High Level			
Perfluoroalkylsulfonic acids			
PPPrS	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
PFBS	0.032	µg/L	AsureQuality Method (LC-MS/MS)
PPPeS	0.045	µg/L	AsureQuality Method (LC-MS/MS)
di-PFHxS (1)	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
mono-PFHxS (1)	0.11	µg/L	AsureQuality Method (LC-MS/MS)
L-PFHxS (1)	0.62	µg/L	AsureQuality Method (LC-MS/MS)
Total PFHxS (3)	0.73	µg/L	AsureQuality Method (LC-MS/MS)
PFHpS	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
di-PFOS (5)	0.026	µg/L	AsureQuality Method (LC-MS/MS)
mono-PFOS (5)	0.72	µg/L	AsureQuality Method (LC-MS/MS)
L-PFOS (5)	1.3	µg/L	AsureQuality Method (LC-MS/MS)
Total PFOS (7)	2.0	µg/L	AsureQuality Method (LC-MS/MS)
Sum PFHxS+PFOS (1)	2.7	µg/L	AsureQuality Method (LC-MS/MS)
PFNS	<0.050	µg/L	AsureQuality Method (LC-MS/MS)
PFDS	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
PFECHS	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
Perfluoroalkylcarboxylic acids			
PFBA	0.24	µg/L	AsureQuality Method (LC-MS/MS)
PPPeA	0.95	µg/L	AsureQuality Method (LC-MS/MS)
PFHxA	0.61	µg/L	AsureQuality Method (LC-MS/MS)
PFHpA	0.36	µg/L	AsureQuality Method (LC-MS/MS)
PFOA	0.37	µg/L	AsureQuality Method (LC-MS/MS)
PFNA	0.23	µg/L	AsureQuality Method (LC-MS/MS)
PFDA	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
PFUnDA	<0.025	µg/L	AsureQuality Method (LC-MS/MS)

AsureQuality Ltd has used reasonable skill, care, and effort to provide an accurate analysis of the sample(s) which form(s) the subject of this report. However, the accuracy of this analysis is reliant on, and subject to, the sample(s) provided by you and your responsibility as to transportation of the sample(s). AsureQuality Ltd's standard terms of business apply to the analysis set out in this report.

Test	Result	Unit	Method Reference
PFDoDA	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
PFTrDA	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
PFTeDA	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
P37DMOA	<0.050	µg/L	AsureQuality Method (LC-MS/MS)
Perfluoroctanesulfonamides			
PFOSA	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
NEtFOSA-M	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
NMeFOSA-M	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
Perfluoroctanesulfonamidoacetic acids			
NEtFOSAA	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
NMeFOSAA	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
Perfluoroctanesulfonamidoethanols			
NEtFOSE-M	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
NMeFOSE-M	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
Telomere Sulfonic acids			
4:2 FTS	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
6:2 FTS	0.73	µg/L	AsureQuality Method (LC-MS/MS)
8:2 FTS	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
10:2 FTS	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
Telomere Carboxylic acids			
FPrPA (3:3FTA)	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
FPePA (5:3FTA)	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
FHpPA (7:3FTA)	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
Miscellaneous			
F-53B (major)	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
F-53B (minor)	<0.050	µg/L	AsureQuality Method (LC-MS/MS)
Sum F-53B	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
ADONA	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
HFPO-DA (GenX)	<0.050	µg/L	AsureQuality Method (LC-MS/MS)
Internal Standards			
M3PFBS	107	%	AsureQuality Method (LC-MS/MS)
M3PFHxS	113	%	AsureQuality Method (LC-MS/MS)
M8PFOS	110	%	AsureQuality Method (LC-MS/MS)
M4PFBA	106	%	AsureQuality Method (LC-MS/MS)
M5PFPeA	107	%	AsureQuality Method (LC-MS/MS)
M5PFHxA	105	%	AsureQuality Method (LC-MS/MS)
MPFHpA	107	%	AsureQuality Method (LC-MS/MS)
M8PFOA	99	%	AsureQuality Method (LC-MS/MS)
M9PFNA	112	%	AsureQuality Method (LC-MS/MS)
M6PFDA	109	%	AsureQuality Method (LC-MS/MS)
M7PFUnDA	103	%	AsureQuality Method (LC-MS/MS)
MPFDoDA	113	%	AsureQuality Method (LC-MS/MS)
MPFTeDA	115	%	AsureQuality Method (LC-MS/MS)
MPFOSA	109	%	AsureQuality Method (LC-MS/MS)
DNEtFOSA	112	%	AsureQuality Method (LC-MS/MS)
DNMeFOSA	114	%	AsureQuality Method (LC-MS/MS)
DNEtFOSAA	109	%	AsureQuality Method (LC-MS/MS)
DNMeFOSAA	112	%	AsureQuality Method (LC-MS/MS)
DNEtFOSE	117	%	AsureQuality Method (LC-MS/MS)
DNMeFOSE	118	%	AsureQuality Method (LC-MS/MS)

Test	Result	Unit	Method Reference
M4:2FTS	102	%	AsureQuality Method (LC-MS/MS)
M6:2FTS	98	%	AsureQuality Method (LC-MS/MS)
M8:2FTS	94	%	AsureQuality Method (LC-MS/MS)
M3HFPO-DA	132	%	AsureQuality Method (LC-MS/MS)

QC Results

Blank

Relates to sample(s) 22-262804-1

Test	Result	Unit	Method Reference
Poly- and Perfluorinated Alkyl Substances (PFAS) in Non Potable Water - High Level			
Perfluoroalkylsulfonic acids			
PFPrS	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
PFBS	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
PPeS	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
di-PFHxS (1)	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
mono-PFHxS (1)	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
L-PFHxS (1)	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
Total PFHxS (3)	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
PFHpS	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
di-PFOS (5)	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
mono-PFOS (5)	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
L-PFOS (5)	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
Total PFOS (7)	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
Sum PFHxS+PFOS (1)	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
PFNS	<0.050	µg/L	AsureQuality Method (LC-MS/MS)
PFDS	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
PFECHS	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
Perfluoroalkylcarboxylic acids			
PFBA	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
PPeA	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
PFHxA	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
PFHpA	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
PFOA	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
PFNA	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
PFDA	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
PFUnDA	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
PFDoDA	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
PFTrDA	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
PFTeDA	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
P37DMOA	<0.050	µg/L	AsureQuality Method (LC-MS/MS)
Perfluoroctanesulfonamides			
PFOSA	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
NEtFOSA-M	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
NMeFOSA-M	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
Perfluoroctanesulfonamidoacetic acids			
NEtFOSAA	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
NMeFOSAA	<0.025	µg/L	AsureQuality Method (LC-MS/MS)

Perfluoroctanesulfonamidoethanols			
NEtFOSE-M	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
NMeFOSE-M	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
Telomere Sulfonic acids			
4:2 FTS	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
6:2 FTS	<0.050	µg/L	AsureQuality Method (LC-MS/MS)
8:2 FTS	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
10:2 FTS	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
Telomere Carboxylic acids			
FPrPA (3:3FTA)	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
FPePA (5:3FTA)	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
FHpPA (7:3FTA)	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
Miscellaneous			
F-53B (major)	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
F-53B (minor)	<0.050	µg/L	AsureQuality Method (LC-MS/MS)
Sum F-53B	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
ADONA	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
HFPO-DA (GenX)	<0.050	µg/L	AsureQuality Method (LC-MS/MS)
Internal Standards			
M3PFBS	109	%	AsureQuality Method (LC-MS/MS)
M3PFHxS	104	%	AsureQuality Method (LC-MS/MS)
M8PFOS	107	%	AsureQuality Method (LC-MS/MS)
M4PFBA	101	%	AsureQuality Method (LC-MS/MS)
M5PFPeA	113	%	AsureQuality Method (LC-MS/MS)
M5PFHxA	108	%	AsureQuality Method (LC-MS/MS)
MPFHpA	107	%	AsureQuality Method (LC-MS/MS)
M8PFOA	100	%	AsureQuality Method (LC-MS/MS)
M9PFNA	102	%	AsureQuality Method (LC-MS/MS)
M6PFDA	100	%	AsureQuality Method (LC-MS/MS)
M7PFUnDA	110	%	AsureQuality Method (LC-MS/MS)
MPFDoDA	97	%	AsureQuality Method (LC-MS/MS)
MPFTeDA	107	%	AsureQuality Method (LC-MS/MS)
MPFOSA	108	%	AsureQuality Method (LC-MS/MS)
DNEtFOSA	105	%	AsureQuality Method (LC-MS/MS)
DNMeFOSA	107	%	AsureQuality Method (LC-MS/MS)
DNEtFOSAA	108	%	AsureQuality Method (LC-MS/MS)
DNMeFOSAA	109	%	AsureQuality Method (LC-MS/MS)
DNEtFOSE	112	%	AsureQuality Method (LC-MS/MS)
DNMeFOSE	111	%	AsureQuality Method (LC-MS/MS)
M4:2FTS	107	%	AsureQuality Method (LC-MS/MS)
M6:2FTS	87	%	AsureQuality Method (LC-MS/MS)
M8:2FTS	97	%	AsureQuality Method (LC-MS/MS)
M3HFPO-DA	104	%	AsureQuality Method (LC-MS/MS)

Analysis Summary

Wellington Laboratory

Analysis	Method	Accreditation	Authorised by
Poly- and Perfluorinated Alkyl Substances (PFAS) in Non Potable Water - High Level	AsureQuality Method (LC-MS/MS)	IANZ	Amelie Sellier

DX-PFCS01, 05-HIGHLEVEL

di-PFHxS (1) = Concentration determined using a branched di-PFHxS isomer standard (399>80 transition)
mono-PFHxS (1) = Concentration determined using a branched mono-PFHxS isomer standard (399>80 transition)
L-PFHxS (1) = Concentration determined using the linear PFHxS isomer standard (399>80 transition)
Total PFHxS (3) = The numerical sum of di-PFHxS (1), mono-PFHxS (1), and L-PFHxS (1)
di-PFOS (5) = Concentration determined using a branched di-PFOS isomer standard (499>80 transition)
mono-PFOS (5) = Concentration determined using a branched mono-PFOS isomer standard (499>80 transition)
L-PFOS (5) = Concentration determined using the linear PFOS isomer standard (499>230 transition)
Total PFOS (7) = The numerical sum of di-PFOS (5), mono-PFOS (5), and L-PFOS (5)
Sum PFHxS+PFOS (1) = The numerical sum of Total PFHxS (3) and Total PFOS (7)
Sum F-53B = The numerical sum of 9Cl-PF3ONS (F-53B major) and 11Cl-PF3OUdS (F-53B minor)
For all Totals, where a component is detected below the LOR, the value of zero is used in the calculation of the sum. The result represents the lower-bound concentration present in the sample.
Reported results are corrected for internal standard recovery

Results that are prefixed with '<' indicate the lowest level at which the analyte can be reported, and that in this case the analyte was not observed above this limit.



Amelie Sellier

Scientist

Accreditation



Appendix

Analyte LOR Summary

Poly- and Perfluorinated Alkyl Substances (PFAS) in Non Potable Water - High Level - AsureQuality Method (LC-MS/MS)

Analyte	LOR
Perfluoroalkylsulfonic acids	
PPPrS	0.025 µg/L
PFBS	0.025 µg/L
PPPeS	0.025 µg/L
di-PFHxS (1)	0.025 µg/L
mono-PFHxS (1)	0.025 µg/L
L-PFHxS (1)	0.025 µg/L
Total PFHxS (3)	0.025 µg/L
PFHpS	0.025 µg/L
di-PFOS (5)	0.025 µg/L
mono-PFOS (5)	0.025 µg/L
L-PFOS (5)	0.025 µg/L
Total PFOS (7)	0.025 µg/L
Sum PFHxS+PFOS (1)	0.025 µg/L
PFNS	0.050 µg/L
PFDS	0.10 µg/L
PFECHS	0.025 µg/L
Perfluoroalkylcarboxylic acids	
PFBA	0.10 µg/L
PPPeA	0.10 µg/L
PFHxA	0.025 µg/L
PFHpA	0.025 µg/L
PFOA	0.025 µg/L
PFNA	0.025 µg/L
PFDA	0.025 µg/L
PFUnDA	0.025 µg/L
PFDoDA	0.10 µg/L
PFTrDA	0.10 µg/L
PFTeDA	0.10 µg/L
P37DMOA	0.050 µg/L
Perfluoroctanesulfonamides	
PFOSA	0.025 µg/L
NEtFOSA-M	0.10 µg/L
NMeFOSA-M	0.10 µg/L
Perfluoroctanesulfonamidoacetic acids	
NEtFOSAA	0.025 µg/L
NMeFOSAA	0.025 µg/L
Perfluoroctanesulfonamidoethanols	
NETFOSE-M	0.10 µg/L
NMeFOSE-M	0.10 µg/L
Telomere Sulfonic acids	
4:2 FTS	0.025 µg/L
6:2 FTS	0.050 µg/L
8:2 FTS	0.10 µg/L
10:2 FTS	0.025 µg/L
Telomere Carboxylic acids	
FPrPA (3:3FTA)	0.10 µg/L
FPePA (5:3FTA)	0.025 µg/L

FHpPA (7:3FTA)	0.025 µg/L
Miscellaneous	
F-53B (major)	0.10 µg/L
F-53B (minor)	0.050 µg/L
Sum F-53B	0.1 µg/L
ADONA	0.025 µg/L
HFPO-DA (GenX)	0.050 µg/L

Analyte Definitions

Poly- and Perfluorinated Alkyl Substances (PFAS) in Non Potable Water - High Level - AsureQuality Method (LC-MS/MS)

Analyte	Full Name
Perfluoroalkylsulfonic acids	
PPrS	Perfluoro-1-propanesulfonic acid
PFBS	Perfluoro-1-butanesulfonic acid
PPeS	Perfluoro-1-pentanesulfonic acid
di-PFHxS (1)	Total Perfluorodimethylbutane sulfonic acids
mono-PFHxS (1)	Total Perfluoromethylpentane sulfonic acids
L-PFHxS (1)	Linear Perfluorohexanesulfonic acid
PFHpS	Perfluoro-1-heptanesulfonic acid
di-PFOS (5)	Total Perfluorodimethylhexane sulfonic acids
mono-PFOS (5)	Total Perfluoromethylheptane sulfonic acids
L-PFOS (5)	Linear Perfluoroctanesulfonic acid
PFNS	Perfluoro-1-nonanesulfonic acid
PFDS	Perfluoro-1-decanesulfonic acid
PFECHS	Perfluoro-4-ethylcyclohexanesulfonic acid
Perfluoroalkylcarboxylic acids	
PFBA	Perfluoro-n-butanoic acid
PPeA	Perfluoro-n-pentanoic acid
PFHxA	Perfluoro-n-hexanoic acid
PFHpA	Perfluoro-n-heptanoic acid
PFOA	Perfluoro-n-octanoic acid
PFNA	Perfluoro-n-nonanoic acid
PFDA	Perfluoro-n-decanoic acid
PFUnDA	Perfluoro-n-undecanoic acid
PFDoDA	Perfluoro-n-dodecanoic acid
PFTrDA	Perfluoro-n-tridecanoic acid
PFTeDA	Perfluoro-n-tetradecanoic acid
P37DMOA	Perfluoro-3,7-dimethyloctanoic acid
Perfluoroctanesulfonamides	
PFOSA	Perfluoro-1-octanesulfonamide
NEtFOSA-M	N-ethylperfluoro-1-octanesulfonamide
NMeFOSA-M	N-methylperfluoro-1-octanesulfonamide
Perfluoroctanesulfonamidoacetic acids	
NETFOSAA	N-ethylperfluoro-1-octanesulfonamidoacetic acid
NMeFOSAA	N-methylperfluoro-1-octanesulfonamidoacetic acid
Perfluoroctanesulfonamidoethanols	
NETFOSE-M	2-(N-ethylperfluoro-1-octanesulfonamido)-ethanol
NMeFOSE-M	2-(N-methylperfluoro-1-octanesulfonamido)-ethanol
Telomere Sulfonic acids	
4:2 FTS	1H,1H,2H,2H-perfluoro-1-hexamersulfonic acid
6:2 FTS	1H,1H,2H,2H-perfluoro-1-octanesulfonic acid
8:2 FTS	1H,1H,2H,2H-perfluoro-1-decanesulfonic acid
10:2 FTS	1H,1H,2H,2H-perfluorododecanesulfonic acid
Telomere Carboxylic acids	
FPrPA (3:3FTA)	3-Perfluoropropyl propanoic acid

Analyte	Full Name
FPePA (5:3FTA)	3-Perfluoropentyl propanoic acid
FHpPA (7:3FTA)	3-Perfluoroheptyl propanoic acid
Miscellaneous	
F-53B (major)	9-chlorohexadecafluoro-3-oxanonane-1-sulfonic acid
F-53B (minor)	11-chloroeicosfluoro-3-oxaundecane-1-sulfonic acid
Sum F-53B	Sum of F-53B components (major + minor)
ADONA	Dodecafluoro-3H-4,8-dioxanonanoic acid
HFPO-DA (GenX)	Tetrafluoro-2-(heptafluoropropoxy)propanoic acid
Internal Standards	
M3PFBS	Perfluoro-1-[2,3,4-13C3]butanesulfonic acid
M3PFHxS	Perfluoro-1-[1,2,3-13C3]hexanesulfonic acid
M8PFOS	Perfluoro-1-[13C8]octanesulfonic acid
M4PFBA	Perfluoro-n-[1,2,3,4-13C4]butanoic acid
M5PFPeA	Perfluoro-n-[1,2,3,4,5-13C5]pentanoic acid
M5PFHxA	Perfluoro-n-[1,2,3,4,6-13C5]hexanoic acid
MPFHxA	Perfluoro-n-[1,2,3,4-13C4]heptanoic acid
M8PFOA	Perfluoro-n-[13C8]octanoic acid
M9PFNA	Perfluoro-n-[13C9]nonanoic acid
M6PFDA	Perfluoro-n-[1,2,3,4,5,6-13C6]decanoic acid
M7PFUnDA	Perfluoro-n-[1,2,3,4,5,6,7-13C7]undecanoic acid
MPFDoDA	Perfluoro-n-[1,2-13C2]dodecanoic acid
MPFTeDA	Perfluoro-n-[1,2-13C2]tetradecanoic acid
MPFOSA	Perfluoro-1-[13C8]octanesulfonamide
DNEtFOSA	N-ethyl-D5-perfluoro-1-octanesulfonamide
DNMeFOSA	N-methyl-D3-perfluoro-1-octanesulfonamide
DNEtFOSAA	N-ethyl-D5-perfluoro-1-octanesulfonamidoacetic acid
DNMeFOSAA	N-methyl-D3-perfluoro-1-octanesulfonamidoacetic acid
DNEtFOSE	2-(N-ethyl-D5-perfluoro-1-octanesulfonamido)ethan-D4-ol
DNMeFOSE	2-(N-methyl-D3-perfluoro-1-octanesulfonamido)ethan-D4-ol
M4:2FTS	1H,1H,2H,2H-perfluoro-1-[1,2-13C2]-hexane sulfonic acid
M6:2FTS	1H,1H,2H,2H-perfluoro-1-[1,2-13C2]-octane sulfonic acid
M8:2FTS	1H,1H,2H,2H-perfluoro-1-[1,2-13C2]-decane sulfonic acid
M3HFPO-DA	Tetrafluoro-2-(heptafluoropropoxy)-13C3-propanoic acid

LOR = Limit of Reporting

LOD = Limit of Detection

NR = Not Reportable

Certificate of Analysis

Submission Reference: A02744122
Final Report

Bryn Taiapa
Pattle Delamore Partners Limited
P O Box 9528
Auckland 1149
New Zealand

PO Number: OHA_PFAS

Report Issued: 12-Oct-2022

AsureQuality Reference: 22-262874

Sample(s) Received: 29-Sep-2022 08:30

Testing Period: 30-Sep-2022 to 12-Oct-2022

Date of analysis is available on request.

Results

The tests were performed on the samples as received.

Customer Sample Name: OHA_RUP_MW6_10_270922		Lab ID: 22-262874-1	
Sample Condition: Acceptable	Sampled Date: 27-Sep-2022		
Test	Result	Unit	Method Reference
Poly- and Perfluorinated Alkyl Substances (PFAS) in Non Potable Water - High Level			
Perfluoroalkylsulfonic acids			
PFPrS	0.16	µg/L	AsureQuality Method (LC-MS/MS)
PFBS	0.46	µg/L	AsureQuality Method (LC-MS/MS)
PPeS	0.64	µg/L	AsureQuality Method (LC-MS/MS)
di-PFHxS (1)	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
mono-PFHxS (1)	1.3	µg/L	AsureQuality Method (LC-MS/MS)
L-PFHxS (1)	7.7	µg/L	AsureQuality Method (LC-MS/MS)
Total PFHxS (3)	9.0	µg/L	AsureQuality Method (LC-MS/MS)
PFHpS	0.24	µg/L	AsureQuality Method (LC-MS/MS)
di-PFOS (5)	0.17	µg/L	AsureQuality Method (LC-MS/MS)
mono-PFOS (5)	2.3	µg/L	AsureQuality Method (LC-MS/MS)
L-PFOS (5)	3.4	µg/L	AsureQuality Method (LC-MS/MS)
Total PFOS (7)	5.9	µg/L	AsureQuality Method (LC-MS/MS)
Sum PFHxS+PFOS (1)	15	µg/L	AsureQuality Method (LC-MS/MS)
PFNS	<0.050	µg/L	AsureQuality Method (LC-MS/MS)
PFDS	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
PFECHS	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
Perfluoroalkylcarboxylic acids			
PFBA	0.61	µg/L	AsureQuality Method (LC-MS/MS)
PPeA	2.2	µg/L	AsureQuality Method (LC-MS/MS)
PFHxA	2.2	µg/L	AsureQuality Method (LC-MS/MS)
PFHpA	0.90	µg/L	AsureQuality Method (LC-MS/MS)
PFOA	1.0	µg/L	AsureQuality Method (LC-MS/MS)
PFNA	0.49	µg/L	AsureQuality Method (LC-MS/MS)
PFDA	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
PFUnDA	<0.025	µg/L	AsureQuality Method (LC-MS/MS)

AsureQuality Ltd has used reasonable skill, care, and effort to provide an accurate analysis of the sample(s) which form(s) the subject of this report. However, the accuracy of this analysis is reliant on, and subject to, the sample(s) provided by you and your responsibility as to transportation of the sample(s). AsureQuality Ltd's standard terms of business apply to the analysis set out in this report.

Test	Result	Unit	Method Reference
PFDoDA	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
PFTrDA	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
PFTeDA	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
P37DMOA	<0.050	µg/L	AsureQuality Method (LC-MS/MS)
Perfluoroctanesulfonamides			
PFOSA	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
NEtFOSA-M	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
NMeFOSA-M	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
Perfluoroctanesulfonamidoacetic acids			
NEtFOSAA	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
NMeFOSAA	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
Perfluoroctanesulfonamidoethanols			
NEtFOSE-M	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
NMeFOSE-M	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
Telomere Sulfonic acids			
4:2 FTS	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
6:2 FTS	0.32	µg/L	AsureQuality Method (LC-MS/MS)
8:2 FTS	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
10:2 FTS	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
Telomere Carboxylic acids			
FPrPA (3:3FTA)	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
FPePA (5:3FTA)	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
FHpPA (7:3FTA)	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
Miscellaneous			
F-53B (major)	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
F-53B (minor)	<0.050	µg/L	AsureQuality Method (LC-MS/MS)
Sum F-53B	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
ADONA	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
HFPO-DA (GenX)	<0.050	µg/L	AsureQuality Method (LC-MS/MS)
Internal Standards			
M3PFBS	107	%	AsureQuality Method (LC-MS/MS)
M3PFHxS	109	%	AsureQuality Method (LC-MS/MS)
M8PFOS	109	%	AsureQuality Method (LC-MS/MS)
M4PFBA	101	%	AsureQuality Method (LC-MS/MS)
M5PFPeA	106	%	AsureQuality Method (LC-MS/MS)
M5PFHxA	97	%	AsureQuality Method (LC-MS/MS)
MPFHpA	105	%	AsureQuality Method (LC-MS/MS)
M8PFOA	96	%	AsureQuality Method (LC-MS/MS)
M9PFNA	104	%	AsureQuality Method (LC-MS/MS)
M6PFDA	103	%	AsureQuality Method (LC-MS/MS)
M7PFUnDA	103	%	AsureQuality Method (LC-MS/MS)
MPFDoDA	105	%	AsureQuality Method (LC-MS/MS)
MPFTeDA	76	%	AsureQuality Method (LC-MS/MS)
MPFOSA	106	%	AsureQuality Method (LC-MS/MS)
DNEtFOSA	106	%	AsureQuality Method (LC-MS/MS)
DNMeFOSA	112	%	AsureQuality Method (LC-MS/MS)
DNEtFOSAA	107	%	AsureQuality Method (LC-MS/MS)
DNMeFOSAA	105	%	AsureQuality Method (LC-MS/MS)
DNEtFOSE	115	%	AsureQuality Method (LC-MS/MS)
DNMeFOSE	104	%	AsureQuality Method (LC-MS/MS)

Test	Result	Unit	Method Reference
M4:2FTS	105	%	AsureQuality Method (LC-MS/MS)
M6:2FTS	91	%	AsureQuality Method (LC-MS/MS)
M8:2FTS	90	%	AsureQuality Method (LC-MS/MS)
M3HFPO-DA	109	%	AsureQuality Method (LC-MS/MS)
Customer Sample Name: Dupl.of 22-262874-1A			Lab ID: 22-262874-2
Sample Description: 20150249_Duplicate			
Sample Condition: Acceptable		Sampled Date: 27-Sep-2022	
Test	Result	Unit	Method Reference
Poly- and Perfluorinated Alkyl Substances (PFAS) in Non Potable Water - High Level			
Perfluoroalkylsulfonic acids			
PPrS	0.15	µg/L	AsureQuality Method (LC-MS/MS)
PFBS	0.45	µg/L	AsureQuality Method (LC-MS/MS)
PPeS	0.55	µg/L	AsureQuality Method (LC-MS/MS)
di-PFHxS (1)	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
mono-PFHxS (1)	1.2	µg/L	AsureQuality Method (LC-MS/MS)
L-PFHxS (1)	7.7	µg/L	AsureQuality Method (LC-MS/MS)
Total PFHxS (3)	8.9	µg/L	AsureQuality Method (LC-MS/MS)
PFHpS	0.24	µg/L	AsureQuality Method (LC-MS/MS)
di-PFOS (5)	0.18	µg/L	AsureQuality Method (LC-MS/MS)
mono-PFOS (5)	2.6	µg/L	AsureQuality Method (LC-MS/MS)
L-PFOS (5)	3.7	µg/L	AsureQuality Method (LC-MS/MS)
Total PFOS (7)	6.5	µg/L	AsureQuality Method (LC-MS/MS)
Sum PFHxS+PFOS (1)	15	µg/L	AsureQuality Method (LC-MS/MS)
PFNS	<0.050	µg/L	AsureQuality Method (LC-MS/MS)
PFDS	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
PFECHS	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
Perfluoroalkylcarboxylic acids			
PFBA	0.63	µg/L	AsureQuality Method (LC-MS/MS)
PPeA	2.3	µg/L	AsureQuality Method (LC-MS/MS)
PFHxA	2.1	µg/L	AsureQuality Method (LC-MS/MS)
PFHpA	0.92	µg/L	AsureQuality Method (LC-MS/MS)
PFOA	0.98	µg/L	AsureQuality Method (LC-MS/MS)
PFNA	0.53	µg/L	AsureQuality Method (LC-MS/MS)
PFDA	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
PFUnDA	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
PFDoDA	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
PFTrDA	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
PFTeDA	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
P37DMOA	<0.050	µg/L	AsureQuality Method (LC-MS/MS)
Perfluoroctanesulfonamides			
PFOSA	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
NEtFOSA-M	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
NMeFOSA-M	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
Perfluoroctanesulfonamidoacetic acids			
NEtFOSAA	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
NMeFOSAA	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
Perfluoroctanesulfonamidoethanols			
NEtFOSE-M	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
NMeFOSE-M	<0.10	µg/L	AsureQuality Method (LC-MS/MS)

Test	Result	Unit	Method Reference
Telomere Sulfonic acids			
4:2 FTS	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
6:2 FTS	0.30	µg/L	AsureQuality Method (LC-MS/MS)
8:2 FTS	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
10:2 FTS	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
Telomere Carboxylic acids			
FPrPA (3:3FTA)	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
FPePA (5:3FTA)	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
FHpPA (7:3FTA)	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
Miscellaneous			
F-53B (major)	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
F-53B (minor)	<0.050	µg/L	AsureQuality Method (LC-MS/MS)
Sum F-53B	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
ADONA	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
HFPO-DA (GenX)	<0.050	µg/L	AsureQuality Method (LC-MS/MS)
Internal Standards			
M3PFBS	112	%	AsureQuality Method (LC-MS/MS)
M3PFHxS	110	%	AsureQuality Method (LC-MS/MS)
M8PFOS	106	%	AsureQuality Method (LC-MS/MS)
M4PFBA	106	%	AsureQuality Method (LC-MS/MS)
M5PFPeA	112	%	AsureQuality Method (LC-MS/MS)
M5PFHxA	109	%	AsureQuality Method (LC-MS/MS)
MPFHpA	108	%	AsureQuality Method (LC-MS/MS)
M8PFOA	108	%	AsureQuality Method (LC-MS/MS)
M9PFNA	107	%	AsureQuality Method (LC-MS/MS)
M6PFDA	105	%	AsureQuality Method (LC-MS/MS)
M7PFUnDA	103	%	AsureQuality Method (LC-MS/MS)
MPFDoDA	114	%	AsureQuality Method (LC-MS/MS)
MPFTeDA	68	%	AsureQuality Method (LC-MS/MS)
MPFOSA	110	%	AsureQuality Method (LC-MS/MS)
DNEtFOSA	113	%	AsureQuality Method (LC-MS/MS)
DNMeFOSA	114	%	AsureQuality Method (LC-MS/MS)
DNEtFOSAA	113	%	AsureQuality Method (LC-MS/MS)
DNMeFOSAA	106	%	AsureQuality Method (LC-MS/MS)
DNEtFOSE	121	%	AsureQuality Method (LC-MS/MS)
DNMeFOSE	118	%	AsureQuality Method (LC-MS/MS)
M4:2FTS	98	%	AsureQuality Method (LC-MS/MS)
M6:2FTS	89	%	AsureQuality Method (LC-MS/MS)
M8:2FTS	84	%	AsureQuality Method (LC-MS/MS)
M3HFPO-DA	119	%	AsureQuality Method (LC-MS/MS)

QC Results

Blank

Relates to sample(s) 22-262874-1, 22-262874-2

Test	Result	Unit	Method Reference
Poly- and Perfluorinated Alkyl Substances (PFAS) in Non Potable Water - High Level			
Perfluoroalkylsulfonic acids			
PFPrS	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
PFBS	<0.025	µg/L	AsureQuality Method (LC-MS/MS)

Test	Result	Unit	Method Reference
PFPeS	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
di-PFHxS (1)	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
mono-PFHxS (1)	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
L-PFHxS (1)	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
Total PFHxS (3)	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
PFHpS	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
di-PFOS (5)	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
mono-PFOS (5)	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
L-PFOS (5)	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
Total PFOS (7)	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
Sum PFHxS+PFOS (1)	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
PFNS	<0.050	µg/L	AsureQuality Method (LC-MS/MS)
PFDS	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
PFECHS	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
Perfluoroalkylcarboxylic acids			
PFBA	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
PFPeA	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
PFHxA	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
PFHpA	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
PFOA	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
PFNA	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
PFDA	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
PFUnDA	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
PFDoDA	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
PFTrDA	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
PFTeDA	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
P37DMOA	<0.050	µg/L	AsureQuality Method (LC-MS/MS)
Perfluoroctanesulfonamides			
PFOSA	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
NEtFOSA-M	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
NMeFOSA-M	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
Perfluoroctanesulfonamidoacetic acids			
NEtFOSAA	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
NMeFOSAA	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
Perfluoroctanesulfonamidoethanols			
NEtFOSE-M	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
NMeFOSE-M	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
Telomere Sulfonic acids			
4:2 FTS	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
6:2 FTS	<0.050	µg/L	AsureQuality Method (LC-MS/MS)
8:2 FTS	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
10:2 FTS	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
Telomere Carboxylic acids			
FPrPA (3:3FTA)	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
FPePA (5:3FTA)	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
FHpPA (7:3FTA)	<0.025	µg/L	AsureQuality Method (LC-MS/MS)

Miscellaneous			
F-53B (major)	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
F-53B (minor)	<0.050	µg/L	AsureQuality Method (LC-MS/MS)
Sum F-53B	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
ADONA	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
HFPO-DA (GenX)	<0.050	µg/L	AsureQuality Method (LC-MS/MS)
Internal Standards			
M3PFBS	109	%	AsureQuality Method (LC-MS/MS)
M3PFHxS	104	%	AsureQuality Method (LC-MS/MS)
M8PFOS	107	%	AsureQuality Method (LC-MS/MS)
M4PFBA	101	%	AsureQuality Method (LC-MS/MS)
M5PFPeA	113	%	AsureQuality Method (LC-MS/MS)
M5PFHxA	108	%	AsureQuality Method (LC-MS/MS)
MPFHxA	107	%	AsureQuality Method (LC-MS/MS)
M8PFOA	100	%	AsureQuality Method (LC-MS/MS)
M9PFNA	102	%	AsureQuality Method (LC-MS/MS)
M6PFDA	100	%	AsureQuality Method (LC-MS/MS)
M7PFUnDA	110	%	AsureQuality Method (LC-MS/MS)
MPFDoDA	97	%	AsureQuality Method (LC-MS/MS)
MPFTeDA	107	%	AsureQuality Method (LC-MS/MS)
MPFOSA	108	%	AsureQuality Method (LC-MS/MS)
DNEtFOSA	105	%	AsureQuality Method (LC-MS/MS)
DNMeFOSA	107	%	AsureQuality Method (LC-MS/MS)
DNEtFOSAA	108	%	AsureQuality Method (LC-MS/MS)
DNMeFOSAA	109	%	AsureQuality Method (LC-MS/MS)
DNEtFOSE	112	%	AsureQuality Method (LC-MS/MS)
DNMeFOSE	111	%	AsureQuality Method (LC-MS/MS)
M4:2FTS	107	%	AsureQuality Method (LC-MS/MS)
M6:2FTS	87	%	AsureQuality Method (LC-MS/MS)
M8:2FTS	97	%	AsureQuality Method (LC-MS/MS)
M3HFPO-DA	104	%	AsureQuality Method (LC-MS/MS)

Analysis Summary

Wellington Laboratory

Analysis	Method	Accreditation	Authorised by
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Poly- and Perfluorinated Alkyl Substances (PFAS) in Non Potable Water - High Level

DX-PFCS01, 05-HIGHLEVEL AsureQuality Method (LC-MS/MS) IANZ Amelie Sellier

di-PFHxS (1) = Concentration determined using a branched di-PFHxS isomer standard (399>80 transition)

mono-PFHxS (1) = Concentration determined using a branched mono-PFHxS isomer standard (399>80 transition)

L-PFHxS (1) = Concentration determined using the linear PFHxS isomer standard (399>80 transition)

Total PFHxS (3) = The numerical sum of di-PFHxS (1), mono-PFHxS (1), and L-PFHxS (1)

di-PFOS (5) = Concentration determined using a branched di-PFOS isomer standard (499>80 transition)

mono-PFOS (5) = Concentration determined using a branched mono-PFOS isomer standard (499>80 transition)

L-PFOS (5) = Concentration determined using the linear PFOS isomer standard (499>230 transition)

Total PFOS (7) = The numerical sum of di-PFOS (5), mono-PFOS (5), and L-PFOS (5)

Sum PFHxS+PFOS (1) = The numerical sum of Total PFHxS (3) and Total PFOS (7)

Sum F-53B = The numerical sum of 9Cl-PF3ONS (F-53B major) and 11Cl-PF3OUdS (F-53B minor)

For all Totals, where a component is detected below the LOR, the value of zero is used in the calculation of the sum. The result represents the lower-bound concentration present in the sample.

Reported results are corrected for internal standard recovery

Results that are prefixed with '<' indicate the lowest level at which the analyte can be reported, and that in this case the analyte was not observed above this limit.



Amelie Sellier

Scientist

Accreditation



Appendix

Analyte LOR Summary

Poly- and Perfluorinated Alkyl Substances (PFAS) in Non Potable Water - High Level - AsureQuality Method (LC-MS/MS)

Analyte LOR

Perfluoroalkylsulfonic acids

PPrS	0.025 µg/L
PFBS	0.025 µg/L
PPeS	0.025 µg/L
di-PFHxS (1)	0.025 µg/L
mono-PFHxS (1)	0.025 µg/L
L-PFHxS (1)	0.025 µg/L
Total PFHxS (3)	0.025 µg/L
PFHpS	0.025 µg/L
di-PFOS (5)	0.025 µg/L
mono-PFOS (5)	0.025 µg/L
L-PFOS (5)	0.025 µg/L
Total PFOS (7)	0.025 µg/L
Sum PFHxS+PFOS (1)	0.025 µg/L
PFNS	0.050 µg/L
PFDS	0.10 µg/L
PFECHS	0.025 µg/L

Perfluoroalkylcarboxylic acids

PFBA	0.10 µg/L
PPeA	0.10 µg/L
PFHxA	0.025 µg/L
PFHpA	0.025 µg/L
PFOA	0.025 µg/L
PFNA	0.025 µg/L
PFDA	0.025 µg/L
PFUnDA	0.025 µg/L
PFDoDA	0.10 µg/L
PFTrDA	0.10 µg/L
PFTeDA	0.10 µg/L
P37DMOA	0.050 µg/L

Perfluoroctanesulfonamides

PFOSA	0.025 µg/L
NEtFOSA-M	0.10 µg/L
NMeFOSA-M	0.10 µg/L

Perfluoroctanesulfonamidoacetic acids

NEtFOSAA	0.025 µg/L
NMeFOSAA	0.025 µg/L

Perfluoroctanesulfonamidoethanols

NETFOSE-M	0.10 µg/L
NMeFOSE-M	0.10 µg/L

Telomere Sulfonic acids

4:2 FTS	0.025 µg/L
6:2 FTS	0.050 µg/L
8:2 FTS	0.10 µg/L
10:2 FTS	0.025 µg/L

Telomere Carboxylic acids

FPrPA (3:3FTA)	0.10 µg/L
FPePA (5:3FTA)	0.025 µg/L

FHpPA (7:3FTA)	0.025 µg/L
Miscellaneous	
F-53B (major)	0.10 µg/L
F-53B (minor)	0.050 µg/L
Sum F-53B	0.1 µg/L
ADONA	0.025 µg/L
HFPO-DA (GenX)	0.050 µg/L

Analyte Definitions

Poly- and Perfluorinated Alkyl Substances (PFAS) in Non Potable Water - High Level - AsureQuality Method (LC-MS/MS)

Analyte	Full Name
Perfluoroalkylsulfonic acids	
PPrS	Perfluoro-1-propanesulfonic acid
PFBS	Perfluoro-1-butanesulfonic acid
PPeS	Perfluoro-1-pentanesulfonic acid
di-PFHxS (1)	Total Perfluorodimethylbutane sulfonic acids
mono-PFHxS (1)	Total Perfluoromethylpentane sulfonic acids
L-PFHxS (1)	Linear Perfluorohexanesulfonic acid
PFHpS	Perfluoro-1-heptanesulfonic acid
di-PFOS (5)	Total Perfluorodimethylhexane sulfonic acids
mono-PFOS (5)	Total Perfluoromethylheptane sulfonic acids
L-PFOS (5)	Linear Perfluoroctanesulfonic acid
PFNS	Perfluoro-1-nonanesulfonic acid
PFDS	Perfluoro-1-decanesulfonic acid
PFECHS	Perfluoro-4-ethylcyclohexanesulfonic acid
Perfluoroalkylcarboxylic acids	
PFBA	Perfluoro-n-butanoic acid
PPeA	Perfluoro-n-pentanoic acid
PFHxA	Perfluoro-n-hexanoic acid
PFHpA	Perfluoro-n-heptanoic acid
PFOA	Perfluoro-n-octanoic acid
PFNA	Perfluoro-n-nonanoic acid
PFDA	Perfluoro-n-decanoic acid
PFUnDA	Perfluoro-n-undecanoic acid
PFDoDA	Perfluoro-n-dodecanoic acid
PFTrDA	Perfluoro-n-tridecanoic acid
PFTeDA	Perfluoro-n-tetradecanoic acid
P37DMOA	Perfluoro-3,7-dimethyloctanoic acid
Perfluoroctanesulfonamides	
PFOSA	Perfluoro-1-octanesulfonamide
NEtFOSA-M	N-ethylperfluoro-1-octanesulfonamide
NMeFOSA-M	N-methylperfluoro-1-octanesulfonamide
Perfluoroctanesulfonamidoacetic acids	
NETFOSAA	N-ethylperfluoro-1-octanesulfonamidoacetic acid
NMeFOSAA	N-methylperfluoro-1-octanesulfonamidoacetic acid
Perfluoroctanesulfonamidoethanols	
NETFOSE-M	2-(N-ethylperfluoro-1-octanesulfonamido)-ethanol
NMeFOSE-M	2-(N-methylperfluoro-1-octanesulfonamido)-ethanol
Telomere Sulfonic acids	
4:2 FTS	1H,1H,2H,2H-perfluoro-1-hexanesulfonic acid
6:2 FTS	1H,1H,2H,2H-perfluoro-1-octanesulfonic acid
8:2 FTS	1H,1H,2H,2H-perfluoro-1-decanesulfonic acid
10:2 FTS	1H,1H,2H,2H-perfluorododecanesulfonic acid
Telomere Carboxylic acids	
FPrPA (3:3FTA)	3-Perfluoropropyl propanoic acid

Analyte	Full Name
FPePA (5:3FTA)	3-Perfluoropentyl propanoic acid
FHpPA (7:3FTA)	3-Perfluoroheptyl propanoic acid
Miscellaneous	
F-53B (major)	9-chlorohexadecafluoro-3-oxanonane-1-sulfonic acid
F-53B (minor)	11-chloroeicosfluoro-3-oxaundecane-1-sulfonic acid
Sum F-53B	Sum of F-53B components (major + minor)
ADONA	Dodecafluoro-3H-4,8-dioxanonanoic acid
HFPO-DA (GenX)	Tetrafluoro-2-(heptafluoropropoxy)propanoic acid
Internal Standards	
M3PFBS	Perfluoro-1-[2,3,4-13C3]butanesulfonic acid
M3PFHxS	Perfluoro-1-[1,2,3-13C3]hexanesulfonic acid
M8PFOS	Perfluoro-1-[13C8]octanesulfonic acid
M4PFBA	Perfluoro-n-[1,2,3,4-13C4]butanoic acid
M5PFPeA	Perfluoro-n-[1,2,3,4,5-13C5]pentanoic acid
M5PFHxA	Perfluoro-n-[1,2,3,4,6-13C5]hexanoic acid
MPFHxA	Perfluoro-n-[1,2,3,4-13C4]heptanoic acid
M8PFOA	Perfluoro-n-[13C8]octanoic acid
M9PFNA	Perfluoro-n-[13C9]nonanoic acid
M6PFDA	Perfluoro-n-[1,2,3,4,5,6-13C6]decanoic acid
M7PFUnDA	Perfluoro-n-[1,2,3,4,5,6,7-13C7]undecanoic acid
MPFDoDA	Perfluoro-n-[1,2-13C2]dodecanoic acid
MPFTeDA	Perfluoro-n-[1,2-13C2]tetradecanoic acid
MPFOSA	Perfluoro-1-[13C8]octanesulfonamide
DNEtFOSA	N-ethyl-D5-perfluoro-1-octanesulfonamide
DNMeFOSA	N-methyl-D3-perfluoro-1-octanesulfonamide
DNEtFOSAA	N-ethyl-D5-perfluoro-1-octanesulfonamidoacetic acid
DNMeFOSAA	N-methyl-D3-perfluoro-1-octanesulfonamidoacetic acid
DNEtFOSE	2-(N-ethyl-D5-perfluoro-1-octanesulfonamido)ethan-D4-ol
DNMeFOSE	2-(N-methyl-D3-perfluoro-1-octanesulfonamido)ethan-D4-ol
M4:2FTS	1H,1H,2H,2H-perfluoro-1-[1,2-13C2]-hexane sulfonic acid
M6:2FTS	1H,1H,2H,2H-perfluoro-1-[1,2-13C2]-octane sulfonic acid
M8:2FTS	1H,1H,2H,2H-perfluoro-1-[1,2-13C2]-decane sulfonic acid
M3HFPO-DA	Tetrafluoro-2-(heptafluoropropoxy)-13C3-propanoic acid

LOR = Limit of Reporting

LOD = Limit of Detection

NR = Not Reportable

Certificate of Analysis

Submission Reference: A02744122
Amended Report

Bryn Taiapa
Pattle Delamore Partners Limited
P O Box 9528
Auckland 1149
New Zealand

PO Number: OHA_PFAS

Report Issued: 20-Oct-2022**AsureQuality Reference:** 22-262742**Sample(s) Received:** 29-Sep-2022 08:30**Testing Period:** 30-Sep-2022 to 12-Oct-2022

Date of analysis is available on request.

Comments

Amended report: Customer Sample Name amended.

Results

The tests were performed on the samples as received.

Customer Sample Name: OHA_DTK_MW9_9_270922 Lab ID: 22-262742-1			
Sample Condition: Acceptable	Sampled Date: 27-Sep-2022		
Test	Result	Unit	Method Reference
Poly- and Perfluorinated Alkyl Substances (PFAS) in Potable Water			
Perfluoroalkylsulfonic acids			
PFPrS	0.0094	µg/L	AsureQuality Method (LC-MS/MS)
PFBS	0.020	µg/L	AsureQuality Method (LC-MS/MS)
PPPeS	0.029	µg/L	AsureQuality Method (LC-MS/MS)
di-PFHxS (1)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
mono-PFHxS (1)	0.053	µg/L	AsureQuality Method (LC-MS/MS)
L-PFHxS (1)	0.42	µg/L	AsureQuality Method (LC-MS/MS)
Total PFHxS (3)	0.47	µg/L	AsureQuality Method (LC-MS/MS)
PFHpS	0.020	µg/L	AsureQuality Method (LC-MS/MS)
di-PFOS (5)	0.023	µg/L	AsureQuality Method (LC-MS/MS)
mono-PFOS (5)	0.32	µg/L	AsureQuality Method (LC-MS/MS)
L-PFOS (5)	0.34	µg/L	AsureQuality Method (LC-MS/MS)
Total PFOS (7)	0.68	µg/L	AsureQuality Method (LC-MS/MS)
Sum PFHxS+PFOS (1)	1.2	µg/L	AsureQuality Method (LC-MS/MS)
PFNS	NR	µg/L	AsureQuality Method (LC-MS/MS)
PFDS	NR	µg/L	AsureQuality Method (LC-MS/MS)
PFECHS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Perfluoroalkylcarboxylic acids			
PFBA	0.39	µg/L	AsureQuality Method (LC-MS/MS)
PPPeA	1.0	µg/L	AsureQuality Method (LC-MS/MS)
PFHxA	0.49	µg/L	AsureQuality Method (LC-MS/MS)
PFHpA	0.29	µg/L	AsureQuality Method (LC-MS/MS)
PFOA	0.30	µg/L	AsureQuality Method (LC-MS/MS)

AsureQuality Ltd has used reasonable skill, care, and effort to provide an accurate analysis of the sample(s) which form(s) the subject of this report. However, the accuracy of this analysis is reliant on, and subject to, the sample(s) provided by you and your responsibility as to transportation of the sample(s). AsureQuality Ltd's standard terms of business apply to the analysis set out in this report.

Test	Result	Unit	Method Reference
PFNA	0.21	µg/L	AsureQuality Method (LC-MS/MS)
PFDA	0.0013	µg/L	AsureQuality Method (LC-MS/MS)
PFUnDA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFDaDA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFTrDA	NR	µg/L	AsureQuality Method (LC-MS/MS)
PFTeDA	NR	µg/L	AsureQuality Method (LC-MS/MS)
P37DMOA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Perfluoroctanesulfonamides			
PFOSA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
NEtFOSA-M	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
NMeFOSA-M	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Perfluoroctanesulfonamidoacetic acids			
NEtFOSAA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
NMeFOSAA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Perfluoroctanesulfonamidoethanols			
NEtFOSE-M	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
NMeFOSE-M	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Telomere Sulfonic acids			
4:2 FTS	NR	µg/L	AsureQuality Method (LC-MS/MS)
6:2 FTS	0.98	µg/L	AsureQuality Method (LC-MS/MS)
8:2 FTS	0.0027	µg/L	AsureQuality Method (LC-MS/MS)
10:2 FTS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Telomere Carboxylic acids			
FPrPA (3:3FTA)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
FPePA (5:3FTA)	0.0029	µg/L	AsureQuality Method (LC-MS/MS)
FHpPA (7:3FTA)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Miscellaneous			
F-53B (major)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
F-53B (minor)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Sum F-53B	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
ADONA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
HFPO-DA (GenX)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Internal Standards			
M3PFBS	104	%	AsureQuality Method (LC-MS/MS)
M3PFHxS	96	%	AsureQuality Method (LC-MS/MS)
M8PFOS	119	%	AsureQuality Method (LC-MS/MS)
M4PFBA	58	%	AsureQuality Method (LC-MS/MS)
M5PFPeA	77	%	AsureQuality Method (LC-MS/MS)
M5PFHxA	93	%	AsureQuality Method (LC-MS/MS)
MPFHpA	100	%	AsureQuality Method (LC-MS/MS)
M8PFOA	92	%	AsureQuality Method (LC-MS/MS)
M9PFNA	90	%	AsureQuality Method (LC-MS/MS)
M6PFDA	95	%	AsureQuality Method (LC-MS/MS)
M7PFUnDA	115	%	AsureQuality Method (LC-MS/MS)
MPFDoDA	196 (R)	%	AsureQuality Method (LC-MS/MS)
MPFTeDA	300 (R)	%	AsureQuality Method (LC-MS/MS)
MPFOSA	100	%	AsureQuality Method (LC-MS/MS)
DNEtFOSA	132	%	AsureQuality Method (LC-MS/MS)
DNMeFOSA	129	%	AsureQuality Method (LC-MS/MS)
DNEtFOSAA	114	%	AsureQuality Method (LC-MS/MS)

Test	Result	Unit	Method Reference
DNMeFOSAA	102	%	AsureQuality Method (LC-MS/MS)
DNEtFOSE	129	%	AsureQuality Method (LC-MS/MS)
DNMeFOSE	108	%	AsureQuality Method (LC-MS/MS)
M4:2FTS	271 (R)	%	AsureQuality Method (LC-MS/MS)
M6:2FTS	127	%	AsureQuality Method (LC-MS/MS)
M8:2FTS	90	%	AsureQuality Method (LC-MS/MS)
M3HFPO-DA	132	%	AsureQuality Method (LC-MS/MS)

R = Recovery outside method limits

QC Results

Blank

Relates to sample(s) 22-262742-1

Test	Result	Unit	Method Reference
Poly- and Perfluorinated Alkyl Substances (PFAS) in Potable Water			
Perfluoroalkylsulfonic acids			
PFPrS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFBS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFPeS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
di-PFHxS (1)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
mono-PFHxS (1)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
L-PFHxS (1)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Total PFHxS (3)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFHpS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
di-PFOS (5)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
mono-PFOS (5)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
L-PFOS (5)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Total PFOS (7)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Sum PFHxS+PFOS (1)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFNS	NR	µg/L	AsureQuality Method (LC-MS/MS)
PFDS	NR	µg/L	AsureQuality Method (LC-MS/MS)
PFECHS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Perfluoroalkylcarboxylic acids			
PFBA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFPeA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFHxA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFHpA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFOA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFNA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFDA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFUnDA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFDoDA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFTrDA	NR	µg/L	AsureQuality Method (LC-MS/MS)
PFTeDA	NR	µg/L	AsureQuality Method (LC-MS/MS)
P37DMOA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Perfluorooctanesulfonamides			
PFOSA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
NEtFOSA-M	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)

Test	Result	Unit	Method Reference
NMeFOSA-M	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Perfluoroctanesulfonamidoacetic acids			
NEtFOSAA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
NMeFOSAA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Perfluoroctanesulfonamidoethanols			
NEtFOSE-M	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
NMeFOSE-M	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Telomere Sulfonic acids			
4:2 FTS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
6:2 FTS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
8:2 FTS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
10:2 FTS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Telomere Carboxylic acids			
FPrPA (3:3FTA)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
FPePA (5:3FTA)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
FHpPA (7:3FTA)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Miscellaneous			
F-53B (major)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
F-53B (minor)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Sum F-53B	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
ADONA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
HFPO-DA (GenX)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Internal Standards			
M3PFBS	100	%	AsureQuality Method (LC-MS/MS)
M3PFHxS	96	%	AsureQuality Method (LC-MS/MS)
M8PFOS	116	%	AsureQuality Method (LC-MS/MS)
M4PFBA	106	%	AsureQuality Method (LC-MS/MS)
M5PFPeA	102	%	AsureQuality Method (LC-MS/MS)
M5PFHxA	103	%	AsureQuality Method (LC-MS/MS)
MPFHxA	97	%	AsureQuality Method (LC-MS/MS)
M8PFOA	107	%	AsureQuality Method (LC-MS/MS)
M9PFNA	101	%	AsureQuality Method (LC-MS/MS)
M6PFDA	102	%	AsureQuality Method (LC-MS/MS)
M7PFUnDA	106	%	AsureQuality Method (LC-MS/MS)
MPFDaDA	145	%	AsureQuality Method (LC-MS/MS)
MPFTeDA	61	%	AsureQuality Method (LC-MS/MS)
MPFOSA	105	%	AsureQuality Method (LC-MS/MS)
DNEtFOSA	129	%	AsureQuality Method (LC-MS/MS)
DNMeFOSA	132	%	AsureQuality Method (LC-MS/MS)
DNEtFOSAA	114	%	AsureQuality Method (LC-MS/MS)
DNMeFOSAA	111	%	AsureQuality Method (LC-MS/MS)
DNEtFOSE	108	%	AsureQuality Method (LC-MS/MS)
DNMeFOSE	101	%	AsureQuality Method (LC-MS/MS)
M4:2FTS	102	%	AsureQuality Method (LC-MS/MS)
M6:2FTS	99	%	AsureQuality Method (LC-MS/MS)
M8:2FTS	99	%	AsureQuality Method (LC-MS/MS)
M3HFPO-DA	131	%	AsureQuality Method (LC-MS/MS)

Analysis Summary

Wellington Laboratory

Analysis	Method	Accreditation	Authorised by
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Poly- and Perfluorinated Alkyl Substances (PFAS) in Potable Water

DX-PFCS01, 03-SUITE_B AsureQuality Method (LC-MS/MS)

IANZ

Amelie Sellier

di-PFHxS (1) = Concentration determined using a branched di-PFHxS isomer standard (399>80 transition)

mono-PFHxS (1) = Concentration determined using a branched mono-PFHxS isomer standard (399>80 transition)

L-PFHxS (1) = Concentration determined using the linear PFHxS isomer standard (399>80 transition)

Total PFHxS (3) = The numerical sum of di-PFHxS (1), mono-PFHxS (1), and L-PFHxS (1)

di-PFOS (5) = Concentration determined using a branched di-PFOS isomer standard (499>80 transition)

mono-PFOS (5) = Concentration determined using a branched mono-PFOS isomer standard (499>80 transition)

L-PFOS (5) = Concentration determined using the linear PFOS isomer standard (499>230 transition)

Total PFOS (7) = The numerical sum of di-PFOS (5), mono-PFOS (5), and L-PFOS (5)

Sum PFHxS+PFOS (1) = The numerical sum of Total PFHxS (3) and Total PFOS (7)

Sum F-53B = The numerical sum of 9CI-PF3ONS (F-53B major) and 11CI-PF3OUdS (F-53B minor)

For all Totals, where a component is detected below the LOR, the value of zero is used in the calculation of the sum. The result represents the lower-bound concentration present in the sample.

Reported results are corrected for internal standard recovery

Results that are prefixed with '<' indicate the lowest level at which the analyte can be reported, and that in this case the analyte was not observed above this limit.

NR = Not Reportable

Amelie Sellier

Scientist

Accreditation



Appendix

Analyte LOR Summary

Poly- and Perfluorinated Alkyl Substances (PFAS) in Potable Water - AsureQuality Method (LC-MS/MS)

Analyte	LOR
Perfluoroalkylsulfonic acids	
PFPrS	0.0010 µg/L
PFBS	0.0010 µg/L
PPeS	0.0010 µg/L
di-PFHxS (1)	0.0010 µg/L
mono-PFHxS (1)	0.0010 µg/L
L-PFHxS (1)	0.0010 µg/L
Total PFHxS (3)	0.0010 µg/L
PFHpS	0.0010 µg/L
di-PFOS (5)	0.0010 µg/L
mono-PFOS (5)	0.0010 µg/L
L-PFOS (5)	0.0010 µg/L
Total PFOS (7)	0.0010 µg/L
Sum PFHxS+PFOS (1)	0.0010 µg/L
PFNS	NR µg/L
PFDS	NR µg/L
PFECHS	0.0010 µg/L
Perfluoroalkylcarboxylic acids	
PFBA	0.0010 µg/L
PPeA	0.0010 µg/L
PFHxA	0.0010 µg/L
PFHpA	0.0010 µg/L
PFOA	0.0010 µg/L
PFNA	0.0010 µg/L
PFDA	0.0010 µg/L
PFUnDA	0.0010 µg/L
PFDoDA	0.0010 µg/L
PFTrDA	NR µg/L
PFTeDA	NR µg/L
P37DMOA	0.0010 µg/L
Perfluoroctanesulfonamides	
PFOSA	0.0010 µg/L
NEtFOSA-M	0.0010 µg/L
NMeFOSA-M	0.0010 µg/L
Perfluoroctanesulfonamidoacetic acids	
NEtFOSAA	0.0010 µg/L
NMeFOSAA	0.0010 µg/L
Perfluoroctanesulfonamidoethanols	
NEtFOSE-M	0.0010 µg/L
NMeFOSE-M	0.0010 µg/L
Telomere Sulfonic acids	
4:2 FTS	NR µg/L
6:2 FTS	0.0010 µg/L
8:2 FTS	0.0010 µg/L
10:2 FTS	0.0010 µg/L
Telomere Carboxylic acids	
FPrPA (3:3FTA)	0.0010 µg/L
FPePA (5:3FTA)	0.0010 µg/L

FHpPA (7:3FTA)	0.0010 µg/L
Miscellaneous	
F-53B (major)	0.0010 µg/L
F-53B (minor)	0.0010 µg/L
Sum F-53B	0.0010 µg/L
ADONA	0.0010 µg/L
HFPO-DA (GenX)	0.0010 µg/L

Analyte Definitions

Poly- and Perfluorinated Alkyl Substances (PFAS) in Potable Water - AsureQuality Method (LC-MS/MS)

Analyte	Full Name
Perfluoroalkylsulfonic acids	
PPrS	Perfluoro-1-propanesulfonic acid
PFBS	Perfluoro-1-butanesulfonic acid
PPeS	Perfluoro-1-pentanesulfonic acid
di-PFHxS (1)	Total Perfluorodimethylbutane sulfonic acids
mono-PFHxS (1)	Total Perfluoromethylpentane sulfonic acids
L-PFHxS (1)	Linear Perfluorohexanesulfonic acid
PFHpS	Perfluoro-1-heptanesulfonic acid
di-PFOS (5)	Total Perfluorodimethylhexane sulfonic acids
mono-PFOS (5)	Total Perfluoromethylheptane sulfonic acids
L-PFOS (5)	Linear Perfluoroctanesulfonic acid
PFNS	Perfluoro-1-nonanesulfonic acid
PFDS	Perfluoro-1-decanesulfonic acid
PFECHS	Perfluoro-4-ethylcyclohexanesulfonic acid
Perfluoroalkylcarboxylic acids	
PFBA	Perfluoro-n-butanoic acid
PPeA	Perfluoro-n-pentanoic acid
PFHxA	Perfluoro-n-hexanoic acid
PFHpA	Perfluoro-n-heptanoic acid
PFOA	Perfluoro-n-octanoic acid
PFNA	Perfluoro-n-nonanoic acid
PFDA	Perfluoro-n-decanoic acid
PFUnDA	Perfluoro-n-undecanoic acid
PFDoDA	Perfluoro-n-dodecanoic acid
PFTrDA	Perfluoro-n-tridecanoic acid
PFTeDA	Perfluoro-n-tetradecanoic acid
P37DMOA	Perfluoro-3,7-dimethyloctanoic acid
Perfluoroctanesulfonamides	
PFOSA	Perfluoro-1-octanesulfonamide
NEtFOSA-M	N-ethylperfluoro-1-octanesulfonamide
NMeFOSA-M	N-methylperfluoro-1-octanesulfonamide
Perfluoroctanesulfonamidoacetic acids	
NETFOSAA	N-ethylperfluoro-1-octanesulfonamidoacetic acid
NMeFOSAA	N-methylperfluoro-1-octanesulfonamidoacetic acid
Perfluoroctanesulfonamidoethanols	
NETFOSE-M	2-(N-ethylperfluoro-1-octanesulfonamido)-ethanol
NMeFOSE-M	2-(N-methylperfluoro-1-octanesulfonamido)-ethanol
Telomere Sulfonic acids	
4:2 FTS	1H,1H,2H,2H-perfluoro-1-hexamersulfonic acid
6:2 FTS	1H,1H,2H,2H-perfluoro-1-octanesulfonic acid
8:2 FTS	1H,1H,2H,2H-perfluoro-1-decanesulfonic acid
10:2 FTS	1H,1H,2H,2H-perfluorododecanesulfonic acid
Telomere Carboxylic acids	
FPrPA (3:3FTA)	3-Perfluoropropyl propanoic acid

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Report Number 3019529 cancels Report Number 3009066.

Analyte	Full Name
FPePA (5:3FTA)	3-Perfluoropentyl propanoic acid
FHpPA (7:3FTA)	3-Perfluoroheptyl propanoic acid
Miscellaneous	
F-53B (major)	9-chlorohexadecafluoro-3-oxanonane-1-sulfonic acid
F-53B (minor)	11-chloroeicosfluoro-3-oxaundecane-1-sulfonic acid
Sum F-53B	Sum of F-53B components (major + minor)
ADONA	Dodecafluoro-3H-4,8-dioxanonanoic acid
HFPO-DA (GenX)	Tetrafluoro-2-(heptafluoropropoxy)propanoic acid
Internal Standards	
M3PFBS	Perfluoro-1-[2,3,4-13C3]butanesulfonic acid
M3PFHxS	Perfluoro-1-[1,2,3-13C3]hexanesulfonic acid
M8PFOS	Perfluoro-1-[13C8]octanesulfonic acid
M4PFBA	Perfluoro-n-[1,2,3,4-13C4]butanoic acid
M5PFPeA	Perfluoro-n-[1,2,3,4,5-13C5]pentanoic acid
M5PFHxA	Perfluoro-n-[1,2,3,4,6-13C5]hexanoic acid
MPFHxA	Perfluoro-n-[1,2,3,4-13C4]heptanoic acid
M8PFOA	Perfluoro-n-[13C8]octanoic acid
M9PFNA	Perfluoro-n-[13C9]nonanoic acid
M6PFDA	Perfluoro-n-[1,2,3,4,5,6-13C6]decanoic acid
M7PFUnDA	Perfluoro-n-[1,2,3,4,5,6,7-13C7]undecanoic acid
MPFDoDA	Perfluoro-n-[1,2-13C2]dodecanoic acid
MPFTeDA	Perfluoro-n-[1,2-13C2]tetradecanoic acid
MPFOSA	Perfluoro-1-[13C8]octanesulfonamide
DNEtFOSA	N-ethyl-D5-perfluoro-1-octanesulfonamide
DNMeFOSA	N-methyl-D3-perfluoro-1-octanesulfonamide
DNEtFOSAA	N-ethyl-D5-perfluoro-1-octanesulfonamidoacetic acid
DNMeFOSAA	N-methyl-D3-perfluoro-1-octanesulfonamidoacetic acid
DNEtFOSE	2-(N-ethyl-D5-perfluoro-1-octanesulfonamido)ethan-D4-ol
DNMeFOSE	2-(N-methyl-D3-perfluoro-1-octanesulfonamido)ethan-D4-ol
M4:2FTS	1H,1H,2H,2H-perfluoro-1-[1,2-13C2]-hexane sulfonic acid
M6:2FTS	1H,1H,2H,2H-perfluoro-1-[1,2-13C2]-octane sulfonic acid
M8:2FTS	1H,1H,2H,2H-perfluoro-1-[1,2-13C2]-decane sulfonic acid
M3HFPO-DA	Tetrafluoro-2-(heptafluoropropoxy)-13C3-propanoic acid

LOR = Limit of Reporting

LOD = Limit of Detection

NR = Not Reportable

Certificate of Analysis

Submission Reference: A023744122
Final Report

Bryn Taiapa
Pattle Delamore Partners Limited
P O Box 9528
Auckland 1149
New Zealand

PO Number: OHA_PFAS

Report Issued: 13-Oct-2022

AsureQuality Reference: 22-262855

Sample(s) Received: 29-Sep-2022 08:30

Testing Period: 30-Sep-2022 to 12-Oct-2022

Date of analysis is available on request.

Results

The tests were performed on the samples as received.

Customer Sample Name: OHA_FTA_WS1_8_270922		Lab ID: 22-262855-1	
Sample Condition: Acceptable	Sampled Date: 27-Sep-2022		
Test	Result	Unit	Method Reference
Poly- and Perfluorinated Alkyl Substances (PFAS) in Potable Water			
Perfluoroalkylsulfonic acids			
PPPrS	0.014	µg/L	AsureQuality Method (LC-MS/MS)
PFBS	0.026	µg/L	AsureQuality Method (LC-MS/MS)
PPPeS	0.026	µg/L	AsureQuality Method (LC-MS/MS)
di-PFHxS (1)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
mono-PFHxS (1)	0.034	µg/L	AsureQuality Method (LC-MS/MS)
L-PFHxS (1)	0.14	µg/L	AsureQuality Method (LC-MS/MS)
Total PFHxS (3)	0.17	µg/L	AsureQuality Method (LC-MS/MS)
PFHpS	0.0028	µg/L	AsureQuality Method (LC-MS/MS)
di-PFOS (5)	0.0034	µg/L	AsureQuality Method (LC-MS/MS)
mono-PFOS (5)	0.031	µg/L	AsureQuality Method (LC-MS/MS)
L-PFOS (5)	0.017	µg/L	AsureQuality Method (LC-MS/MS)
Total PFOS (7)	0.051	µg/L	AsureQuality Method (LC-MS/MS)
Sum PFHxS+PFOS (1)	0.22	µg/L	AsureQuality Method (LC-MS/MS)
PFNS	NR	µg/L	AsureQuality Method (LC-MS/MS)
PFDS	NR	µg/L	AsureQuality Method (LC-MS/MS)
PFECHS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Perfluoroalkylcarboxylic acids			
PFBA	0.023	µg/L	AsureQuality Method (LC-MS/MS)
PPPeA	0.12	µg/L	AsureQuality Method (LC-MS/MS)
PFHxA	0.097	µg/L	AsureQuality Method (LC-MS/MS)
PFHpA	0.035	µg/L	AsureQuality Method (LC-MS/MS)
PFOA	0.029	µg/L	AsureQuality Method (LC-MS/MS)
PFNA	0.0097	µg/L	AsureQuality Method (LC-MS/MS)
PFDA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFUnDA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)

AsureQuality Ltd has used reasonable skill, care, and effort to provide an accurate analysis of the sample(s) which form(s) the subject of this report. However, the accuracy of this analysis is reliant on, and subject to, the sample(s) provided by you and your responsibility as to transportation of the sample(s). AsureQuality Ltd's standard terms of business apply to the analysis set out in this report.

Test	Result	Unit	Method Reference
PFDoDA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFTrDA	NR	µg/L	AsureQuality Method (LC-MS/MS)
PFTeDA	NR	µg/L	AsureQuality Method (LC-MS/MS)
P37DMOA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Perfluoroctanesulfonamides			
PFOSA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
NEtFOSA-M	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
NMeFOSA-M	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Perfluoroctanesulfonamidoacetic acids			
NEtFOSAA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
NMeFOSAA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Perfluoroctanesulfonamidoethanols			
NEtFOSE-M	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
NMeFOSE-M	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Telomere Sulfonic acids			
4:2 FTS	0.0012	µg/L	AsureQuality Method (LC-MS/MS)
6:2 FTS	0.13	µg/L	AsureQuality Method (LC-MS/MS)
8:2 FTS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
10:2 FTS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Telomere Carboxylic acids			
FPrPA (3:3FTA)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
FPePA (5:3FTA)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
FHpPA (7:3FTA)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Miscellaneous			
F-53B (major)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
F-53B (minor)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Sum F-53B	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
ADONA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
HFPO-DA (GenX)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Internal Standards			
M3PFBS	97	%	AsureQuality Method (LC-MS/MS)
M3PFHxS	88	%	AsureQuality Method (LC-MS/MS)
M8PFOS	91	%	AsureQuality Method (LC-MS/MS)
M4PFBA	83	%	AsureQuality Method (LC-MS/MS)
M5PFPeA	90	%	AsureQuality Method (LC-MS/MS)
M5PFHxA	97	%	AsureQuality Method (LC-MS/MS)
MPFHpA	93	%	AsureQuality Method (LC-MS/MS)
M8PFOA	91	%	AsureQuality Method (LC-MS/MS)
M9PFNA	89	%	AsureQuality Method (LC-MS/MS)
M6PFDA	89	%	AsureQuality Method (LC-MS/MS)
M7PFUnDA	92	%	AsureQuality Method (LC-MS/MS)
MPFDoDA	101	%	AsureQuality Method (LC-MS/MS)
MPFTeDA	49	%	AsureQuality Method (LC-MS/MS)
MPFOSA	100	%	AsureQuality Method (LC-MS/MS)
DNEtFOSA	95	%	AsureQuality Method (LC-MS/MS)
DNMeFOSA	105	%	AsureQuality Method (LC-MS/MS)
DNEtFOSAA	86	%	AsureQuality Method (LC-MS/MS)
DNMeFOSAA	80	%	AsureQuality Method (LC-MS/MS)
DNEtFOSE	83	%	AsureQuality Method (LC-MS/MS)
DNMeFOSE	86	%	AsureQuality Method (LC-MS/MS)

Test	Result	Unit	Method Reference
M4:2FTS	125	%	AsureQuality Method (LC-MS/MS)
M6:2FTS	99	%	AsureQuality Method (LC-MS/MS)
M8:2FTS	81	%	AsureQuality Method (LC-MS/MS)
M3HFPO-DA	92	%	AsureQuality Method (LC-MS/MS)

QC Results

Blank

Relates to sample(s) 22-262855-1

Test	Result	Unit	Method Reference
Poly- and Perfluorinated Alkyl Substances (PFAS) in Potable Water			
Perfluoroalkylsulfonic acids			
PFPrS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFBS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PPeS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
di-PFHxS (1)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
mono-PFHxS (1)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
L-PFHxS (1)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Total PFHxS (3)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFHpS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
di-PFOS (5)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
mono-PFOS (5)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
L-PFOS (5)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Total PFOS (7)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Sum PFHxS+PFOS (1)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFNS	NR	µg/L	AsureQuality Method (LC-MS/MS)
PFDS	NR	µg/L	AsureQuality Method (LC-MS/MS)
PFECHS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Perfluoroalkylcarboxylic acids			
PFBA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PPeA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFHxA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFHpA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFOA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFNA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFDA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFUnDA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFDoDA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFTrDA	NR	µg/L	AsureQuality Method (LC-MS/MS)
PFTeDA	NR	µg/L	AsureQuality Method (LC-MS/MS)
P37DMOA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Perfluoroctanesulfonamides			
PFOSA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
NEtFOSA-M	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
NMeFOSA-M	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Perfluoroctanesulfonamidoacetic acids			
NEtFOSAA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
NMeFOSAA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)

Perfluoroctanesulfonamidoethanols			
NEtFOSE-M	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
NMeFOSE-M	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Telomere Sulfonic acids			
4:2 FTS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
6:2 FTS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
8:2 FTS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
10:2 FTS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Telomere Carboxylic acids			
FPrPA (3:3FTA)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
FPePA (5:3FTA)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
FHpPA (7:3FTA)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Miscellaneous			
F-53B (major)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
F-53B (minor)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Sum F-53B	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
ADONA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
HFPO-DA (GenX)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Internal Standards			
M3PFBS	100	%	AsureQuality Method (LC-MS/MS)
M3PFHxS	96	%	AsureQuality Method (LC-MS/MS)
M8PFOS	116	%	AsureQuality Method (LC-MS/MS)
M4PFBA	106	%	AsureQuality Method (LC-MS/MS)
M5PFPeA	102	%	AsureQuality Method (LC-MS/MS)
M5PFHxA	103	%	AsureQuality Method (LC-MS/MS)
MPFHpA	97	%	AsureQuality Method (LC-MS/MS)
M8PFOA	107	%	AsureQuality Method (LC-MS/MS)
M9PFNA	101	%	AsureQuality Method (LC-MS/MS)
M6PFDA	102	%	AsureQuality Method (LC-MS/MS)
M7PFUnDA	106	%	AsureQuality Method (LC-MS/MS)
MPFDoDA	145	%	AsureQuality Method (LC-MS/MS)
MPFTeDA	61	%	AsureQuality Method (LC-MS/MS)
MPFOSA	105	%	AsureQuality Method (LC-MS/MS)
DNEtFOSA	129	%	AsureQuality Method (LC-MS/MS)
DNMeFOSA	132	%	AsureQuality Method (LC-MS/MS)
DNEtFOSAA	114	%	AsureQuality Method (LC-MS/MS)
DNMeFOSAA	111	%	AsureQuality Method (LC-MS/MS)
DNEtFOSE	108	%	AsureQuality Method (LC-MS/MS)
DNMeFOSE	101	%	AsureQuality Method (LC-MS/MS)
M4:2FTS	102	%	AsureQuality Method (LC-MS/MS)
M6:2FTS	99	%	AsureQuality Method (LC-MS/MS)
M8:2FTS	99	%	AsureQuality Method (LC-MS/MS)
M3HFPO-DA	131	%	AsureQuality Method (LC-MS/MS)

Analysis Summary

Wellington Laboratory

Analysis	Method	Accreditation	Authorised by
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Poly- and Perfluorinated Alkyl Substances (PFAS) in Potable Water

DX-PFCS01, 03-SUITE_B AsureQuality Method (LC-MS/MS)

IANZ

Amelie Sellier

di-PFHxS (1) = Concentration determined using a branched di-PFHxS isomer standard (399>80 transition)

mono-PFHxS (1) = Concentration determined using a branched mono-PFHxS isomer standard (399>80 transition)

L-PFHxS (1) = Concentration determined using the linear PFHxS isomer standard (399>80 transition)

Total PFHxS (3) = The numerical sum of di-PFHxS (1), mono-PFHxS (1), and L-PFHxS (1)

di-PFOS (5) = Concentration determined using a branched di-PFOS isomer standard (499>80 transition)

mono-PFOS (5) = Concentration determined using a branched mono-PFOS isomer standard (499>80 transition)

L-PFOS (5) = Concentration determined using the linear PFOS isomer standard (499>230 transition)

Total PFOS (7) = The numerical sum of di-PFOS (5), mono-PFOS (5), and L-PFOS (5)

Sum PFHxS+PFOS (1) = The numerical sum of Total PFHxS (3) and Total PFOS (7)

Sum F-53B = The numerical sum of 9Cl-PF3ONS (F-53B major) and 11Cl-PF3OUdS (F-53B minor)

For all Totals, where a component is detected below the LOR, the value of zero is used in the calculation of the sum. The result represents the lower-bound concentration present in the sample.

Reported results are corrected for internal standard recovery

Results that are prefixed with '<' indicate the lowest level at which the analyte can be reported, and that in this case the analyte was not observed above this limit.

NR = Not Reportable

Amelie Sellier

Scientist

Accreditation



Appendix

Analyte LOR Summary

Poly- and Perfluorinated Alkyl Substances (PFAS) in Potable Water - AsureQuality Method (LC-MS/MS)

Analyte	LOR
Perfluoroalkylsulfonic acids	
PFPrS	0.0010 µg/L
PFBS	0.0010 µg/L
PPeS	0.0010 µg/L
di-PFHxS (1)	0.0010 µg/L
mono-PFHxS (1)	0.0010 µg/L
L-PFHxS (1)	0.0010 µg/L
Total PFHxS (3)	0.0010 µg/L
PFHpS	0.0010 µg/L
di-PFOS (5)	0.0010 µg/L
mono-PFOS (5)	0.0010 µg/L
L-PFOS (5)	0.0010 µg/L
Total PFOS (7)	0.0010 µg/L
Sum PFHxS+PFOS (1)	0.0010 µg/L
PFNS	NR µg/L
PFDS	NR µg/L
PFECHS	0.0010 µg/L
Perfluoroalkylcarboxylic acids	
PFBA	0.0010 µg/L
PPPeA	0.0010 µg/L
PFHxA	0.0010 µg/L
PFHpA	0.0010 µg/L
PFOA	0.0010 µg/L
PFNA	0.0010 µg/L
PFDA	0.0010 µg/L
PFUnDA	0.0010 µg/L
PFDoDA	0.0010 µg/L
PFTrDA	NR µg/L
PFTeDA	NR µg/L
P37DMOA	0.0010 µg/L
Perfluoroctanesulfonamides	
PFOSA	0.0010 µg/L
NEtFOSA-M	0.0010 µg/L
NMeFOSA-M	0.0010 µg/L
Perfluoroctanesulfonamidoacetic acids	
NEtFOSAA	0.0010 µg/L
NMeFOSAA	0.0010 µg/L
Perfluoroctanesulfonamidoethanols	
NEtFOSE-M	0.0010 µg/L
NMeFOSE-M	0.0010 µg/L
Telomere Sulfonic acids	
4:2 FTS	0.0010 µg/L
6:2 FTS	0.0010 µg/L
8:2 FTS	0.0010 µg/L
10:2 FTS	0.0010 µg/L
Telomere Carboxylic acids	
FPrPA (3:3FTA)	0.0010 µg/L
FPePA (5:3FTA)	0.0010 µg/L

FHpPA (7:3FTA)	0.0010 µg/L
Miscellaneous	
F-53B (major)	0.0010 µg/L
F-53B (minor)	0.0010 µg/L
Sum F-53B	0.0010 µg/L
ADONA	0.0010 µg/L
HFPO-DA (GenX)	0.0010 µg/L

Analyte Definitions

Poly- and Perfluorinated Alkyl Substances (PFAS) in Potable Water - AsureQuality Method (LC-MS/MS)

Analyte	Full Name
Perfluoroalkylsulfonic acids	
PPrS	Perfluoro-1-propanesulfonic acid
PFBS	Perfluoro-1-butanesulfonic acid
PPeS	Perfluoro-1-pentanesulfonic acid
di-PFHxS (1)	Total Perfluorodimethylbutane sulfonic acids
mono-PFHxS (1)	Total Perfluoromethylpentane sulfonic acids
L-PFHxS (1)	Linear Perfluorohexanesulfonic acid
PFHpS	Perfluoro-1-heptanesulfonic acid
di-PFOS (5)	Total Perfluorodimethylhexane sulfonic acids
mono-PFOS (5)	Total Perfluoromethylheptane sulfonic acids
L-PFOS (5)	Linear Perfluoroctanesulfonic acid
PFNS	Perfluoro-1-nonanesulfonic acid
PFDS	Perfluoro-1-decanesulfonic acid
PFECHS	Perfluoro-4-ethylcyclohexanesulfonic acid
Perfluoroalkylcarboxylic acids	
PFBA	Perfluoro-n-butanoic acid
PPeA	Perfluoro-n-pentanoic acid
PFHxA	Perfluoro-n-hexanoic acid
PFHpA	Perfluoro-n-heptanoic acid
PFOA	Perfluoro-n-octanoic acid
PFNA	Perfluoro-n-nonanoic acid
PFDA	Perfluoro-n-decanoic acid
PFUnDA	Perfluoro-n-undecanoic acid
PFDoDA	Perfluoro-n-dodecanoic acid
PFTrDA	Perfluoro-n-tridecanoic acid
PFTeDA	Perfluoro-n-tetradecanoic acid
P37DMOA	Perfluoro-3,7-dimethyloctanoic acid
Perfluoroctanesulfonamides	
PFOSA	Perfluoro-1-octanesulfonamide
NEtFOSA-M	N-ethylperfluoro-1-octanesulfonamide
NMeFOSA-M	N-methylperfluoro-1-octanesulfonamide
Perfluoroctanesulfonamidoacetic acids	
NETFOSAA	N-ethylperfluoro-1-octanesulfonamidoacetic acid
NMeFOSAA	N-methylperfluoro-1-octanesulfonamidoacetic acid
Perfluoroctanesulfonamidoethanols	
NETFOSE-M	2-(N-ethylperfluoro-1-octanesulfonamido)-ethanol
NMeFOSE-M	2-(N-methylperfluoro-1-octanesulfonamido)-ethanol
Telomere Sulfonic acids	
4:2 FTS	1H,1H,2H,2H-perfluoro-1-hexanesulfonic acid
6:2 FTS	1H,1H,2H,2H-perfluoro-1-octanesulfonic acid
8:2 FTS	1H,1H,2H,2H-perfluoro-1-decanesulfonic acid
10:2 FTS	1H,1H,2H,2H-perfluorododecanesulfonic acid
Telomere Carboxylic acids	
FPrPA (3:3FTA)	3-Perfluoropropyl propanoic acid

Analyte	Full Name
FPePA (5:3FTA)	3-Perfluoropentyl propanoic acid
FHpPA (7:3FTA)	3-Perfluoroheptyl propanoic acid
Miscellaneous	
F-53B (major)	9-chlorohexadecafluoro-3-oxanonane-1-sulfonic acid
F-53B (minor)	11-chloroeicosfluoro-3-oxaundecane-1-sulfonic acid
Sum F-53B	Sum of F-53B components (major + minor)
ADONA	Dodecafluoro-3H-4,8-dioxanonanoic acid
HFPO-DA (GenX)	Tetrafluoro-2-(heptafluoropropoxy)propanoic acid
Internal Standards	
M3PFBS	Perfluoro-1-[2,3,4-13C3]butanesulfonic acid
M3PFHxS	Perfluoro-1-[1,2,3-13C3]hexanesulfonic acid
M8PFOS	Perfluoro-1-[13C8]octanesulfonic acid
M4PFBA	Perfluoro-n-[1,2,3,4-13C4]butanoic acid
M5PFPeA	Perfluoro-n-[1,2,3,4,5-13C5]pentanoic acid
M5PFHxA	Perfluoro-n-[1,2,3,4,6-13C5]hexanoic acid
MPFHxA	Perfluoro-n-[1,2,3,4-13C4]heptanoic acid
M8PFOA	Perfluoro-n-[13C8]octanoic acid
M9PFNA	Perfluoro-n-[13C9]nonanoic acid
M6PFDA	Perfluoro-n-[1,2,3,4,5,6-13C6]decanoic acid
M7PFUnDA	Perfluoro-n-[1,2,3,4,5,6,7-13C7]undecanoic acid
MPFDoDA	Perfluoro-n-[1,2-13C2]dodecanoic acid
MPFTeDA	Perfluoro-n-[1,2-13C2]tetradecanoic acid
MPFOSA	Perfluoro-1-[13C8]octanesulfonamide
DNEtFOSA	N-ethyl-D5-perfluoro-1-octanesulfonamide
DNMeFOSA	N-methyl-D3-perfluoro-1-octanesulfonamide
DNEtFOSAA	N-ethyl-D5-perfluoro-1-octanesulfonamidoacetic acid
DNMeFOSAA	N-methyl-D3-perfluoro-1-octanesulfonamidoacetic acid
DNEtFOSE	2-(N-ethyl-D5-perfluoro-1-octanesulfonamido)ethan-D4-ol
DNMeFOSE	2-(N-methyl-D3-perfluoro-1-octanesulfonamido)ethan-D4-ol
M4:2FTS	1H,1H,2H,2H-perfluoro-1-[1,2-13C2]-hexane sulfonic acid
M6:2FTS	1H,1H,2H,2H-perfluoro-1-[1,2-13C2]-octane sulfonic acid
M8:2FTS	1H,1H,2H,2H-perfluoro-1-[1,2-13C2]-decane sulfonic acid
M3HFPO-DA	Tetrafluoro-2-(heptafluoropropoxy)-13C3-propanoic acid

LOR = Limit of Reporting

LOD = Limit of Detection

NR = Not Reportable

Certificate of Analysis

Submission Reference: A02744122
Amended Report

Bryn Taiapa
Pattle Delamore Partners Limited
P O Box 9528
Auckland 1149
New Zealand

PO Number: OHA_PFAS

Report Issued: 20-Oct-2022

AsureQuality Reference: 22-262628

Sample(s) Received: 29-Sep-2022 08:30

Testing Period: 30-Sep-2022 to 11-Oct-2022

Date of analysis is available on request.

Comments

Amended Report: Customer Sample Name amended.

Results

The tests were performed on the samples as received.

Customer Sample Name: OHA_QRY_WS2_14_280922				Lab ID: 22-262628-1
Sample Condition:	Acceptable	Sampled Date:	28-Sep-2022	
Test	Result	Unit	Method Reference	
Poly- and Perfluorinated Alkyl Substances (PFAS) in Potable Water				
Perfluoroalkylsulfonic acids				
PFPrS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)	
PFBS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)	
PPPeS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)	
di-PFHxS (1)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)	
mono-PFHxS (1)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)	
L-PFHxS (1)	0.0036	µg/L	AsureQuality Method (LC-MS/MS)	
Total PFHxS (3)	0.0036	µg/L	AsureQuality Method (LC-MS/MS)	
PFHpS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)	
di-PFOS (5)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)	
mono-PFOS (5)	0.0016	µg/L	AsureQuality Method (LC-MS/MS)	
L-PFOS (5)	0.0017	µg/L	AsureQuality Method (LC-MS/MS)	
Total PFOS (7)	0.0033	µg/L	AsureQuality Method (LC-MS/MS)	
Sum PFHxS+PFOS (1)	0.0069	µg/L	AsureQuality Method (LC-MS/MS)	
PFNS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)	
PFDS	NR	µg/L	AsureQuality Method (LC-MS/MS)	
PFECHS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)	
Perfluoroalkylcarboxylic acids				
PFBA	0.0037	µg/L	AsureQuality Method (LC-MS/MS)	
PPPeA	0.0039	µg/L	AsureQuality Method (LC-MS/MS)	
PFHxA	0.0027	µg/L	AsureQuality Method (LC-MS/MS)	
PFHpA	0.0017	µg/L	AsureQuality Method (LC-MS/MS)	
PFOA	0.0015	µg/L	AsureQuality Method (LC-MS/MS)	

AsureQuality Ltd has used reasonable skill, care, and effort to provide an accurate analysis of the sample(s) which form(s) the subject of this report. However, the accuracy of this analysis is reliant on, and subject to, the sample(s) provided by you and your responsibility as to transportation of the sample(s). AsureQuality Ltd's standard terms of business apply to the analysis set out in this report.

Test	Result	Unit	Method Reference
PFNA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFDA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFUnDA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFDaDA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFTrDA	NR	µg/L	AsureQuality Method (LC-MS/MS)
PFTeDA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
P37DMOA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Perfluoroctanesulfonamides			
PFOSA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
NEtFOSA-M	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
NMeFOSA-M	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Perfluoroctanesulfonamidoacetic acids			
NEtFOSAA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
NMeFOSAA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Perfluoroctanesulfonamidoethanols			
NEtFOSE-M	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
NMeFOSE-M	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Telomere Sulfonic acids			
4:2 FTS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
6:2 FTS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
8:2 FTS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
10:2 FTS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Telomere Carboxylic acids			
FPrPA (3:FTA)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
FPePA (5:FTA)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
FHpPA (7:FTA)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Miscellaneous			
F-53B (major)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
F-53B (minor)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Sum F-53B	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
ADONA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
HFPO-DA (GenX)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Internal Standards			
M3PFBS	109	%	AsureQuality Method (LC-MS/MS)
M3PFHxS	107	%	AsureQuality Method (LC-MS/MS)
M8PFOS	94	%	AsureQuality Method (LC-MS/MS)
M4PFBA	102	%	AsureQuality Method (LC-MS/MS)
M5PFPeA	109	%	AsureQuality Method (LC-MS/MS)
M5PFHxA	106	%	AsureQuality Method (LC-MS/MS)
MPFHpA	111	%	AsureQuality Method (LC-MS/MS)
M8PFOA	105	%	AsureQuality Method (LC-MS/MS)
M9PFNA	101	%	AsureQuality Method (LC-MS/MS)
M6PFDA	94	%	AsureQuality Method (LC-MS/MS)
M7PFUnDA	72	%	AsureQuality Method (LC-MS/MS)
MPFDoDA	41	%	AsureQuality Method (LC-MS/MS)
MPFTeDA	150	%	AsureQuality Method (LC-MS/MS)
MPFOSA	67	%	AsureQuality Method (LC-MS/MS)
DNEtFOSA	36	%	AsureQuality Method (LC-MS/MS)
DNMeFOSA	43	%	AsureQuality Method (LC-MS/MS)
DNEtFOSAA	59	%	AsureQuality Method (LC-MS/MS)

Test	Result	Unit	Method Reference
DNMeFOSAA	74	%	AsureQuality Method (LC-MS/MS)
DNEtFOSE	31	%	AsureQuality Method (LC-MS/MS)
DNMeFOSE	39	%	AsureQuality Method (LC-MS/MS)
M4:2FTS	125	%	AsureQuality Method (LC-MS/MS)
M6:2FTS	103	%	AsureQuality Method (LC-MS/MS)
M8:2FTS	99	%	AsureQuality Method (LC-MS/MS)
M3HFPO-DA	106	%	AsureQuality Method (LC-MS/MS)

QC Results

Blank

Relates to sample(s) 22-262628-1

Test	Result	Unit	Method Reference
Poly- and Perfluorinated Alkyl Substances (PFAS) in Potable Water			
Perfluoroalkylsulfonic acids			
PFPrS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFBS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PPeS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
di-PFHxS (1)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
mono-PFHxS (1)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
L-PFHxS (1)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Total PFHxS (3)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFHpS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
di-PFOS (5)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
mono-PFOS (5)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
L-PFOS (5)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Total PFOS (7)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Sum PFHxS+PFOS (1)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFNS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFDS	NR	µg/L	AsureQuality Method (LC-MS/MS)
PFECHS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Perfluoroalkylcarboxylic acids			
PFBA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PPeA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFHxA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFHpA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFOA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFNA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFDA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFUnDA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFDoDA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFTrDA	NR	µg/L	AsureQuality Method (LC-MS/MS)
PFTeDA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
P37DMOA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Perfluorooctanesulfonamides			
PFOSA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
NEtFOSA-M	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
NMeFOSA-M	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)

Perfluoroctanesulfonamidoacetic acids			
NEtFOSAA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
NMeFOSAA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Perfluoroctanesulfonamidoethanols			
NEtFOSE-M	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
NMeFOSE-M	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Telomere Sulfonic acids			
4:2 FTS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
6:2 FTS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
8:2 FTS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
10:2 FTS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Telomere Carboxylic acids			
FPrPA (3:3FTA)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
FPePA (5:3FTA)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
FHpPA (7:3FTA)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Miscellaneous			
F-53B (major)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
F-53B (minor)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Sum F-53B	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
ADONA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
HFPO-DA (GenX)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Internal Standards			
M3PFBS	105	%	AsureQuality Method (LC-MS/MS)
M3PFHxS	106	%	AsureQuality Method (LC-MS/MS)
M8PFOS	111	%	AsureQuality Method (LC-MS/MS)
M4PFBA	109	%	AsureQuality Method (LC-MS/MS)
M5PFPeA	107	%	AsureQuality Method (LC-MS/MS)
M5PFHxA	102	%	AsureQuality Method (LC-MS/MS)
MPFHxA	106	%	AsureQuality Method (LC-MS/MS)
M8PFOA	112	%	AsureQuality Method (LC-MS/MS)
M9PFNA	110	%	AsureQuality Method (LC-MS/MS)
M6PFDA	117	%	AsureQuality Method (LC-MS/MS)
M7PFUnDA	113	%	AsureQuality Method (LC-MS/MS)
MPFDODA	86	%	AsureQuality Method (LC-MS/MS)
MPFTeDA	83	%	AsureQuality Method (LC-MS/MS)
MPFOSA	80	%	AsureQuality Method (LC-MS/MS)
DNEtFOSA	40	%	AsureQuality Method (LC-MS/MS)
DNMeFOSA	37	%	AsureQuality Method (LC-MS/MS)
DNEtFOSAA	104	%	AsureQuality Method (LC-MS/MS)
DNMeFOSAA	116	%	AsureQuality Method (LC-MS/MS)
DNEtFOSE	41	%	AsureQuality Method (LC-MS/MS)
DNMeFOSE	44	%	AsureQuality Method (LC-MS/MS)
M4:2FTS	100	%	AsureQuality Method (LC-MS/MS)
M6:2FTS	111	%	AsureQuality Method (LC-MS/MS)
M8:2FTS	120	%	AsureQuality Method (LC-MS/MS)
M3HFPO-DA	117	%	AsureQuality Method (LC-MS/MS)

Analysis Summary

Wellington Laboratory

Analysis	Method	Accreditation	Authorised by
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Poly- and Perfluorinated Alkyl Substances (PFAS) in Potable Water

DX-PFCS01, 03-SUITE_B AsureQuality Method (LC-MS/MS)

IANZ

Amelie Sellier

di-PFHxS (1) = Concentration determined using a branched di-PFHxS isomer standard (399>80 transition)

mono-PFHxS (1) = Concentration determined using a branched mono-PFHxS isomer standard (399>80 transition)

L-PFHxS (1) = Concentration determined using the linear PFHxS isomer standard (399>80 transition)

Total PFHxS (3) = The numerical sum of di-PFHxS (1), mono-PFHxS (1), and L-PFHxS (1)

di-PFOS (5) = Concentration determined using a branched di-PFOS isomer standard (499>80 transition)

mono-PFOS (5) = Concentration determined using a branched mono-PFOS isomer standard (499>80 transition)

L-PFOS (5) = Concentration determined using the linear PFOS isomer standard (499>230 transition)

Total PFOS (7) = The numerical sum of di-PFOS (5), mono-PFOS (5), and L-PFOS (5)

Sum PFHxS+PFOS (1) = The numerical sum of Total PFHxS (3) and Total PFOS (7)

Sum F-53B = The numerical sum of 9Cl-PF3ONS (F-53B major) and 11Cl-PF3OUdS (F-53B minor)

For all Totals, where a component is detected below the LOR, the value of zero is used in the calculation of the sum. The result represents the lower-bound concentration present in the sample.

Reported results are corrected for internal standard recovery

Results that are prefixed with '<' indicate the lowest level at which the analyte can be reported, and that in this case the analyte was not observed above this limit.

NR = Not Reportable

Amelie Sellier

Scientist

Accreditation



Appendix

Analyte LOR Summary

Poly- and Perfluorinated Alkyl Substances (PFAS) in Potable Water - AsureQuality Method (LC-MS/MS)

Analyte LOR

Perfluoroalkylsulfonic acids

PFPrS	0.0010 µg/L
PFBS	0.0010 µg/L
PPeS	0.0010 µg/L
di-PFHxS (1)	0.0010 µg/L
mono-PFHxS (1)	0.0010 µg/L
L-PFHxS (1)	0.0010 µg/L
Total PFHxS (3)	0.0010 µg/L
PFHpS	0.0010 µg/L
di-PFOS (5)	0.0010 µg/L
mono-PFOS (5)	0.0010 µg/L
L-PFOS (5)	0.0010 µg/L
Total PFOS (7)	0.0010 µg/L
Sum PFHxS+PFOS (1)	0.0010 µg/L
PFNS	0.0010 µg/L
PFDS	NR µg/L
PFECHS	0.0010 µg/L

Perfluoroalkylcarboxylic acids

PFBA	0.0010 µg/L
PPeA	0.0010 µg/L
PFHxA	0.0010 µg/L
PFHpA	0.0010 µg/L
PFOA	0.0010 µg/L
PFNA	0.0010 µg/L
PFDA	0.0010 µg/L
PFUnDA	0.0010 µg/L
PFDoDA	0.0010 µg/L
PFTrDA	NR µg/L
PFTeDA	0.0010 µg/L
P37DMOA	0.0010 µg/L

Perfluoroctanesulfonamides

PFOSA	0.0010 µg/L
NEtFOSA-M	0.0010 µg/L
NMeFOSA-M	0.0010 µg/L

Perfluoroctanesulfonamidoacetic acids

NEtFOSAA	0.0010 µg/L
NMeFOSAA	0.0010 µg/L

Perfluoroctanesulfonamidoethanols

NETFOSE-M	0.0010 µg/L
NMeFOSE-M	0.0010 µg/L

Telomere Sulfonic acids

4:2 FTS	0.0010 µg/L
6:2 FTS	0.0010 µg/L
8:2 FTS	0.0010 µg/L
10:2 FTS	0.0010 µg/L

Telomere Carboxylic acids

FPrPA (3:3FTA)	0.0010 µg/L
FPePA (5:3FTA)	0.0010 µg/L

FHpPA (7:3FTA)	0.0010 µg/L
Miscellaneous	
F-53B (major)	0.0010 µg/L
F-53B (minor)	0.0010 µg/L
Sum F-53B	0.0010 µg/L
ADONA	0.0010 µg/L
HFPO-DA (GenX)	0.0010 µg/L

Analyte Definitions

Poly- and Perfluorinated Alkyl Substances (PFAS) in Potable Water - AsureQuality Method (LC-MS/MS)

Analyte	Full Name
Perfluoroalkylsulfonic acids	
PPrS	Perfluoro-1-propanesulfonic acid
PFBS	Perfluoro-1-butanesulfonic acid
PPeS	Perfluoro-1-pentanesulfonic acid
di-PFHxS (1)	Total Perfluorodimethylbutane sulfonic acids
mono-PFHxS (1)	Total Perfluoromethylpentane sulfonic acids
L-PFHxS (1)	Linear Perfluorohexanesulfonic acid
PFHpS	Perfluoro-1-heptanesulfonic acid
di-PFOS (5)	Total Perfluorodimethylhexane sulfonic acids
mono-PFOS (5)	Total Perfluoromethylheptane sulfonic acids
L-PFOS (5)	Linear Perfluoroctanesulfonic acid
PFNS	Perfluoro-1-nonanesulfonic acid
PFDS	Perfluoro-1-decanesulfonic acid
PFECHS	Perfluoro-4-ethylcyclohexanesulfonic acid
Perfluoroalkylcarboxylic acids	
PFBA	Perfluoro-n-butanoic acid
PPeA	Perfluoro-n-pentanoic acid
PFHxA	Perfluoro-n-hexanoic acid
PFHpA	Perfluoro-n-heptanoic acid
PFOA	Perfluoro-n-octanoic acid
PFNA	Perfluoro-n-nonanoic acid
PFDA	Perfluoro-n-decanoic acid
PFUnDA	Perfluoro-n-undecanoic acid
PFDoDA	Perfluoro-n-dodecanoic acid
PFTrDA	Perfluoro-n-tridecanoic acid
PFTeDA	Perfluoro-n-tetradecanoic acid
P37DMOA	Perfluoro-3,7-dimethyloctanoic acid
Perfluoroctanesulfonamides	
PFOSA	Perfluoro-1-octanesulfonamide
NEtFOSA-M	N-ethylperfluoro-1-octanesulfonamide
NMeFOSA-M	N-methylperfluoro-1-octanesulfonamide
Perfluoroctanesulfonamidoacetic acids	
NETFOSAA	N-ethylperfluoro-1-octanesulfonamidoacetic acid
NMeFOSAA	N-methylperfluoro-1-octanesulfonamidoacetic acid
Perfluoroctanesulfonamidoethanols	
NETFOSE-M	2-(N-ethylperfluoro-1-octanesulfonamido)-ethanol
NMeFOSE-M	2-(N-methylperfluoro-1-octanesulfonamido)-ethanol
Telomere Sulfonic acids	
4:2 FTS	1H,1H,2H,2H-perfluoro-1-hexanesulfonic acid
6:2 FTS	1H,1H,2H,2H-perfluoro-1-octanesulfonic acid
8:2 FTS	1H,1H,2H,2H-perfluoro-1-decanesulfonic acid
10:2 FTS	1H,1H,2H,2H-perfluorododecanesulfonic acid
Telomere Carboxylic acids	
FPrPA (3:3FTA)	3-Perfluoropropyl propanoic acid

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Report Number 3019773 cancels Report Number 3007282.

Analyte	Full Name
FPePA (5:3FTA)	3-Perfluoropentyl propanoic acid
FHpPA (7:3FTA)	3-Perfluoroheptyl propanoic acid
Miscellaneous	
F-53B (major)	9-chlorohexadecafluoro-3-oxanonane-1-sulfonic acid
F-53B (minor)	11-chloroeicosfluoro-3-oxaundecane-1-sulfonic acid
Sum F-53B	Sum of F-53B components (major + minor)
ADONA	Dodecafluoro-3H-4,8-dioxanonanoic acid
HFPO-DA (GenX)	Tetrafluoro-2-(heptafluoropropoxy)propanoic acid
Internal Standards	
M3PFBS	Perfluoro-1-[2,3,4-13C3]butanesulfonic acid
M3PFHxS	Perfluoro-1-[1,2,3-13C3]hexanesulfonic acid
M8PFOS	Perfluoro-1-[13C8]octanesulfonic acid
M4PFBA	Perfluoro-n-[1,2,3,4-13C4]butanoic acid
M5PFPeA	Perfluoro-n-[1,2,3,4,5-13C5]pentanoic acid
M5PFHxA	Perfluoro-n-[1,2,3,4,6-13C5]hexanoic acid
MPFHxA	Perfluoro-n-[1,2,3,4-13C4]heptanoic acid
M8PFOA	Perfluoro-n-[13C8]octanoic acid
M9PFNA	Perfluoro-n-[13C9]nonanoic acid
M6PFDA	Perfluoro-n-[1,2,3,4,5,6-13C6]decanoic acid
M7PFUnDA	Perfluoro-n-[1,2,3,4,5,6,7-13C7]undecanoic acid
MPFDoDA	Perfluoro-n-[1,2-13C2]dodecanoic acid
MPFTeDA	Perfluoro-n-[1,2-13C2]tetradecanoic acid
MPFOSA	Perfluoro-1-[13C8]octanesulfonamide
DNEtFOSA	N-ethyl-D5-perfluoro-1-octanesulfonamide
DNMeFOSA	N-methyl-D3-perfluoro-1-octanesulfonamide
DNEtFOSAA	N-ethyl-D5-perfluoro-1-octanesulfonamidoacetic acid
DNMeFOSAA	N-methyl-D3-perfluoro-1-octanesulfonamidoacetic acid
DNEtFOSE	2-(N-ethyl-D5-perfluoro-1-octanesulfonamido)ethan-D4-ol
DNMeFOSE	2-(N-methyl-D3-perfluoro-1-octanesulfonamido)ethan-D4-ol
M4:2FTS	1H,1H,2H,2H-perfluoro-1-[1,2-13C2]-hexane sulfonic acid
M6:2FTS	1H,1H,2H,2H-perfluoro-1-[1,2-13C2]-octane sulfonic acid
M8:2FTS	1H,1H,2H,2H-perfluoro-1-[1,2-13C2]-decane sulfonic acid
M3HFPO-DA	Tetrafluoro-2-(heptafluoropropoxy)-13C3-propanoic acid

LOR = Limit of Reporting

LOD = Limit of Detection

NR = Not Reportable

Certificate of Analysis

Submission Reference: A02744122
Final Report

Bryn Taiapa
Pattle Delamore Partners Limited
P O Box 9528
Auckland 1149
New Zealand

PO Number: OHA_PFAS

Report Issued: 12-Oct-2022

AsureQuality Reference: 22-262534

Sample(s) Received: 29-Sep-2022 08:30

Testing Period: 30-Sep-2022 to 11-Oct-2022

Date of analysis is available on request.

Results

The tests were performed on the samples as received.

Customer Sample Name: OHA_ADJ_GW6_9_280922		Lab ID: 22-262534-1	
Sample Condition: Acceptable	Sampled Date: 28-Sep-2022		
Test	Result	Unit	Method Reference
Poly- and Perfluorinated Alkyl Substances (PFAS) in Potable Water			
Perfluoroalkylsulfonic acids			
PFPrS	0.0019	µg/L	AsureQuality Method (LC-MS/MS)
PFBS	0.0026	µg/L	AsureQuality Method (LC-MS/MS)
PPeS	0.0030	µg/L	AsureQuality Method (LC-MS/MS)
di-PFHxS (1)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
mono-PFHxS (1)	0.0035	µg/L	AsureQuality Method (LC-MS/MS)
L-PFHxS (1)	0.020	µg/L	AsureQuality Method (LC-MS/MS)
Total PFHxS (3)	0.024	µg/L	AsureQuality Method (LC-MS/MS)
PFHpS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
di-PFOS (5)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
mono-PFOS (5)	0.011	µg/L	AsureQuality Method (LC-MS/MS)
L-PFOS (5)	0.0041	µg/L	AsureQuality Method (LC-MS/MS)
Total PFOS (7)	0.015	µg/L	AsureQuality Method (LC-MS/MS)
Sum PFHxS+PFOS (1)	0.039	µg/L	AsureQuality Method (LC-MS/MS)
PFNS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFDS	NR	µg/L	AsureQuality Method (LC-MS/MS)
PFECHS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Perfluoroalkylcarboxylic acids			
PFBA	0.0061	µg/L	AsureQuality Method (LC-MS/MS)
PPeA	0.0090	µg/L	AsureQuality Method (LC-MS/MS)
PFHxA	0.010	µg/L	AsureQuality Method (LC-MS/MS)
PFHpA	0.0047	µg/L	AsureQuality Method (LC-MS/MS)
PFOA	0.0030	µg/L	AsureQuality Method (LC-MS/MS)
PFNA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFDA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFUnDA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)

AsureQuality Ltd has used reasonable skill, care, and effort to provide an accurate analysis of the sample(s) which form(s) the subject of this report. However, the accuracy of this analysis is reliant on, and subject to, the sample(s) provided by you and your responsibility as to transportation of the sample(s). AsureQuality Ltd's standard terms of business apply to the analysis set out in this report.

Test	Result	Unit	Method Reference
PFDoDA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFTrDA	NR	µg/L	AsureQuality Method (LC-MS/MS)
PFTeDA	NR	µg/L	AsureQuality Method (LC-MS/MS)
P37DMOA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Perfluoroctanesulfonamides			
PFOSA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
NEtFOSA-M	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
NMeFOSA-M	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Perfluoroctanesulfonamidoacetic acids			
NEtFOSAA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
NMeFOSAA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Perfluoroctanesulfonamidoethanols			
NEtFOSE-M	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
NMeFOSE-M	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Telomere Sulfonic acids			
4:2 FTS	NR	µg/L	AsureQuality Method (LC-MS/MS)
6:2 FTS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
8:2 FTS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
10:2 FTS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Telomere Carboxylic acids			
FPrPA (3:3FTA)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
FPePA (5:3FTA)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
FHpPA (7:3FTA)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Miscellaneous			
F-53B (major)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
F-53B (minor)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Sum F-53B	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
ADONA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
HFPO-DA (GenX)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Internal Standards			
M3PFBS	108	%	AsureQuality Method (LC-MS/MS)
M3PFHxS	126	%	AsureQuality Method (LC-MS/MS)
M8PFOS	120	%	AsureQuality Method (LC-MS/MS)
M4PFBA	49	%	AsureQuality Method (LC-MS/MS)
M5PFPeA	79	%	AsureQuality Method (LC-MS/MS)
M5PFHxA	77	%	AsureQuality Method (LC-MS/MS)
MPFHpA	96	%	AsureQuality Method (LC-MS/MS)
M8PFOA	99	%	AsureQuality Method (LC-MS/MS)
M9PFNA	116	%	AsureQuality Method (LC-MS/MS)
M6PFDA	120	%	AsureQuality Method (LC-MS/MS)
M7PFUnDA	153 (R)	%	AsureQuality Method (LC-MS/MS)
MPFDoDA	147	%	AsureQuality Method (LC-MS/MS)
MPFTeDA	420 (R)	%	AsureQuality Method (LC-MS/MS)
MPFOSA	90	%	AsureQuality Method (LC-MS/MS)
DNEtFOSA	81	%	AsureQuality Method (LC-MS/MS)
DNMeFOSA	66	%	AsureQuality Method (LC-MS/MS)
DNEtFOSAA	124	%	AsureQuality Method (LC-MS/MS)
DNMeFOSAA	126	%	AsureQuality Method (LC-MS/MS)
DNEtFOSE	89	%	AsureQuality Method (LC-MS/MS)
DNMeFOSE	77	%	AsureQuality Method (LC-MS/MS)

Test	Result	Unit	Method Reference
M4:2FTS	431 (R)	%	AsureQuality Method (LC-MS/MS)
M6:2FTS	200 (R)	%	AsureQuality Method (LC-MS/MS)
M8:2FTS	164 (R)	%	AsureQuality Method (LC-MS/MS)
M3HFPO-DA	80	%	AsureQuality Method (LC-MS/MS)

R = Recovery outside method limits

QC Results

Blank

Relates to sample(s) 22-262534-1

Test	Result	Unit	Method Reference
Poly- and Perfluorinated Alkyl Substances (PFAS) in Potable Water			
Perfluoroalkylsulfonic acids			
PFPrS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFBS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFPeS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
di-PFHxS (1)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
mono-PFHxS (1)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
L-PFHxS (1)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Total PFHxS (3)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFHpS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
di-PFOS (5)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
mono-PFOS (5)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
L-PFOS (5)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Total PFOS (7)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Sum PFHxS+PFOS (1)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFNS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFDS	NR	µg/L	AsureQuality Method (LC-MS/MS)
PFECHS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Perfluoroalkylcarboxylic acids			
PFBA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFPeA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFHxA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFHpA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFOA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFNA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFDA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFUnDA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFDoDA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFTrDA	NR	µg/L	AsureQuality Method (LC-MS/MS)
PFTeDA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
P37DMOA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Perfluoroctanesulfonamides			
PFOSA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
NEtFOSA-M	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
NMeFOSA-M	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Perfluoroctanesulfonamidoacetic acids			
NEtFOSAA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)

Test	Result	Unit	Method Reference
NMeFOSAA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Perfluoroctanesulfonamidoethanols			
NEtFOSE-M	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
NMeFOSE-M	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Telomere Sulfonic acids			
4:2 FTS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
6:2 FTS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
8:2 FTS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
10:2 FTS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Telomere Carboxylic acids			
FPrPA (3:3FTA)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
FPePA (5:3FTA)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
FHpPA (7:3FTA)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Miscellaneous			
F-53B (major)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
F-53B (minor)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Sum F-53B	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
ADONA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
HFPO-DA (GenX)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Internal Standards			
M3PFBS	105	%	AsureQuality Method (LC-MS/MS)
M3PFHxS	106	%	AsureQuality Method (LC-MS/MS)
M8PFOS	111	%	AsureQuality Method (LC-MS/MS)
M4PFBA	109	%	AsureQuality Method (LC-MS/MS)
M5PFPeA	107	%	AsureQuality Method (LC-MS/MS)
M5PFHxA	102	%	AsureQuality Method (LC-MS/MS)
MPFHpA	106	%	AsureQuality Method (LC-MS/MS)
M8PFOA	112	%	AsureQuality Method (LC-MS/MS)
M9PFNA	110	%	AsureQuality Method (LC-MS/MS)
M6PFDA	117	%	AsureQuality Method (LC-MS/MS)
M7PFUnDA	113	%	AsureQuality Method (LC-MS/MS)
MPFDoDA	86	%	AsureQuality Method (LC-MS/MS)
MPFTeDA	83	%	AsureQuality Method (LC-MS/MS)
MPFOSA	80	%	AsureQuality Method (LC-MS/MS)
DNEtFOSA	40	%	AsureQuality Method (LC-MS/MS)
DNMeFOSA	37	%	AsureQuality Method (LC-MS/MS)
DNEtFOSAA	104	%	AsureQuality Method (LC-MS/MS)
DNMeFOSAA	116	%	AsureQuality Method (LC-MS/MS)
DNEtFOSE	41	%	AsureQuality Method (LC-MS/MS)
DNMeFOSE	44	%	AsureQuality Method (LC-MS/MS)
M4:2FTS	100	%	AsureQuality Method (LC-MS/MS)
M6:2FTS	111	%	AsureQuality Method (LC-MS/MS)
M8:2FTS	120	%	AsureQuality Method (LC-MS/MS)
M3HFPO-DA	117	%	AsureQuality Method (LC-MS/MS)

Analysis Summary

Wellington Laboratory

Analysis	Method	Accreditation	Authorised by
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Poly- and Perfluorinated Alkyl Substances (PFAS) in Potable Water

DX-PFCS01, 03-SUITE_B AsureQuality Method (LC-MS/MS)

IANZ

Amelie Sellier

di-PFHxS (1) = Concentration determined using a branched di-PFHxS isomer standard (399>80 transition)

mono-PFHxS (1) = Concentration determined using a branched mono-PFHxS isomer standard (399>80 transition)

L-PFHxS (1) = Concentration determined using the linear PFHxS isomer standard (399>80 transition)

Total PFHxS (3) = The numerical sum of di-PFHxS (1), mono-PFHxS (1), and L-PFHxS (1)

di-PFOS (5) = Concentration determined using a branched di-PFOS isomer standard (499>80 transition)

mono-PFOS (5) = Concentration determined using a branched mono-PFOS isomer standard (499>80 transition)

L-PFOS (5) = Concentration determined using the linear PFOS isomer standard (499>230 transition)

Total PFOS (7) = The numerical sum of di-PFOS (5), mono-PFOS (5), and L-PFOS (5)

Sum PFHxS+PFOS (1) = The numerical sum of Total PFHxS (3) and Total PFOS (7)

Sum F-53B = The numerical sum of 9Cl-PF3ONS (F-53B major) and 11Cl-PF3OUdS (F-53B minor)

For all Totals, where a component is detected below the LOR, the value of zero is used in the calculation of the sum. The result represents the lower-bound concentration present in the sample.

Reported results are corrected for internal standard recovery

Results that are prefixed with '<' indicate the lowest level at which the analyte can be reported, and that in this case the analyte was not observed above this limit.

NR = Not Reportable

Amelie Sellier

Scientist

Accreditation



Appendix

Analyte LOR Summary

Poly- and Perfluorinated Alkyl Substances (PFAS) in Potable Water - AsureQuality Method (LC-MS/MS)

Analyte	LOR
Perfluoroalkylsulfonic acids	
PFPrS	0.0010 µg/L
PFBS	0.0010 µg/L
PPeS	0.0010 µg/L
di-PFHxS (1)	0.0010 µg/L
mono-PFHxS (1)	0.0010 µg/L
L-PFHxS (1)	0.0010 µg/L
Total PFHxS (3)	0.0010 µg/L
PFHpS	0.0010 µg/L
di-PFOS (5)	0.0010 µg/L
mono-PFOS (5)	0.0010 µg/L
L-PFOS (5)	0.0010 µg/L
Total PFOS (7)	0.0010 µg/L
Sum PFHxS+PFOS (1)	0.0010 µg/L
PFNS	0.0010 µg/L
PFDS	NR µg/L
PFECHS	0.0010 µg/L
Perfluoroalkylcarboxylic acids	
PFBA	0.0010 µg/L
PPeA	0.0010 µg/L
PFHxA	0.0010 µg/L
PFHpA	0.0010 µg/L
PFOA	0.0010 µg/L
PFNA	0.0010 µg/L
PFDA	0.0010 µg/L
PFUnDA	0.0010 µg/L
PFDoDA	0.0010 µg/L
PFTrDA	NR µg/L
PFTeDA	NR µg/L
P37DMOA	0.0010 µg/L
Perfluoroctanesulfonamides	
PFOSA	0.0010 µg/L
NEtFOSA-M	0.0010 µg/L
NMeFOSA-M	0.0010 µg/L
Perfluoroctanesulfonamidoacetic acids	
NEtFOSAA	0.0010 µg/L
NMeFOSAA	0.0010 µg/L
Perfluoroctanesulfonamidoethanols	
NEtFOSE-M	0.0010 µg/L
NMeFOSE-M	0.0010 µg/L
Telomere Sulfonic acids	
4:2 FTS	NR µg/L
6:2 FTS	0.0010 µg/L
8:2 FTS	0.0010 µg/L
10:2 FTS	0.0010 µg/L
Telomere Carboxylic acids	
FPrPA (3:3FTA)	0.0010 µg/L
FPePA (5:3FTA)	0.0010 µg/L

FHpPA (7:3FTA)	0.0010 µg/L
Miscellaneous	
F-53B (major)	0.0010 µg/L
F-53B (minor)	0.0010 µg/L
Sum F-53B	0.0010 µg/L
ADONA	0.0010 µg/L
HFPO-DA (GenX)	0.0010 µg/L

Analyte Definitions

Poly- and Perfluorinated Alkyl Substances (PFAS) in Potable Water - AsureQuality Method (LC-MS/MS)

Analyte	Full Name
Perfluoroalkylsulfonic acids	
PPrS	Perfluoro-1-propanesulfonic acid
PFBS	Perfluoro-1-butanesulfonic acid
PPeS	Perfluoro-1-pentanesulfonic acid
di-PFHxS (1)	Total Perfluorodimethylbutane sulfonic acids
mono-PFHxS (1)	Total Perfluoromethylpentane sulfonic acids
L-PFHxS (1)	Linear Perfluorohexanesulfonic acid
PFHpS	Perfluoro-1-heptanesulfonic acid
di-PFOS (5)	Total Perfluorodimethylhexane sulfonic acids
mono-PFOS (5)	Total Perfluoromethylheptane sulfonic acids
L-PFOS (5)	Linear Perfluoroctanesulfonic acid
PFNS	Perfluoro-1-nonanesulfonic acid
PFDS	Perfluoro-1-decanesulfonic acid
PFECHS	Perfluoro-4-ethylcyclohexanesulfonic acid
Perfluoroalkylcarboxylic acids	
PFBA	Perfluoro-n-butanoic acid
PPeA	Perfluoro-n-pentanoic acid
PFHxA	Perfluoro-n-hexanoic acid
PFHpA	Perfluoro-n-heptanoic acid
PFOA	Perfluoro-n-octanoic acid
PFNA	Perfluoro-n-nonanoic acid
PFDA	Perfluoro-n-decanoic acid
PFUnDA	Perfluoro-n-undecanoic acid
PFDoDA	Perfluoro-n-dodecanoic acid
PFTrDA	Perfluoro-n-tridecanoic acid
PFTeDA	Perfluoro-n-tetradecanoic acid
P37DMOA	Perfluoro-3,7-dimethyloctanoic acid
Perfluoroctanesulfonamides	
PFOSA	Perfluoro-1-octanesulfonamide
NEtFOSA-M	N-ethylperfluoro-1-octanesulfonamide
NMeFOSA-M	N-methylperfluoro-1-octanesulfonamide
Perfluoroctanesulfonamidoacetic acids	
NETFOSAA	N-ethylperfluoro-1-octanesulfonamidoacetic acid
NMeFOSAA	N-methylperfluoro-1-octanesulfonamidoacetic acid
Perfluoroctanesulfonamidoethanols	
NETFOSE-M	2-(N-ethylperfluoro-1-octanesulfonamido)-ethanol
NMeFOSE-M	2-(N-methylperfluoro-1-octanesulfonamido)-ethanol
Telomere Sulfonic acids	
4:2 FTS	1H,1H,2H,2H-perfluoro-1-hexanesulfonic acid
6:2 FTS	1H,1H,2H,2H-perfluoro-1-octanesulfonic acid
8:2 FTS	1H,1H,2H,2H-perfluoro-1-decanesulfonic acid
10:2 FTS	1H,1H,2H,2H-perfluorododecanesulfonic acid
Telomere Carboxylic acids	
FPrPA (3:3FTA)	3-Perfluoropropyl propanoic acid

Analyte	Full Name
FPePA (5:3FTA)	3-Perfluoropentyl propanoic acid
FHpPA (7:3FTA)	3-Perfluoroheptyl propanoic acid
Miscellaneous	
F-53B (major)	9-chlorohexadecafluoro-3-oxanonane-1-sulfonic acid
F-53B (minor)	11-chloroeicosfluoro-3-oxaundecane-1-sulfonic acid
Sum F-53B	Sum of F-53B components (major + minor)
ADONA	Dodecafluoro-3H-4,8-dioxanonanoic acid
HFPO-DA (GenX)	Tetrafluoro-2-(heptafluoropropoxy)propanoic acid
Internal Standards	
M3PFBS	Perfluoro-1-[2,3,4-13C3]butanesulfonic acid
M3PFHxS	Perfluoro-1-[1,2,3-13C3]hexanesulfonic acid
M8PFOS	Perfluoro-1-[13C8]octanesulfonic acid
M4PFBA	Perfluoro-n-[1,2,3,4-13C4]butanoic acid
M5PFPeA	Perfluoro-n-[1,2,3,4,5-13C5]pentanoic acid
M5PFHxA	Perfluoro-n-[1,2,3,4,6-13C5]hexanoic acid
MPFHxA	Perfluoro-n-[1,2,3,4-13C4]heptanoic acid
M8PFOA	Perfluoro-n-[13C8]octanoic acid
M9PFNA	Perfluoro-n-[13C9]nonanoic acid
M6PFDA	Perfluoro-n-[1,2,3,4,5,6-13C6]decanoic acid
M7PFUnDA	Perfluoro-n-[1,2,3,4,5,6,7-13C7]undecanoic acid
MPFDoDA	Perfluoro-n-[1,2-13C2]dodecanoic acid
MPFTeDA	Perfluoro-n-[1,2-13C2]tetradecanoic acid
MPFOSA	Perfluoro-1-[13C8]octanesulfonamide
DNEtFOSA	N-ethyl-D5-perfluoro-1-octanesulfonamide
DNMeFOSA	N-methyl-D3-perfluoro-1-octanesulfonamide
DNEtFOSAA	N-ethyl-D5-perfluoro-1-octanesulfonamidoacetic acid
DNMeFOSAA	N-methyl-D3-perfluoro-1-octanesulfonamidoacetic acid
DNEtFOSE	2-(N-ethyl-D5-perfluoro-1-octanesulfonamido)ethan-D4-ol
DNMeFOSE	2-(N-methyl-D3-perfluoro-1-octanesulfonamido)ethan-D4-ol
M4:2FTS	1H,1H,2H,2H-perfluoro-1-[1,2-13C2]-hexane sulfonic acid
M6:2FTS	1H,1H,2H,2H-perfluoro-1-[1,2-13C2]-octane sulfonic acid
M8:2FTS	1H,1H,2H,2H-perfluoro-1-[1,2-13C2]-decane sulfonic acid
M3HFPO-DA	Tetrafluoro-2-(heptafluoropropoxy)-13C3-propanoic acid

LOR = Limit of Reporting

LOD = Limit of Detection

NR = Not Reportable

Certificate of Analysis

Submission Reference: A02744123
Final Report

James Conway
Pattle Delamore Partners Limited
P O Box 9528
Auckland 1149
New Zealand

PO Number: OHA_PFAS

Report Issued: 12-Oct-2022

AsureQuality Reference: 22-262678

Sample(s) Received: 30-Sep-2022 08:20

Testing Period: 30-Sep-2022 to 11-Oct-2022

Date of analysis is available on request.

Results

The tests were performed on the samples as received.

Customer Sample Name: OHA_ADJ_GW31_8_290922		Lab ID: 22-262678-1	
Sample Condition: Acceptable	Sampled Date: 29-Sep-2022		
Test	Result	Unit	Method Reference
Poly- and Perfluorinated Alkyl Substances (PFAS) in Potable Water			
Perfluoroalkylsulfonic acids			
PFPrS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFBS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PPeS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
di-PFHxS (1)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
mono-PFHxS (1)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
L-PFHxS (1)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Total PFHxS (3)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFHpS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
di-PFOS (5)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
mono-PFOS (5)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
L-PFOS (5)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Total PFOS (7)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Sum PFHxS+PFOS (1)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFNS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFDS	NR	µg/L	AsureQuality Method (LC-MS/MS)
PFECHS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Perfluoroalkylcarboxylic acids			
PFBA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PPeA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFHxA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFHpA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFOA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFNA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFDA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFUnDA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)

AsureQuality Ltd has used reasonable skill, care, and effort to provide an accurate analysis of the sample(s) which form(s) the subject of this report. However, the accuracy of this analysis is reliant on, and subject to, the sample(s) provided by you and your responsibility as to transportation of the sample(s). AsureQuality Ltd's standard terms of business apply to the analysis set out in this report.

Test	Result	Unit	Method Reference
PFDoDA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFTrDA	NR	µg/L	AsureQuality Method (LC-MS/MS)
PFTeDA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
P37DMOA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Perfluoroctanesulfonamides			
PFOSA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
NEtFOSA-M	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
NMeFOSA-M	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Perfluoroctanesulfonamidoacetic acids			
NEtFOSAA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
NMeFOSAA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Perfluoroctanesulfonamidoethanols			
NEtFOSE-M	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
NMeFOSE-M	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Telomere Sulfonic acids			
4:2 FTS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
6:2 FTS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
8:2 FTS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
10:2 FTS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Telomere Carboxylic acids			
FPrPA (3:3FTA)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
FPePA (5:3FTA)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
FHpPA (7:3FTA)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Miscellaneous			
F-53B (major)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
F-53B (minor)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Sum F-53B	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
ADONA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
HFPO-DA (GenX)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Internal Standards			
M3PFBS	96	%	AsureQuality Method (LC-MS/MS)
M3PFHxS	97	%	AsureQuality Method (LC-MS/MS)
M8PFOS	86	%	AsureQuality Method (LC-MS/MS)
M4PFBA	97	%	AsureQuality Method (LC-MS/MS)
M5PFPeA	100	%	AsureQuality Method (LC-MS/MS)
M5PFHxA	98	%	AsureQuality Method (LC-MS/MS)
MPFHpA	101	%	AsureQuality Method (LC-MS/MS)
M8PFOA	97	%	AsureQuality Method (LC-MS/MS)
M9PFNA	97	%	AsureQuality Method (LC-MS/MS)
M6PFDA	95	%	AsureQuality Method (LC-MS/MS)
M7PFUnDA	94	%	AsureQuality Method (LC-MS/MS)
MPFDoDA	86	%	AsureQuality Method (LC-MS/MS)
MPFTeDA	50	%	AsureQuality Method (LC-MS/MS)
MPFOSA	104	%	AsureQuality Method (LC-MS/MS)
DNEtFOSA	104	%	AsureQuality Method (LC-MS/MS)
DNMeFOSA	92	%	AsureQuality Method (LC-MS/MS)
DNEtFOSAA	86	%	AsureQuality Method (LC-MS/MS)
DNMeFOSAA	93	%	AsureQuality Method (LC-MS/MS)
DNEtFOSE	105	%	AsureQuality Method (LC-MS/MS)
DNMeFOSE	93	%	AsureQuality Method (LC-MS/MS)

Test	Result	Unit	Method Reference
M4:2FTS	99	%	AsureQuality Method (LC-MS/MS)
M6:2FTS	93	%	AsureQuality Method (LC-MS/MS)
M8:2FTS	98	%	AsureQuality Method (LC-MS/MS)
M3HFPO-DA	86	%	AsureQuality Method (LC-MS/MS)

QC Results

Blank

Relates to sample(s) 22-262678-1

Test	Result	Unit	Method Reference
Poly- and Perfluorinated Alkyl Substances (PFAS) in Potable Water			
Perfluoroalkylsulfonic acids			
PFPrS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFBS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PPeS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
di-PFHxS (1)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
mono-PFHxS (1)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
L-PFHxS (1)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Total PFHxS (3)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFHpS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
di-PFOS (5)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
mono-PFOS (5)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
L-PFOS (5)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Total PFOS (7)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Sum PFHxS+PFOS (1)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFNS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFDS	NR	µg/L	AsureQuality Method (LC-MS/MS)
PFECHS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Perfluoroalkylcarboxylic acids			
PFBA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PPeA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFHxA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFHpA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFOA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFNA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFDA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFUnDA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFDoDA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFTrDA	NR	µg/L	AsureQuality Method (LC-MS/MS)
PFTeDA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
P37DMOA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Perfluoroctanesulfonamides			
PFOSA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
NEtFOSA-M	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
NMeFOSA-M	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Perfluoroctanesulfonamidoacetic acids			
NEtFOSAA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
NMeFOSAA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)

Perfluoroctanesulfonamidoethanols			
NEtFOSE-M	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
NMeFOSE-M	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Telomere Sulfonic acids			
4:2 FTS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
6:2 FTS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
8:2 FTS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
10:2 FTS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Telomere Carboxylic acids			
FPrPA (3:3FTA)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
FPePA (5:3FTA)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
FHpPA (7:3FTA)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Miscellaneous			
F-53B (major)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
F-53B (minor)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Sum F-53B	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
ADONA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
HFPO-DA (GenX)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Internal Standards			
M3PFBS	105	%	AsureQuality Method (LC-MS/MS)
M3PFHxS	106	%	AsureQuality Method (LC-MS/MS)
M8PFOS	111	%	AsureQuality Method (LC-MS/MS)
M4PFBA	109	%	AsureQuality Method (LC-MS/MS)
M5PFPeA	107	%	AsureQuality Method (LC-MS/MS)
M5PFHxA	102	%	AsureQuality Method (LC-MS/MS)
MPFHpA	106	%	AsureQuality Method (LC-MS/MS)
M8PFOA	112	%	AsureQuality Method (LC-MS/MS)
M9PFNA	110	%	AsureQuality Method (LC-MS/MS)
M6PFDA	117	%	AsureQuality Method (LC-MS/MS)
M7PFUnDA	113	%	AsureQuality Method (LC-MS/MS)
MPFDoDA	86	%	AsureQuality Method (LC-MS/MS)
MPFTeDA	83	%	AsureQuality Method (LC-MS/MS)
MPFOSA	80	%	AsureQuality Method (LC-MS/MS)
DNEtFOSA	40	%	AsureQuality Method (LC-MS/MS)
DNMeFOSA	37	%	AsureQuality Method (LC-MS/MS)
DNEtFOSAA	104	%	AsureQuality Method (LC-MS/MS)
DNMeFOSAA	116	%	AsureQuality Method (LC-MS/MS)
DNEtFOSE	41	%	AsureQuality Method (LC-MS/MS)
DNMeFOSE	44	%	AsureQuality Method (LC-MS/MS)
M4:2FTS	100	%	AsureQuality Method (LC-MS/MS)
M6:2FTS	111	%	AsureQuality Method (LC-MS/MS)
M8:2FTS	120	%	AsureQuality Method (LC-MS/MS)
M3HFPO-DA	117	%	AsureQuality Method (LC-MS/MS)

Analysis Summary

Wellington Laboratory

Analysis	Method	Accreditation	Authorised by
Poly- and Perfluorinated Alkyl Substances (PFAS) in Potable Water	AsureQuality Method (LC-MS/MS)	IANZ	Amelie Sellier

di-PFHxS (1) = Concentration determined using a branched di-PFHxS isomer standard (399>80 transition)

mono-PFHxS (1) = Concentration determined using a branched mono-PFHxS isomer standard (399>80 transition)

L-PFHxS (1) = Concentration determined using the linear PFHxS isomer standard (399>80 transition)

Total PFHxS (3) = The numerical sum of di-PFHxS (1), mono-PFHxS (1), and L-PFHxS (1)

di-PFOS (5) = Concentration determined using a branched di-PFOS isomer standard (499>80 transition)

mono-PFOS (5) = Concentration determined using a branched mono-PFOS isomer standard (499>80 transition)

L-PFOS (5) = Concentration determined using the linear PFOS isomer standard (499>230 transition)

Total PFOS (7) = The numerical sum of di-PFOS (5), mono-PFOS (5), and L-PFOS (5)

Sum PFHxS+PFOS (1) = The numerical sum of Total PFHxS (3) and Total PFOS (7)

Sum F-53B = The numerical sum of 9Cl-PF3ONS (F-53B major) and 11Cl-PF3OUdS (F-53B minor)

For all Totals, where a component is detected below the LOR, the value of zero is used in the calculation of the sum. The result represents the lower-bound concentration present in the sample.

Reported results are corrected for internal standard recovery

Results that are prefixed with '<' indicate the lowest level at which the analyte can be reported, and that in this case the analyte was not observed above this limit.

NR = Not Reportable



Amelie Sellier

Scientist

Accreditation



Appendix

Analyte LOR Summary

Poly- and Perfluorinated Alkyl Substances (PFAS) in Potable Water - AsureQuality Method (LC-MS/MS)

Analyte LOR

Perfluoroalkylsulfonic acids

PFPrS	0.0010 µg/L
PFBS	0.0010 µg/L
PPeS	0.0010 µg/L
di-PFHxS (1)	0.0010 µg/L
mono-PFHxS (1)	0.0010 µg/L
L-PFHxS (1)	0.0010 µg/L
Total PFHxS (3)	0.0010 µg/L
PFHpS	0.0010 µg/L
di-PFOS (5)	0.0010 µg/L
mono-PFOS (5)	0.0010 µg/L
L-PFOS (5)	0.0010 µg/L
Total PFOS (7)	0.0010 µg/L
Sum PFHxS+PFOS (1)	0.0010 µg/L
PFNS	0.0010 µg/L
PFDS	NR µg/L
PFECHS	0.0010 µg/L

Perfluoroalkylcarboxylic acids

PFBA	0.0010 µg/L
PPeA	0.0010 µg/L
PFHxA	0.0010 µg/L
PFHpA	0.0010 µg/L
PFOA	0.0010 µg/L
PFNA	0.0010 µg/L
PFDA	0.0010 µg/L
PFUnDA	0.0010 µg/L
PFDoDA	0.0010 µg/L
PFTrDA	NR µg/L
PFTeDA	0.0010 µg/L
P37DMOA	0.0010 µg/L

Perfluoroctanesulfonamides

PFOSA	0.0010 µg/L
NEtFOSA-M	0.0010 µg/L
NMeFOSA-M	0.0010 µg/L

Perfluoroctanesulfonamidoacetic acids

NEtFOSAA	0.0010 µg/L
NMeFOSAA	0.0010 µg/L

Perfluoroctanesulfonamidoethanols

NETFOSE-M	0.0010 µg/L
NMeFOSE-M	0.0010 µg/L

Telomere Sulfonic acids

4:2 FTS	0.0010 µg/L
6:2 FTS	0.0010 µg/L
8:2 FTS	0.0010 µg/L
10:2 FTS	0.0010 µg/L

Telomere Carboxylic acids

FPrPA (3:3FTA)	0.0010 µg/L
FPePA (5:3FTA)	0.0010 µg/L

FHpPA (7:3FTA)	0.0010 µg/L
Miscellaneous	
F-53B (major)	0.0010 µg/L
F-53B (minor)	0.0010 µg/L
Sum F-53B	0.0010 µg/L
ADONA	0.0010 µg/L
HFPO-DA (GenX)	0.0010 µg/L

Analyte Definitions

Poly- and Perfluorinated Alkyl Substances (PFAS) in Potable Water - AsureQuality Method (LC-MS/MS)

Analyte	Full Name
Perfluoroalkylsulfonic acids	
PPrS	Perfluoro-1-propanesulfonic acid
PFBS	Perfluoro-1-butanesulfonic acid
PPeS	Perfluoro-1-pentanesulfonic acid
di-PFHxS (1)	Total Perfluorodimethylbutane sulfonic acids
mono-PFHxS (1)	Total Perfluoromethylpentane sulfonic acids
L-PFHxS (1)	Linear Perfluorohexanesulfonic acid
PFHpS	Perfluoro-1-heptanesulfonic acid
di-PFOS (5)	Total Perfluorodimethylhexane sulfonic acids
mono-PFOS (5)	Total Perfluoromethylheptane sulfonic acids
L-PFOS (5)	Linear Perfluoroctanesulfonic acid
PFNS	Perfluoro-1-nonanesulfonic acid
PFDS	Perfluoro-1-decanesulfonic acid
PFECHS	Perfluoro-4-ethylcyclohexanesulfonic acid
Perfluoroalkylcarboxylic acids	
PFBA	Perfluoro-n-butanoic acid
PPeA	Perfluoro-n-pentanoic acid
PFHxA	Perfluoro-n-hexanoic acid
PFHpA	Perfluoro-n-heptanoic acid
PFOA	Perfluoro-n-octanoic acid
PFNA	Perfluoro-n-nonanoic acid
PFDA	Perfluoro-n-decanoic acid
PFUnDA	Perfluoro-n-undecanoic acid
PFDoDA	Perfluoro-n-dodecanoic acid
PFTrDA	Perfluoro-n-tridecanoic acid
PFTeDA	Perfluoro-n-tetradecanoic acid
P37DMOA	Perfluoro-3,7-dimethyloctanoic acid
Perfluoroctanesulfonamides	
PFOSA	Perfluoro-1-octanesulfonamide
NEtFOSA-M	N-ethylperfluoro-1-octanesulfonamide
NMeFOSA-M	N-methylperfluoro-1-octanesulfonamide
Perfluoroctanesulfonamidoacetic acids	
NETFOSAA	N-ethylperfluoro-1-octanesulfonamidoacetic acid
NMeFOSAA	N-methylperfluoro-1-octanesulfonamidoacetic acid
Perfluoroctanesulfonamidoethanols	
NETFOSE-M	2-(N-ethylperfluoro-1-octanesulfonamido)-ethanol
NMeFOSE-M	2-(N-methylperfluoro-1-octanesulfonamido)-ethanol
Telomere Sulfonic acids	
4:2 FTS	1H,1H,2H,2H-perfluoro-1-hexanesulfonic acid
6:2 FTS	1H,1H,2H,2H-perfluoro-1-octanesulfonic acid
8:2 FTS	1H,1H,2H,2H-perfluoro-1-decanesulfonic acid
10:2 FTS	1H,1H,2H,2H-perfluorododecanesulfonic acid
Telomere Carboxylic acids	
FPrPA (3:3FTA)	3-Perfluoropropyl propanoic acid

Analyte	Full Name
FPePA (5:3FTA)	3-Perfluoropentyl propanoic acid
FHpPA (7:3FTA)	3-Perfluoroheptyl propanoic acid
Miscellaneous	
F-53B (major)	9-chlorohexadecafluoro-3-oxanonane-1-sulfonic acid
F-53B (minor)	11-chloroeicosfluoro-3-oxaundecane-1-sulfonic acid
Sum F-53B	Sum of F-53B components (major + minor)
ADONA	Dodecafluoro-3H-4,8-dioxanonanoic acid
HFPO-DA (GenX)	Tetrafluoro-2-(heptafluoropropoxy)propanoic acid
Internal Standards	
M3PFBS	Perfluoro-1-[2,3,4-13C3]butanesulfonic acid
M3PFHxS	Perfluoro-1-[1,2,3-13C3]hexanesulfonic acid
M8PFOS	Perfluoro-1-[13C8]octanesulfonic acid
M4PFBA	Perfluoro-n-[1,2,3,4-13C4]butanoic acid
M5PFPeA	Perfluoro-n-[1,2,3,4,5-13C5]pentanoic acid
M5PFHxA	Perfluoro-n-[1,2,3,4,6-13C5]hexanoic acid
MPFHxA	Perfluoro-n-[1,2,3,4-13C4]heptanoic acid
M8PFOA	Perfluoro-n-[13C8]octanoic acid
M9PFNA	Perfluoro-n-[13C9]nonanoic acid
M6PFDA	Perfluoro-n-[1,2,3,4,5,6-13C6]decanoic acid
M7PFUnDA	Perfluoro-n-[1,2,3,4,5,6,7-13C7]undecanoic acid
MPFDoDA	Perfluoro-n-[1,2-13C2]dodecanoic acid
MPFTeDA	Perfluoro-n-[1,2-13C2]tetradecanoic acid
MPFOSA	Perfluoro-1-[13C8]octanesulfonamide
DNEtFOSA	N-ethyl-D5-perfluoro-1-octanesulfonamide
DNMeFOSA	N-methyl-D3-perfluoro-1-octanesulfonamide
DNEtFOSAA	N-ethyl-D5-perfluoro-1-octanesulfonamidoacetic acid
DNMeFOSAA	N-methyl-D3-perfluoro-1-octanesulfonamidoacetic acid
DNEtFOSE	2-(N-ethyl-D5-perfluoro-1-octanesulfonamido)ethan-D4-ol
DNMeFOSE	2-(N-methyl-D3-perfluoro-1-octanesulfonamido)ethan-D4-ol
M4:2FTS	1H,1H,2H,2H-perfluoro-1-[1,2-13C2]-hexane sulfonic acid
M6:2FTS	1H,1H,2H,2H-perfluoro-1-[1,2-13C2]-octane sulfonic acid
M8:2FTS	1H,1H,2H,2H-perfluoro-1-[1,2-13C2]-decane sulfonic acid
M3HFPO-DA	Tetrafluoro-2-(heptafluoropropoxy)-13C3-propanoic acid

LOR = Limit of Reporting

LOD = Limit of Detection

NR = Not Reportable

Certificate of Analysis

Submission Reference: A02744123
Final Report

James Conway
Pattle Delamore Partners Limited
P O Box 9528
Auckland 1149
New Zealand

PO Number: OHA_PFAS

Report Issued: 14-Oct-2022

AsureQuality Reference: 22-262761

Sample(s) Received: 30-Sep-2022 08:20

Testing Period: 30-Sep-2022 to 14-Oct-2022

Date of analysis is available on request.

Results

The tests were performed on the samples as received.

Customer Sample Name: OHA_ADJ_GW53_8_290922		Lab ID: 22-262761-1	
Sample Condition: Acceptable	Sampled Date: 29-Sep-2022		
Test	Result	Unit	Method Reference
Poly- and Perfluorinated Alkyl Substances (PFAS) in Potable Water			
Perfluoroalkylsulfonic acids			
PFPrS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFBS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PPeS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
di-PFHxS (1)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
mono-PFHxS (1)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
L-PFHxS (1)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Total PFHxS (3)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFHpS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
di-PFOS (5)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
mono-PFOS (5)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
L-PFOS (5)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Total PFOS (7)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Sum PFHxS+PFOS (1)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFNS	NR	µg/L	AsureQuality Method (LC-MS/MS)
PFDS	NR	µg/L	AsureQuality Method (LC-MS/MS)
PFECHS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Perfluoroalkylcarboxylic acids			
PFBA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PPeA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFHxA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFHpA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFOA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFNA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFDA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFUnDA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)

AsureQuality Ltd has used reasonable skill, care, and effort to provide an accurate analysis of the sample(s) which form(s) the subject of this report. However, the accuracy of this analysis is reliant on, and subject to, the sample(s) provided by you and your responsibility as to transportation of the sample(s). AsureQuality Ltd's standard terms of business apply to the analysis set out in this report.

Test	Result	Unit	Method Reference
PFDoDA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFTrDA	NR	µg/L	AsureQuality Method (LC-MS/MS)
PFTeDA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
P37DMOA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Perfluoroctanesulfonamides			
PFOSA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
NEtFOSA-M	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
NMeFOSA-M	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Perfluoroctanesulfonamidoacetic acids			
NEtFOSAA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
NMeFOSAA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Perfluoroctanesulfonamidoethanols			
NEtFOSE-M	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
NMeFOSE-M	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Telomere Sulfonic acids			
4:2 FTS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
6:2 FTS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
8:2 FTS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
10:2 FTS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Telomere Carboxylic acids			
FPrPA (3:3FTA)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
FPePA (5:3FTA)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
FHpPA (7:3FTA)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Miscellaneous			
F-53B (major)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
F-53B (minor)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Sum F-53B	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
ADONA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
HFPO-DA (GenX)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Internal Standards			
M3PFBS	102	%	AsureQuality Method (LC-MS/MS)
M3PFHxS	145	%	AsureQuality Method (LC-MS/MS)
M8PFOS	110	%	AsureQuality Method (LC-MS/MS)
M4PFBA	90	%	AsureQuality Method (LC-MS/MS)
M5PFPeA	96	%	AsureQuality Method (LC-MS/MS)
M5PFHxA	96	%	AsureQuality Method (LC-MS/MS)
MPFHpA	109	%	AsureQuality Method (LC-MS/MS)
M8PFOA	168 (R)	%	AsureQuality Method (LC-MS/MS)
M9PFNA	129	%	AsureQuality Method (LC-MS/MS)
M6PFDA	137	%	AsureQuality Method (LC-MS/MS)
M7PFUnDA	196 (R)	%	AsureQuality Method (LC-MS/MS)
MPFDoDA	90	%	AsureQuality Method (LC-MS/MS)
MPFTeDA	159 (R)	%	AsureQuality Method (LC-MS/MS)
MPFOSA	95	%	AsureQuality Method (LC-MS/MS)
DNEtFOSA	81	%	AsureQuality Method (LC-MS/MS)
DNMeFOSA	69	%	AsureQuality Method (LC-MS/MS)
DNEtFOSAA	79	%	AsureQuality Method (LC-MS/MS)
DNMeFOSAA	90	%	AsureQuality Method (LC-MS/MS)
DNEtFOSE	81	%	AsureQuality Method (LC-MS/MS)
DNMeFOSE	77	%	AsureQuality Method (LC-MS/MS)

Test	Result	Unit	Method Reference
M4:2FTS	95	%	AsureQuality Method (LC-MS/MS)
M6:2FTS	126	%	AsureQuality Method (LC-MS/MS)
M8:2FTS	72	%	AsureQuality Method (LC-MS/MS)
M3HFPO-DA	111	%	AsureQuality Method (LC-MS/MS)

R = Recovery outside method limits

QC Results

Blank

Relates to sample(s) 22-262761-1

Test	Result	Unit	Method Reference
Poly- and Perfluorinated Alkyl Substances (PFAS) in Potable Water			
Perfluoroalkylsulfonic acids			
PFPrS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFBS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFPeS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
di-PFHxS (1)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
mono-PFHxS (1)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
L-PFHxS (1)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Total PFHxS (3)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFHpS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
di-PFOS (5)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
mono-PFOS (5)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
L-PFOS (5)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Total PFOS (7)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Sum PFHxS+PFOS (1)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFNS	NR	µg/L	AsureQuality Method (LC-MS/MS)
PFDS	NR	µg/L	AsureQuality Method (LC-MS/MS)
PFECHS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Perfluoroalkylcarboxylic acids			
PFBA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFPeA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFHxA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFHpA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFOA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFNA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFDA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFUnDA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFDoDA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFTrDA	NR	µg/L	AsureQuality Method (LC-MS/MS)
PFTeDA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
P37DMOA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Perfluorooctanesulfonamides			
PFOSA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
NEtFOSA-M	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
NMeFOSA-M	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Perfluorooctanesulfonamidoacetic acids			
NEtFOSAA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)

Test	Result	Unit	Method Reference
NMeFOSAA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Perfluoroctanesulfonamidoethanols			
NEtFOSE-M	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
NMeFOSE-M	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Telomere Sulfonic acids			
4:2 FTS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
6:2 FTS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
8:2 FTS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
10:2 FTS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Telomere Carboxylic acids			
FPrPA (3:3FTA)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
FPePA (5:3FTA)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
FHpPA (7:3FTA)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Miscellaneous			
F-53B (major)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
F-53B (minor)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Sum F-53B	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
ADONA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
HFPO-DA (GenX)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Internal Standards			
M3PFBS	112	%	AsureQuality Method (LC-MS/MS)
M3PFHxS	125	%	AsureQuality Method (LC-MS/MS)
M8PFOS	119	%	AsureQuality Method (LC-MS/MS)
M4PFBA	111	%	AsureQuality Method (LC-MS/MS)
M5PFPeA	115	%	AsureQuality Method (LC-MS/MS)
M5PFHxA	115	%	AsureQuality Method (LC-MS/MS)
MPFHpA	116	%	AsureQuality Method (LC-MS/MS)
M8PFOA	119	%	AsureQuality Method (LC-MS/MS)
M9PFNA	132	%	AsureQuality Method (LC-MS/MS)
M6PFDA	110	%	AsureQuality Method (LC-MS/MS)
M7PFUnDA	148	%	AsureQuality Method (LC-MS/MS)
MPFDoDA	107	%	AsureQuality Method (LC-MS/MS)
MPFTeDA	99	%	AsureQuality Method (LC-MS/MS)
MPFOSA	98	%	AsureQuality Method (LC-MS/MS)
DNEtFOSA	85	%	AsureQuality Method (LC-MS/MS)
DNMeFOSA	73	%	AsureQuality Method (LC-MS/MS)
DNEtFOSAA	103	%	AsureQuality Method (LC-MS/MS)
DNMeFOSAA	105	%	AsureQuality Method (LC-MS/MS)
DNEtFOSE	84	%	AsureQuality Method (LC-MS/MS)
DNMeFOSE	67	%	AsureQuality Method (LC-MS/MS)
M4:2FTS	113	%	AsureQuality Method (LC-MS/MS)
M6:2FTS	124	%	AsureQuality Method (LC-MS/MS)
M8:2FTS	129	%	AsureQuality Method (LC-MS/MS)
M3HFPO-DA	111	%	AsureQuality Method (LC-MS/MS)

Analysis Summary

Wellington Laboratory

Analysis	Method	Accreditation	Authorised by
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Poly- and Perfluorinated Alkyl Substances (PFAS) in Potable Water

DX-PFCS01, 03-SUITE_B AsureQuality Method (LC-MS/MS)

IANZ

Amelie Sellier

di-PFHxS (1) = Concentration determined using a branched di-PFHxS isomer standard (399>80 transition)

mono-PFHxS (1) = Concentration determined using a branched mono-PFHxS isomer standard (399>80 transition)

L-PFHxS (1) = Concentration determined using the linear PFHxS isomer standard (399>80 transition)

Total PFHxS (3) = The numerical sum of di-PFHxS (1), mono-PFHxS (1), and L-PFHxS (1)

di-PFOS (5) = Concentration determined using a branched di-PFOS isomer standard (499>80 transition)

mono-PFOS (5) = Concentration determined using a branched mono-PFOS isomer standard (499>80 transition)

L-PFOS (5) = Concentration determined using the linear PFOS isomer standard (499>230 transition)

Total PFOS (7) = The numerical sum of di-PFOS (5), mono-PFOS (5), and L-PFOS (5)

Sum PFHxS+PFOS (1) = The numerical sum of Total PFHxS (3) and Total PFOS (7)

Sum F-53B = The numerical sum of 9Cl-PF3ONS (F-53B major) and 11Cl-PF3OUdS (F-53B minor)

For all Totals, where a component is detected below the LOR, the value of zero is used in the calculation of the sum. The result represents the lower-bound concentration present in the sample.

Reported results are corrected for internal standard recovery

Results that are prefixed with '<' indicate the lowest level at which the analyte can be reported, and that in this case the analyte was not observed above this limit.

NR = Not Reportable

Amelie Sellier

Scientist

Accreditation



Appendix

Analyte LOR Summary

Poly- and Perfluorinated Alkyl Substances (PFAS) in Potable Water - AsureQuality Method (LC-MS/MS)

Analyte	LOR
Perfluoroalkylsulfonic acids	
PFPrS	0.0010 µg/L
PFBS	0.0010 µg/L
PPPeS	0.0010 µg/L
di-PFHxS (1)	0.0010 µg/L
mono-PFHxS (1)	0.0010 µg/L
L-PFHxS (1)	0.0010 µg/L
Total PFHxS (3)	0.0010 µg/L
PFHpS	0.0010 µg/L
di-PFOS (5)	0.0010 µg/L
mono-PFOS (5)	0.0010 µg/L
L-PFOS (5)	0.0010 µg/L
Total PFOS (7)	0.0010 µg/L
Sum PFHxS+PFOS (1)	0.0010 µg/L
PFNS	NR µg/L
PFDS	NR µg/L
PFECHS	0.0010 µg/L
Perfluoroalkylcarboxylic acids	
PFBA	0.0010 µg/L
PPPeA	0.0010 µg/L
PFHxA	0.0010 µg/L
PFHpA	0.0010 µg/L
PFOA	0.0010 µg/L
PFNA	0.0010 µg/L
PFDA	0.0010 µg/L
PFUnDA	0.0010 µg/L
PFDoDA	0.0010 µg/L
PFTrDA	NR µg/L
PFTeDA	0.0010 µg/L
P37DMOA	0.0010 µg/L
Perfluoroctanesulfonamides	
PFOSA	0.0010 µg/L
NEtFOSA-M	0.0010 µg/L
NMeFOSA-M	0.0010 µg/L
Perfluoroctanesulfonamidoacetic acids	
NEtFOSAA	0.0010 µg/L
NMeFOSAA	0.0010 µg/L
Perfluoroctanesulfonamidoethanols	
NEtFOSE-M	0.0010 µg/L
NMeFOSE-M	0.0010 µg/L
Telomere Sulfonic acids	
4:2 FTS	0.0010 µg/L
6:2 FTS	0.0010 µg/L
8:2 FTS	0.0010 µg/L
10:2 FTS	0.0010 µg/L
Telomere Carboxylic acids	
FPrPA (3:3FTA)	0.0010 µg/L
FPePA (5:3FTA)	0.0010 µg/L

FHpPA (7:3FTA)	0.0010 µg/L
Miscellaneous	
F-53B (major)	0.0010 µg/L
F-53B (minor)	0.0010 µg/L
Sum F-53B	0.0010 µg/L
ADONA	0.0010 µg/L
HFPO-DA (GenX)	0.0010 µg/L

Analyte Definitions

Poly- and Perfluorinated Alkyl Substances (PFAS) in Potable Water - AsureQuality Method (LC-MS/MS)

Analyte	Full Name
Perfluoroalkylsulfonic acids	
PPrS	Perfluoro-1-propanesulfonic acid
PFBS	Perfluoro-1-butanesulfonic acid
PPeS	Perfluoro-1-pentanesulfonic acid
di-PFHxS (1)	Total Perfluorodimethylbutane sulfonic acids
mono-PFHxS (1)	Total Perfluoromethylpentane sulfonic acids
L-PFHxS (1)	Linear Perfluorohexanesulfonic acid
PFHpS	Perfluoro-1-heptanesulfonic acid
di-PFOS (5)	Total Perfluorodimethylhexane sulfonic acids
mono-PFOS (5)	Total Perfluoromethylheptane sulfonic acids
L-PFOS (5)	Linear Perfluoroctanesulfonic acid
PFNS	Perfluoro-1-nonanesulfonic acid
PFDS	Perfluoro-1-decanesulfonic acid
PFECHS	Perfluoro-4-ethylcyclohexanesulfonic acid
Perfluoroalkylcarboxylic acids	
PFBA	Perfluoro-n-butanoic acid
PPeA	Perfluoro-n-pentanoic acid
PFHxA	Perfluoro-n-hexanoic acid
PFHpA	Perfluoro-n-heptanoic acid
PFOA	Perfluoro-n-octanoic acid
PFNA	Perfluoro-n-nonanoic acid
PFDA	Perfluoro-n-decanoic acid
PFUnDA	Perfluoro-n-undecanoic acid
PFDoDA	Perfluoro-n-dodecanoic acid
PFTrDA	Perfluoro-n-tridecanoic acid
PFTeDA	Perfluoro-n-tetradecanoic acid
P37DMOA	Perfluoro-3,7-dimethyloctanoic acid
Perfluoroctanesulfonamides	
PFOSA	Perfluoro-1-octanesulfonamide
NEtFOSA-M	N-ethylperfluoro-1-octanesulfonamide
NMeFOSA-M	N-methylperfluoro-1-octanesulfonamide
Perfluoroctanesulfonamidoacetic acids	
NETFOSAA	N-ethylperfluoro-1-octanesulfonamidoacetic acid
NMeFOSAA	N-methylperfluoro-1-octanesulfonamidoacetic acid
Perfluoroctanesulfonamidoethanols	
NETFOSE-M	2-(N-ethylperfluoro-1-octanesulfonamido)-ethanol
NMeFOSE-M	2-(N-methylperfluoro-1-octanesulfonamido)-ethanol
Telomere Sulfonic acids	
4:2 FTS	1H,1H,2H,2H-perfluoro-1-hexanesulfonic acid
6:2 FTS	1H,1H,2H,2H-perfluoro-1-octanesulfonic acid
8:2 FTS	1H,1H,2H,2H-perfluoro-1-decanesulfonic acid
10:2 FTS	1H,1H,2H,2H-perfluorododecanesulfonic acid
Telomere Carboxylic acids	
FPrPA (3:3FTA)	3-Perfluoropropyl propanoic acid

Analyte	Full Name
FPePA (5:3FTA)	3-Perfluoropentyl propanoic acid
FHpPA (7:3FTA)	3-Perfluoroheptyl propanoic acid
Miscellaneous	
F-53B (major)	9-chlorohexadecafluoro-3-oxanonane-1-sulfonic acid
F-53B (minor)	11-chloroeicosfluoro-3-oxaundecane-1-sulfonic acid
Sum F-53B	Sum of F-53B components (major + minor)
ADONA	Dodecafluoro-3H-4,8-dioxanonanoic acid
HFPO-DA (GenX)	Tetrafluoro-2-(heptafluoropropoxy)propanoic acid
Internal Standards	
M3PFBS	Perfluoro-1-[2,3,4-13C3]butanesulfonic acid
M3PFHxS	Perfluoro-1-[1,2,3-13C3]hexanesulfonic acid
M8PFOS	Perfluoro-1-[13C8]octanesulfonic acid
M4PFBA	Perfluoro-n-[1,2,3,4-13C4]butanoic acid
M5PFPeA	Perfluoro-n-[1,2,3,4,5-13C5]pentanoic acid
M5PFHxA	Perfluoro-n-[1,2,3,4,6-13C5]hexanoic acid
MPFHxA	Perfluoro-n-[1,2,3,4-13C4]heptanoic acid
M8PFOA	Perfluoro-n-[13C8]octanoic acid
M9PFNA	Perfluoro-n-[13C9]nonanoic acid
M6PFDA	Perfluoro-n-[1,2,3,4,5,6-13C6]decanoic acid
M7PFUnDA	Perfluoro-n-[1,2,3,4,5,6,7-13C7]undecanoic acid
MPFDoDA	Perfluoro-n-[1,2-13C2]dodecanoic acid
MPFTeDA	Perfluoro-n-[1,2-13C2]tetradecanoic acid
MPFOSA	Perfluoro-1-[13C8]octanesulfonamide
DNEtFOSA	N-ethyl-D5-perfluoro-1-octanesulfonamide
DNMeFOSA	N-methyl-D3-perfluoro-1-octanesulfonamide
DNEtFOSAA	N-ethyl-D5-perfluoro-1-octanesulfonamidoacetic acid
DNMeFOSAA	N-methyl-D3-perfluoro-1-octanesulfonamidoacetic acid
DNEtFOSE	2-(N-ethyl-D5-perfluoro-1-octanesulfonamido)ethan-D4-ol
DNMeFOSE	2-(N-methyl-D3-perfluoro-1-octanesulfonamido)ethan-D4-ol
M4:2FTS	1H,1H,2H,2H-perfluoro-1-[1,2-13C2]-hexane sulfonic acid
M6:2FTS	1H,1H,2H,2H-perfluoro-1-[1,2-13C2]-octane sulfonic acid
M8:2FTS	1H,1H,2H,2H-perfluoro-1-[1,2-13C2]-decane sulfonic acid
M3HFPO-DA	Tetrafluoro-2-(heptafluoropropoxy)-13C3-propanoic acid

LOR = Limit of Reporting

LOD = Limit of Detection

NR = Not Reportable

Certificate of Analysis

Submission Reference: A02744123
Final Report

James Conway
Pattle Delamore Partners Limited
P O Box 9528
Auckland 1149
New Zealand

PO Number: OHA_PFAS

Report Issued: 14-Oct-2022

AsureQuality Reference: 22-262754

Sample(s) Received: 30-Sep-2022 08:20

Testing Period: 30-Sep-2022 to 14-Oct-2022

Date of analysis is available on request.

Results

The tests were performed on the samples as received.

Customer Sample Name:	OHA_ADJ_GW65_8_290922	Lab ID:	22-262754-1
Sample Condition:	Acceptable	Sampled Date:	29-Sep-2022
Test	Result	Unit	Method Reference
Poly- and Perfluorinated Alkyl Substances (PFAS) in Potable Water			
Perfluoroalkylsulfonic acids			
PFPrS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFBS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PPeS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
di-PFHxS (1)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
mono-PFHxS (1)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
L-PFHxS (1)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Total PFHxS (3)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFHpS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
di-PFOS (5)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
mono-PFOS (5)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
L-PFOS (5)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Total PFOS (7)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Sum PFHxS+PFOS (1)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFNS	NR	µg/L	AsureQuality Method (LC-MS/MS)
PFDS	NR	µg/L	AsureQuality Method (LC-MS/MS)
PFECHS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Perfluoroalkylcarboxylic acids			
PFBA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PPeA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFHxA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFHpA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFOA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFNA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFDA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFUnDA	NR	µg/L	AsureQuality Method (LC-MS/MS)

AsureQuality Ltd has used reasonable skill, care, and effort to provide an accurate analysis of the sample(s) which form(s) the subject of this report. However, the accuracy of this analysis is reliant on, and subject to, the sample(s) provided by you and your responsibility as to transportation of the sample(s). AsureQuality Ltd's standard terms of business apply to the analysis set out in this report.

Test	Result	Unit	Method Reference
PFDoDA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFTrDA	NR	µg/L	AsureQuality Method (LC-MS/MS)
PFTeDA	NR	µg/L	AsureQuality Method (LC-MS/MS)
P37DMOA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Perfluoroctanesulfonamides			
PFOSA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
NEtFOSA-M	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
NMeFOSA-M	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Perfluoroctanesulfonamidoacetic acids			
NEtFOSAA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
NMeFOSAA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Perfluoroctanesulfonamidoethanols			
NEtFOSE-M	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
NMeFOSE-M	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Telomere Sulfonic acids			
4:2 FTS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
6:2 FTS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
8:2 FTS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
10:2 FTS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Telomere Carboxylic acids			
FPrPA (3:3FTA)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
FPePA (5:3FTA)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
FHpPA (7:3FTA)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Miscellaneous			
F-53B (major)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
F-53B (minor)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Sum F-53B	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
ADONA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
HFPO-DA (GenX)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Internal Standards			
M3PFBS	106	%	AsureQuality Method (LC-MS/MS)
M3PFHxS	150	%	AsureQuality Method (LC-MS/MS)
M8PFOS	119	%	AsureQuality Method (LC-MS/MS)
M4PFBA	89	%	AsureQuality Method (LC-MS/MS)
M5PFPeA	103	%	AsureQuality Method (LC-MS/MS)
M5PFHxA	97	%	AsureQuality Method (LC-MS/MS)
MPFHpA	117	%	AsureQuality Method (LC-MS/MS)
M8PFOA	169 (R)	%	AsureQuality Method (LC-MS/MS)
M9PFNA	134	%	AsureQuality Method (LC-MS/MS)
M6PFDA	160 (R)	%	AsureQuality Method (LC-MS/MS)
M7PFUnDA	311 (R)	%	AsureQuality Method (LC-MS/MS)
MPFDoDA	122	%	AsureQuality Method (LC-MS/MS)
MPFTeDA	324 (R)	%	AsureQuality Method (LC-MS/MS)
MPFOSA	105	%	AsureQuality Method (LC-MS/MS)
DNEtFOSA	74	%	AsureQuality Method (LC-MS/MS)
DNMeFOSA	68	%	AsureQuality Method (LC-MS/MS)
DNEtFOSAA	92	%	AsureQuality Method (LC-MS/MS)
DNMeFOSAA	120	%	AsureQuality Method (LC-MS/MS)
DNEtFOSE	74	%	AsureQuality Method (LC-MS/MS)
DNMeFOSE	67	%	AsureQuality Method (LC-MS/MS)

Test	Result	Unit	Method Reference
M4:2FTS	105	%	AsureQuality Method (LC-MS/MS)
M6:2FTS	133	%	AsureQuality Method (LC-MS/MS)
M8:2FTS	109	%	AsureQuality Method (LC-MS/MS)
M3HFPO-DA	109	%	AsureQuality Method (LC-MS/MS)

R = Recovery outside method limits

QC Results

Blank

Relates to sample(s) 22-262754-1

Test	Result	Unit	Method Reference
Poly- and Perfluorinated Alkyl Substances (PFAS) in Potable Water			
Perfluoroalkylsulfonic acids			
PFPrS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFBS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFPeS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
di-PFHxS (1)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
mono-PFHxS (1)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
L-PFHxS (1)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Total PFHxS (3)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFHpS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
di-PFOS (5)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
mono-PFOS (5)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
L-PFOS (5)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Total PFOS (7)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Sum PFHxS+PFOS (1)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFNS	NR	µg/L	AsureQuality Method (LC-MS/MS)
PFDS	NR	µg/L	AsureQuality Method (LC-MS/MS)
PFECHS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Perfluoroalkylcarboxylic acids			
PFBA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFPeA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFHxA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFHpA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFOA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFNA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFDA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFUnDA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFDoDA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFTrDA	NR	µg/L	AsureQuality Method (LC-MS/MS)
PFTeDA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
P37DMOA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Perfluorooctanesulfonamides			
PFOSA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
NEtFOSA-M	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
NMeFOSA-M	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Perfluorooctanesulfonamidoacetic acids			
NEtFOSAA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)

Test	Result	Unit	Method Reference
NMeFOSAA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Perfluoroctanesulfonamidoethanols			
NEtFOSE-M	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
NMeFOSE-M	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Telomere Sulfonic acids			
4:2 FTS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
6:2 FTS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
8:2 FTS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
10:2 FTS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Telomere Carboxylic acids			
FPrPA (3:3FTA)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
FPePA (5:3FTA)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
FHpPA (7:3FTA)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Miscellaneous			
F-53B (major)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
F-53B (minor)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Sum F-53B	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
ADONA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
HFPO-DA (GenX)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Internal Standards			
M3PFBS	112	%	AsureQuality Method (LC-MS/MS)
M3PFHxS	125	%	AsureQuality Method (LC-MS/MS)
M8PFOS	119	%	AsureQuality Method (LC-MS/MS)
M4PFBA	111	%	AsureQuality Method (LC-MS/MS)
M5PFPeA	115	%	AsureQuality Method (LC-MS/MS)
M5PFHxA	115	%	AsureQuality Method (LC-MS/MS)
MPFHpA	116	%	AsureQuality Method (LC-MS/MS)
M8PFOA	119	%	AsureQuality Method (LC-MS/MS)
M9PFNA	132	%	AsureQuality Method (LC-MS/MS)
M6PFDA	110	%	AsureQuality Method (LC-MS/MS)
M7PFUnDA	148	%	AsureQuality Method (LC-MS/MS)
MPFDoDA	107	%	AsureQuality Method (LC-MS/MS)
MPFTeDA	99	%	AsureQuality Method (LC-MS/MS)
MPFOSA	98	%	AsureQuality Method (LC-MS/MS)
DNEtFOSA	85	%	AsureQuality Method (LC-MS/MS)
DNMeFOSA	73	%	AsureQuality Method (LC-MS/MS)
DNEtFOSAA	103	%	AsureQuality Method (LC-MS/MS)
DNMeFOSAA	105	%	AsureQuality Method (LC-MS/MS)
DNEtFOSE	84	%	AsureQuality Method (LC-MS/MS)
DNMeFOSE	67	%	AsureQuality Method (LC-MS/MS)
M4:2FTS	113	%	AsureQuality Method (LC-MS/MS)
M6:2FTS	124	%	AsureQuality Method (LC-MS/MS)
M8:2FTS	129	%	AsureQuality Method (LC-MS/MS)
M3HFPO-DA	111	%	AsureQuality Method (LC-MS/MS)

Analysis Summary

Wellington Laboratory

Analysis	Method	Accreditation	Authorised by
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Poly- and Perfluorinated Alkyl Substances (PFAS) in Potable Water

DX-PFCS01, 03-SUITE_B AsureQuality Method (LC-MS/MS)

IANZ

Amelie Sellier

di-PFHxS (1) = Concentration determined using a branched di-PFHxS isomer standard (399>80 transition)

mono-PFHxS (1) = Concentration determined using a branched mono-PFHxS isomer standard (399>80 transition)

L-PFHxS (1) = Concentration determined using the linear PFHxS isomer standard (399>80 transition)

Total PFHxS (3) = The numerical sum of di-PFHxS (1), mono-PFHxS (1), and L-PFHxS (1)

di-PFOS (5) = Concentration determined using a branched di-PFOS isomer standard (499>80 transition)

mono-PFOS (5) = Concentration determined using a branched mono-PFOS isomer standard (499>80 transition)

L-PFOS (5) = Concentration determined using the linear PFOS isomer standard (499>230 transition)

Total PFOS (7) = The numerical sum of di-PFOS (5), mono-PFOS (5), and L-PFOS (5)

Sum PFHxS+PFOS (1) = The numerical sum of Total PFHxS (3) and Total PFOS (7)

Sum F-53B = The numerical sum of 9Cl-PF3ONS (F-53B major) and 11Cl-PF3OUdS (F-53B minor)

For all Totals, where a component is detected below the LOR, the value of zero is used in the calculation of the sum. The result represents the lower-bound concentration present in the sample.

Reported results are corrected for internal standard recovery

Results that are prefixed with '<' indicate the lowest level at which the analyte can be reported, and that in this case the analyte was not observed above this limit.

NR = Not Reportable

Amelie Sellier

Scientist

Accreditation



Appendix

Analyte LOR Summary

Poly- and Perfluorinated Alkyl Substances (PFAS) in Potable Water - AsureQuality Method (LC-MS/MS)

Analyte	LOR
Perfluoroalkylsulfonic acids	
PFPrS	0.0010 µg/L
PFBS	0.0010 µg/L
PPPeS	0.0010 µg/L
di-PFHxS (1)	0.0010 µg/L
mono-PFHxS (1)	0.0010 µg/L
L-PFHxS (1)	0.0010 µg/L
Total PFHxS (3)	0.0010 µg/L
PFHpS	0.0010 µg/L
di-PFOS (5)	0.0010 µg/L
mono-PFOS (5)	0.0010 µg/L
L-PFOS (5)	0.0010 µg/L
Total PFOS (7)	0.0010 µg/L
Sum PFHxS+PFOS (1)	0.0010 µg/L
PFNS	NR µg/L
PFDS	NR µg/L
PFECHS	0.0010 µg/L
Perfluoroalkylcarboxylic acids	
PFBA	0.0010 µg/L
PPPeA	0.0010 µg/L
PFHxA	0.0010 µg/L
PFHpA	0.0010 µg/L
PFOA	0.0010 µg/L
PFNA	0.0010 µg/L
PFDA	0.0010 µg/L
PFUnDA	NR µg/L
PFDoDA	0.0010 µg/L
PFTrDA	NR µg/L
PFTeDA	NR µg/L
P37DMOA	0.0010 µg/L
Perfluoroctanesulfonamides	
PFOSA	0.0010 µg/L
NEtFOSA-M	0.0010 µg/L
NMeFOSA-M	0.0010 µg/L
Perfluoroctanesulfonamidoacetic acids	
NEtFOSAA	0.0010 µg/L
NMeFOSAA	0.0010 µg/L
Perfluoroctanesulfonamidoethanols	
NEtFOSE-M	0.0010 µg/L
NMeFOSE-M	0.0010 µg/L
Telomere Sulfonic acids	
4:2 FTS	0.0010 µg/L
6:2 FTS	0.0010 µg/L
8:2 FTS	0.0010 µg/L
10:2 FTS	0.0010 µg/L
Telomere Carboxylic acids	
FPrPA (3:3FTA)	0.0010 µg/L
FPePA (5:3FTA)	0.0010 µg/L

FHpPA (7:3FTA)	0.0010 µg/L
Miscellaneous	
F-53B (major)	0.0010 µg/L
F-53B (minor)	0.0010 µg/L
Sum F-53B	0.0010 µg/L
ADONA	0.0010 µg/L
HFPO-DA (GenX)	0.0010 µg/L

Analyte Definitions

Poly- and Perfluorinated Alkyl Substances (PFAS) in Potable Water - AsureQuality Method (LC-MS/MS)

Analyte	Full Name
Perfluoroalkylsulfonic acids	
PPrS	Perfluoro-1-propanesulfonic acid
PFBS	Perfluoro-1-butanesulfonic acid
PPeS	Perfluoro-1-pentanesulfonic acid
di-PFHxS (1)	Total Perfluorodimethylbutane sulfonic acids
mono-PFHxS (1)	Total Perfluoromethylpentane sulfonic acids
L-PFHxS (1)	Linear Perfluorohexanesulfonic acid
PFHpS	Perfluoro-1-heptanesulfonic acid
di-PFOS (5)	Total Perfluorodimethylhexane sulfonic acids
mono-PFOS (5)	Total Perfluoromethylheptane sulfonic acids
L-PFOS (5)	Linear Perfluoroctanesulfonic acid
PFNS	Perfluoro-1-nonanesulfonic acid
PFDS	Perfluoro-1-decanesulfonic acid
PFECHS	Perfluoro-4-ethylcyclohexanesulfonic acid
Perfluoroalkylcarboxylic acids	
PFBA	Perfluoro-n-butanoic acid
PPeA	Perfluoro-n-pentanoic acid
PFHxA	Perfluoro-n-hexanoic acid
PFHpA	Perfluoro-n-heptanoic acid
PFOA	Perfluoro-n-octanoic acid
PFNA	Perfluoro-n-nonanoic acid
PFDA	Perfluoro-n-decanoic acid
PFUnDA	Perfluoro-n-undecanoic acid
PFDoDA	Perfluoro-n-dodecanoic acid
PFTrDA	Perfluoro-n-tridecanoic acid
PFTeDA	Perfluoro-n-tetradecanoic acid
P37DMOA	Perfluoro-3,7-dimethyloctanoic acid
Perfluoroctanesulfonamides	
PFOSA	Perfluoro-1-octanesulfonamide
NEtFOSA-M	N-ethylperfluoro-1-octanesulfonamide
NMeFOSA-M	N-methylperfluoro-1-octanesulfonamide
Perfluoroctanesulfonamidoacetic acids	
NETFOSAA	N-ethylperfluoro-1-octanesulfonamidoacetic acid
NMeFOSAA	N-methylperfluoro-1-octanesulfonamidoacetic acid
Perfluoroctanesulfonamidoethanols	
NETFOSE-M	2-(N-ethylperfluoro-1-octanesulfonamido)-ethanol
NMeFOSE-M	2-(N-methylperfluoro-1-octanesulfonamido)-ethanol
Telomere Sulfonic acids	
4:2 FTS	1H,1H,2H,2H-perfluoro-1-hexanesulfonic acid
6:2 FTS	1H,1H,2H,2H-perfluoro-1-octanesulfonic acid
8:2 FTS	1H,1H,2H,2H-perfluoro-1-decanesulfonic acid
10:2 FTS	1H,1H,2H,2H-perfluorododecanesulfonic acid
Telomere Carboxylic acids	
FPrPA (3:3FTA)	3-Perfluoropropyl propanoic acid

Analyte	Full Name
FPePA (5:3FTA)	3-Perfluoropentyl propanoic acid
FHpPA (7:3FTA)	3-Perfluoroheptyl propanoic acid
Miscellaneous	
F-53B (major)	9-chlorohexadecafluoro-3-oxanonane-1-sulfonic acid
F-53B (minor)	11-chloroeicosfluoro-3-oxaundecane-1-sulfonic acid
Sum F-53B	Sum of F-53B components (major + minor)
ADONA	Dodecafluoro-3H-4,8-dioxanonanoic acid
HFPO-DA (GenX)	Tetrafluoro-2-(heptafluoropropoxy)propanoic acid
Internal Standards	
M3PFBS	Perfluoro-1-[2,3,4-13C3]butanesulfonic acid
M3PFHxS	Perfluoro-1-[1,2,3-13C3]hexanesulfonic acid
M8PFOS	Perfluoro-1-[13C8]octanesulfonic acid
M4PFBA	Perfluoro-n-[1,2,3,4-13C4]butanoic acid
M5PFPeA	Perfluoro-n-[1,2,3,4,5-13C5]pentanoic acid
M5PFHxA	Perfluoro-n-[1,2,3,4,6-13C5]hexanoic acid
MPFhpA	Perfluoro-n-[1,2,3,4-13C4]heptanoic acid
M8PFOA	Perfluoro-n-[13C8]octanoic acid
M9PFNA	Perfluoro-n-[13C9]nonanoic acid
M6PFDA	Perfluoro-n-[1,2,3,4,5,6-13C6]decanoic acid
M7PFUnDA	Perfluoro-n-[1,2,3,4,5,6,7-13C7]undecanoic acid
MPFDoDA	Perfluoro-n-[1,2-13C2]dodecanoic acid
MPFTeDA	Perfluoro-n-[1,2-13C2]tetradecanoic acid
MPFOSA	Perfluoro-1-[13C8]octanesulfonamide
DNEtFOSA	N-ethyl-D5-perfluoro-1-octanesulfonamide
DNMeFOSA	N-methyl-D3-perfluoro-1-octanesulfonamide
DNEtFOSAA	N-ethyl-D5-perfluoro-1-octanesulfonamidoacetic acid
DNMeFOSAA	N-methyl-D3-perfluoro-1-octanesulfonamidoacetic acid
DNEtFOSE	2-(N-ethyl-D5-perfluoro-1-octanesulfonamido)ethan-D4-ol
DNMeFOSE	2-(N-methyl-D3-perfluoro-1-octanesulfonamido)ethan-D4-ol
M4:2FTS	1H,1H,2H,2H-perfluoro-1-[1,2-13C2]-hexane sulfonic acid
M6:2FTS	1H,1H,2H,2H-perfluoro-1-[1,2-13C2]-octane sulfonic acid
M8:2FTS	1H,1H,2H,2H-perfluoro-1-[1,2-13C2]-decane sulfonic acid
M3HFPO-DA	Tetrafluoro-2-(heptafluoropropoxy)-13C3-propanoic acid

LOR = Limit of Reporting

LOD = Limit of Detection

NR = Not Reportable

Certificate of Analysis

Submission Reference: A02744123
Final Report

James Conway
Pattle Delamore Partners Limited
P O Box 9528
Auckland 1149
New Zealand

PO Number: OHA_PFAS

Report Issued: 06-Oct-2022

AsureQuality Reference: 22-262865

Sample(s) Received: 29-Sep-2022 08:30

Testing Period: 30-Sep-2022 to 06-Oct-2022

Date of analysis is available on request.

Results

The tests were performed on the samples as received.

Customer Sample Name: OHA_ADJ_GW67_8_280922		Lab ID: 22-262865-1	
Sample Condition: Acceptable	Sampled Date: 28-Sep-2022		
Test	Result	Unit	Method Reference
Poly- and Perfluorinated Alkyl Substances (PFAS) in Non Potable Water - High Level			
Perfluoroalkylsulfonic acids			
PFPrS	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
PFBS	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
PPeS	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
di-PFHxS (1)	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
mono-PFHxS (1)	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
L-PFHxS (1)	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
Total PFHxS (3)	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
PFHpS	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
di-PFOS (5)	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
mono-PFOS (5)	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
L-PFOS (5)	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
Total PFOS (7)	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
Sum PFHxS+PFOS (1)	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
PFNS	<0.050	µg/L	AsureQuality Method (LC-MS/MS)
PFDS	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
PFECHS	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
Perfluoroalkylcarboxylic acids			
PFBA	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
PPeA	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
PFHxA	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
PFHpA	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
PFOA	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
PFNA	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
PFDA	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
PFUnDA	<0.025	µg/L	AsureQuality Method (LC-MS/MS)

AsureQuality Ltd has used reasonable skill, care, and effort to provide an accurate analysis of the sample(s) which form(s) the subject of this report. However, the accuracy of this analysis is reliant on, and subject to, the sample(s) provided by you and your responsibility as to transportation of the sample(s). AsureQuality Ltd's standard terms of business apply to the analysis set out in this report.

Test	Result	Unit	Method Reference
PFDoDA	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
PFTrDA	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
PFTeDA	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
P37DMOA	<0.050	µg/L	AsureQuality Method (LC-MS/MS)
Perfluoroctanesulfonamides			
PFOSA	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
NEtFOSA-M	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
NMeFOSA-M	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
Perfluoroctanesulfonamidoacetic acids			
NEtFOSAA	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
NMeFOSAA	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
Perfluoroctanesulfonamidoethanols			
NEtFOSE-M	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
NMeFOSE-M	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
Telomere Sulfonic acids			
4:2 FTS	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
6:2 FTS	<0.050	µg/L	AsureQuality Method (LC-MS/MS)
8:2 FTS	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
10:2 FTS	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
Telomere Carboxylic acids			
FPrPA (3:3FTA)	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
FPePA (5:3FTA)	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
FHpPA (7:3FTA)	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
Miscellaneous			
F-53B (major)	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
F-53B (minor)	<0.050	µg/L	AsureQuality Method (LC-MS/MS)
Sum F-53B	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
ADONA	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
HFPO-DA (GenX)	<0.050	µg/L	AsureQuality Method (LC-MS/MS)
Internal Standards			
M3PFBS	101	%	AsureQuality Method (LC-MS/MS)
M3PFHxS	114	%	AsureQuality Method (LC-MS/MS)
M8PFOS	98	%	AsureQuality Method (LC-MS/MS)
M4PFBA	98	%	AsureQuality Method (LC-MS/MS)
M5PFPeA	113	%	AsureQuality Method (LC-MS/MS)
M5PFHxA	102	%	AsureQuality Method (LC-MS/MS)
MPFHpA	102	%	AsureQuality Method (LC-MS/MS)
M8PFOA	99	%	AsureQuality Method (LC-MS/MS)
M9PFNA	99	%	AsureQuality Method (LC-MS/MS)
M6PFDA	96	%	AsureQuality Method (LC-MS/MS)
M7PFUnDA	73	%	AsureQuality Method (LC-MS/MS)
MPFDoDA	94	%	AsureQuality Method (LC-MS/MS)
MPFTeDA	38	%	AsureQuality Method (LC-MS/MS)
MPFOSA	99	%	AsureQuality Method (LC-MS/MS)
DNEtFOSA	92	%	AsureQuality Method (LC-MS/MS)
DNMeFOSA	93	%	AsureQuality Method (LC-MS/MS)
DNEtFOSAA	100	%	AsureQuality Method (LC-MS/MS)
DNMeFOSAA	96	%	AsureQuality Method (LC-MS/MS)
DNEtFOSE	93	%	AsureQuality Method (LC-MS/MS)
DNMeFOSE	88	%	AsureQuality Method (LC-MS/MS)

Test	Result	Unit	Method Reference
M4:2FTS	88	%	AsureQuality Method (LC-MS/MS)
M6:2FTS	81	%	AsureQuality Method (LC-MS/MS)
M8:2FTS	75	%	AsureQuality Method (LC-MS/MS)
M3HFPO-DA	103	%	AsureQuality Method (LC-MS/MS)

QC Results

Blank

Relates to sample(s) 22-262865-1

Test	Result	Unit	Method Reference
Poly- and Perfluorinated Alkyl Substances (PFAS) in Non Potable Water - High Level			
Perfluoroalkylsulfonic acids			
PFPrS	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
PFBS	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
PPeS	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
di-PFHxS (1)	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
mono-PFHxS (1)	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
L-PFHxS (1)	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
Total PFHxS (3)	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
PFHpS	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
di-PFOS (5)	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
mono-PFOS (5)	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
L-PFOS (5)	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
Total PFOS (7)	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
Sum PFHxS+PFOS (1)	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
PFNS	<0.050	µg/L	AsureQuality Method (LC-MS/MS)
PFDS	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
PFECHS	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
Perfluoroalkylcarboxylic acids			
PFBA	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
PPeA	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
PFHxA	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
PFHpA	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
PFOA	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
PFNA	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
PFDA	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
PFUnDA	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
PFDoDA	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
PFTrDA	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
PFTeDA	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
P37DMOA	<0.050	µg/L	AsureQuality Method (LC-MS/MS)
Perfluoroctanesulfonamides			
PFOSA	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
NEtFOSA-M	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
NMeFOSA-M	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
Perfluoroctanesulfonamidoacetic acids			
NEtFOSAA	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
NMeFOSAA	<0.025	µg/L	AsureQuality Method (LC-MS/MS)

Perfluoroctanesulfonamidoethanols			
NEtFOSE-M	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
NMeFOSE-M	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
Telomere Sulfonic acids			
4:2 FTS	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
6:2 FTS	<0.050	µg/L	AsureQuality Method (LC-MS/MS)
8:2 FTS	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
10:2 FTS	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
Telomere Carboxylic acids			
FPrPA (3:3FTA)	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
FPePA (5:3FTA)	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
FHpPA (7:3FTA)	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
Miscellaneous			
F-53B (major)	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
F-53B (minor)	<0.050	µg/L	AsureQuality Method (LC-MS/MS)
Sum F-53B	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
ADONA	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
HFPO-DA (GenX)	<0.050	µg/L	AsureQuality Method (LC-MS/MS)
Internal Standards			
M3PFBS	101	%	AsureQuality Method (LC-MS/MS)
M3PFHxS	110	%	AsureQuality Method (LC-MS/MS)
M8PFOS	102	%	AsureQuality Method (LC-MS/MS)
M4PFBA	104	%	AsureQuality Method (LC-MS/MS)
M5PFPeA	114	%	AsureQuality Method (LC-MS/MS)
M5PFHxA	103	%	AsureQuality Method (LC-MS/MS)
MPFHpA	104	%	AsureQuality Method (LC-MS/MS)
M8PFOA	100	%	AsureQuality Method (LC-MS/MS)
M9PFNA	103	%	AsureQuality Method (LC-MS/MS)
M6PFDA	103	%	AsureQuality Method (LC-MS/MS)
M7PFUnDA	102	%	AsureQuality Method (LC-MS/MS)
MPFDoDA	98	%	AsureQuality Method (LC-MS/MS)
MPFTeDA	55	%	AsureQuality Method (LC-MS/MS)
MPFOSA	103	%	AsureQuality Method (LC-MS/MS)
DNEtFOSA	101	%	AsureQuality Method (LC-MS/MS)
DNMeFOSA	99	%	AsureQuality Method (LC-MS/MS)
DNEtFOSAA	102	%	AsureQuality Method (LC-MS/MS)
DNMeFOSAA	100	%	AsureQuality Method (LC-MS/MS)
DNEtFOSE	103	%	AsureQuality Method (LC-MS/MS)
DNMeFOSE	99	%	AsureQuality Method (LC-MS/MS)
M4:2FTS	110	%	AsureQuality Method (LC-MS/MS)
M6:2FTS	94	%	AsureQuality Method (LC-MS/MS)
M8:2FTS	109	%	AsureQuality Method (LC-MS/MS)
M3HFPO-DA	137	%	AsureQuality Method (LC-MS/MS)

Analysis Summary

Wellington Laboratory

Analysis	Method	Accreditation	Authorised by
Poly- and Perfluorinated Alkyl Substances (PFAS) in Non Potable Water - High Level DX-PFCS01, 05-HIGHLEVEL	AsureQuality Method (LC-MS/MS)	IANZ	Amelie Sellier

di-PFHxS (1) = Concentration determined using a branched di-PFHxS isomer standard (399>80 transition)
mono-PFHxS (1) = Concentration determined using a branched mono-PFHxS isomer standard (399>80 transition)
L-PFHxS (1) = Concentration determined using the linear PFHxS isomer standard (399>80 transition)
Total PFHxS (3) = The numerical sum of di-PFHxS (1), mono-PFHxS (1), and L-PFHxS (1)
di-PFOS (5) = Concentration determined using a branched di-PFOS isomer standard (499>80 transition)
mono-PFOS (5) = Concentration determined using a branched mono-PFOS isomer standard (499>80 transition)
L-PFOS (5) = Concentration determined using the linear PFOS isomer standard (499>230 transition)
Total PFOS (7) = The numerical sum of di-PFOS (5), mono-PFOS (5), and L-PFOS (5)
Sum PFHxS+PFOS (1) = The numerical sum of Total PFHxS (3) and Total PFOS (7)
Sum F-53B = The numerical sum of 9Cl-PF3ONS (F-53B major) and 11Cl-PF3OUdS (F-53B minor)
For all Totals, where a component is detected below the LOR, the value of zero is used in the calculation of the sum. The result represents the lower-bound concentration present in the sample.
Reported results are corrected for internal standard recovery

Results that are prefixed with '<' indicate the lowest level at which the analyte can be reported, and that in this case the analyte was not observed above this limit.



Amelie Sellier

Scientist

Accreditation



Appendix

Analyte LOR Summary

Poly- and Perfluorinated Alkyl Substances (PFAS) in Non Potable Water - High Level - AsureQuality Method (LC-MS/MS)

Analyte LOR

Perfluoroalkylsulfonic acids

PPrS	0.025 µg/L
PFBS	0.025 µg/L
PPeS	0.025 µg/L
di-PFHxS (1)	0.025 µg/L
mono-PFHxS (1)	0.025 µg/L
L-PFHxS (1)	0.025 µg/L
Total PFHxS (3)	0.025 µg/L
PFHpS	0.025 µg/L
di-PFOS (5)	0.025 µg/L
mono-PFOS (5)	0.025 µg/L
L-PFOS (5)	0.025 µg/L
Total PFOS (7)	0.025 µg/L
Sum PFHxS+PFOS (1)	0.025 µg/L
PFNS	0.050 µg/L
PFDS	0.10 µg/L
PFECHS	0.025 µg/L

Perfluoroalkylcarboxylic acids

PFBA	0.10 µg/L
PPeA	0.10 µg/L
PFHxA	0.025 µg/L
PFHpA	0.025 µg/L
PFOA	0.025 µg/L
PFNA	0.025 µg/L
PFDA	0.025 µg/L
PFUnDA	0.025 µg/L
PFDoDA	0.10 µg/L
PFTrDA	0.10 µg/L
PFTeDA	0.10 µg/L
P37DMOA	0.050 µg/L

Perfluoroctanesulfonamides

PFOSA	0.025 µg/L
NEtFOSA-M	0.10 µg/L
NMeFOSA-M	0.10 µg/L

Perfluoroctanesulfonamidoacetic acids

NEtFOSAA	0.025 µg/L
NMeFOSAA	0.025 µg/L

Perfluoroctanesulfonamidoethanols

NETFOSE-M	0.10 µg/L
NMeFOSE-M	0.10 µg/L

Telomere Sulfonic acids

4:2 FTS	0.025 µg/L
6:2 FTS	0.050 µg/L
8:2 FTS	0.10 µg/L
10:2 FTS	0.025 µg/L

Telomere Carboxylic acids

FPrPA (3:3FTA)	0.10 µg/L
FPePA (5:3FTA)	0.025 µg/L

FHpPA (7:3FTA)	0.025 µg/L
Miscellaneous	
F-53B (major)	0.10 µg/L
F-53B (minor)	0.050 µg/L
Sum F-53B	0.1 µg/L
ADONA	0.025 µg/L
HFPO-DA (GenX)	0.050 µg/L

Analyte Definitions

Poly- and Perfluorinated Alkyl Substances (PFAS) in Non Potable Water - High Level - AsureQuality Method (LC-MS/MS)

Analyte	Full Name
Perfluoroalkylsulfonic acids	
PPrS	Perfluoro-1-propanesulfonic acid
PFBS	Perfluoro-1-butanesulfonic acid
PPeS	Perfluoro-1-pentanesulfonic acid
di-PFHxS (1)	Total Perfluorodimethylbutane sulfonic acids
mono-PFHxS (1)	Total Perfluoromethylpentane sulfonic acids
L-PFHxS (1)	Linear Perfluorohexanesulfonic acid
PFHpS	Perfluoro-1-heptanesulfonic acid
di-PFOS (5)	Total Perfluorodimethylhexane sulfonic acids
mono-PFOS (5)	Total Perfluoromethylheptane sulfonic acids
L-PFOS (5)	Linear Perfluoroctanesulfonic acid
PFNS	Perfluoro-1-nonanesulfonic acid
PFDS	Perfluoro-1-decanesulfonic acid
PFECHS	Perfluoro-4-ethylcyclohexanesulfonic acid
Perfluoroalkylcarboxylic acids	
PFBA	Perfluoro-n-butanoic acid
PPeA	Perfluoro-n-pentanoic acid
PFHxA	Perfluoro-n-hexanoic acid
PFHpA	Perfluoro-n-heptanoic acid
PFOA	Perfluoro-n-octanoic acid
PFNA	Perfluoro-n-nonanoic acid
PFDA	Perfluoro-n-decanoic acid
PFUnDA	Perfluoro-n-undecanoic acid
PFDoDA	Perfluoro-n-dodecanoic acid
PFTrDA	Perfluoro-n-tridecanoic acid
PFTeDA	Perfluoro-n-tetradecanoic acid
P37DMOA	Perfluoro-3,7-dimethyloctanoic acid
Perfluoroctanesulfonamides	
PFOSA	Perfluoro-1-octanesulfonamide
NEtFOSA-M	N-ethylperfluoro-1-octanesulfonamide
NMeFOSA-M	N-methylperfluoro-1-octanesulfonamide
Perfluoroctanesulfonamidoacetic acids	
NETFOSAA	N-ethylperfluoro-1-octanesulfonamidoacetic acid
NMeFOSAA	N-methylperfluoro-1-octanesulfonamidoacetic acid
Perfluoroctanesulfonamidoethanols	
NETFOSE-M	2-(N-ethylperfluoro-1-octanesulfonamido)-ethanol
NMeFOSE-M	2-(N-methylperfluoro-1-octanesulfonamido)-ethanol
Telomere Sulfonic acids	
4:2 FTS	1H,1H,2H,2H-perfluoro-1-hexanesulfonic acid
6:2 FTS	1H,1H,2H,2H-perfluoro-1-octanesulfonic acid
8:2 FTS	1H,1H,2H,2H-perfluoro-1-decanesulfonic acid
10:2 FTS	1H,1H,2H,2H-perfluorododecanesulfonic acid
Telomere Carboxylic acids	
FPrPA (3:3FTA)	3-Perfluoropropyl propanoic acid

Analyte	Full Name
FPePA (5:3FTA)	3-Perfluoropentyl propanoic acid
FHpPA (7:3FTA)	3-Perfluoroheptyl propanoic acid
Miscellaneous	
F-53B (major)	9-chlorohexadecafluoro-3-oxanonane-1-sulfonic acid
F-53B (minor)	11-chloroeicosfluoro-3-oxaundecane-1-sulfonic acid
Sum F-53B	Sum of F-53B components (major + minor)
ADONA	Dodecafluoro-3H-4,8-dioxanonanoic acid
HFPO-DA (GenX)	Tetrafluoro-2-(heptafluoropropoxy)propanoic acid
Internal Standards	
M3PFBS	Perfluoro-1-[2,3,4-13C3]butanesulfonic acid
M3PFHxS	Perfluoro-1-[1,2,3-13C3]hexanesulfonic acid
M8PFOS	Perfluoro-1-[13C8]octanesulfonic acid
M4PFBA	Perfluoro-n-[1,2,3,4-13C4]butanoic acid
M5PFPeA	Perfluoro-n-[1,2,3,4,5-13C5]pentanoic acid
M5PFHxA	Perfluoro-n-[1,2,3,4,6-13C5]hexanoic acid
MPFHxA	Perfluoro-n-[1,2,3,4-13C4]heptanoic acid
M8PFOA	Perfluoro-n-[13C8]octanoic acid
M9PFNA	Perfluoro-n-[13C9]nonanoic acid
M6PFDA	Perfluoro-n-[1,2,3,4,5,6-13C6]decanoic acid
M7PFUnDA	Perfluoro-n-[1,2,3,4,5,6,7-13C7]undecanoic acid
MPFDoDA	Perfluoro-n-[1,2-13C2]dodecanoic acid
MPFTeDA	Perfluoro-n-[1,2-13C2]tetradecanoic acid
MPFOSA	Perfluoro-1-[13C8]octanesulfonamide
DNEtFOSA	N-ethyl-D5-perfluoro-1-octanesulfonamide
DNMeFOSA	N-methyl-D3-perfluoro-1-octanesulfonamide
DNEtFOSAA	N-ethyl-D5-perfluoro-1-octanesulfonamidoacetic acid
DNMeFOSAA	N-methyl-D3-perfluoro-1-octanesulfonamidoacetic acid
DNEtFOSE	2-(N-ethyl-D5-perfluoro-1-octanesulfonamido)ethan-D4-ol
DNMeFOSE	2-(N-methyl-D3-perfluoro-1-octanesulfonamido)ethan-D4-ol
M4:2FTS	1H,1H,2H,2H-perfluoro-1-[1,2-13C2]-hexane sulfonic acid
M6:2FTS	1H,1H,2H,2H-perfluoro-1-[1,2-13C2]-octane sulfonic acid
M8:2FTS	1H,1H,2H,2H-perfluoro-1-[1,2-13C2]-decane sulfonic acid
M3HFPO-DA	Tetrafluoro-2-(heptafluoropropoxy)-13C3-propanoic acid

LOR = Limit of Reporting

LOD = Limit of Detection

NR = Not Reportable

Certificate of Analysis

Submission Reference: A02744123
Final Report

James Conway
Pattle Delamore Partners Limited
P O Box 9528
Auckland 1149
New Zealand

PO Number: OHA_PFAS

Report Issued: 14-Oct-2022

AsureQuality Reference: 22-262685

Sample(s) Received: 30-Sep-2022 08:20

Testing Period: 30-Sep-2022 to 14-Oct-2022

Date of analysis is available on request.

Results

The tests were performed on the samples as received.

Customer Sample Name: OHA_ADJ_GW106_4_290922		Lab ID: 22-262685-1	
Sample Condition: Acceptable	Sampled Date: 29-Sep-2022		
Test	Result	Unit	Method Reference
Poly- and Perfluorinated Alkyl Substances (PFAS) in Potable Water			
Perfluoroalkylsulfonic acids			
PFPrS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFBS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PPeS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
di-PFHxS (1)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
mono-PFHxS (1)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
L-PFHxS (1)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Total PFHxS (3)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFHpS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
di-PFOS (5)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
mono-PFOS (5)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
L-PFOS (5)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Total PFOS (7)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Sum PFHxS+PFOS (1)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFNS	NR	µg/L	AsureQuality Method (LC-MS/MS)
PFDS	NR	µg/L	AsureQuality Method (LC-MS/MS)
PFECHS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Perfluoroalkylcarboxylic acids			
PFBA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PPeA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFHxA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFHpA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFOA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFNA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFDA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFUnDA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)

AsureQuality Ltd has used reasonable skill, care, and effort to provide an accurate analysis of the sample(s) which form(s) the subject of this report. However, the accuracy of this analysis is reliant on, and subject to, the sample(s) provided by you and your responsibility as to transportation of the sample(s). AsureQuality Ltd's standard terms of business apply to the analysis set out in this report.

Test	Result	Unit	Method Reference
PFDoDA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFTrDA	NR	µg/L	AsureQuality Method (LC-MS/MS)
PFTeDA	NR	µg/L	AsureQuality Method (LC-MS/MS)
P37DMOA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Perfluoroctanesulfonamides			
PFOSA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
NEtFOSA-M	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
NMeFOSA-M	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Perfluoroctanesulfonamidoacetic acids			
NEtFOSAA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
NMeFOSAA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Perfluoroctanesulfonamidoethanols			
NEtFOSE-M	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
NMeFOSE-M	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Telomere Sulfonic acids			
4:2 FTS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
6:2 FTS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
8:2 FTS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
10:2 FTS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Telomere Carboxylic acids			
FPrPA (3:3FTA)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
FPePA (5:3FTA)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
FHpPA (7:3FTA)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Miscellaneous			
F-53B (major)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
F-53B (minor)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Sum F-53B	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
ADONA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
HFPO-DA (GenX)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Internal Standards			
M3PFBS	105	%	AsureQuality Method (LC-MS/MS)
M3PFHxS	148	%	AsureQuality Method (LC-MS/MS)
M8PFOS	114	%	AsureQuality Method (LC-MS/MS)
M4PFBA	69	%	AsureQuality Method (LC-MS/MS)
M5PFPeA	97	%	AsureQuality Method (LC-MS/MS)
M5PFHxA	98	%	AsureQuality Method (LC-MS/MS)
MPFHpA	126	%	AsureQuality Method (LC-MS/MS)
M8PFOA	135	%	AsureQuality Method (LC-MS/MS)
M9PFNA	121	%	AsureQuality Method (LC-MS/MS)
M6PFDA	121	%	AsureQuality Method (LC-MS/MS)
M7PFUnDA	184 (R)	%	AsureQuality Method (LC-MS/MS)
MPFDoDA	107	%	AsureQuality Method (LC-MS/MS)
MPFTeDA	225 (R)	%	AsureQuality Method (LC-MS/MS)
MPFOSA	63	%	AsureQuality Method (LC-MS/MS)
DNEtFOSA	58	%	AsureQuality Method (LC-MS/MS)
DNMeFOSA	52	%	AsureQuality Method (LC-MS/MS)
DNEtFOSAA	99	%	AsureQuality Method (LC-MS/MS)
DNMeFOSAA	110	%	AsureQuality Method (LC-MS/MS)
DNEtFOSE	70	%	AsureQuality Method (LC-MS/MS)
DNMeFOSE	50	%	AsureQuality Method (LC-MS/MS)

Test	Result	Unit	Method Reference
M4:2FTS	149	%	AsureQuality Method (LC-MS/MS)
M6:2FTS	135	%	AsureQuality Method (LC-MS/MS)
M8:2FTS	96	%	AsureQuality Method (LC-MS/MS)
M3HFPO-DA	101	%	AsureQuality Method (LC-MS/MS)

R = Recovery outside method limits

QC Results

Blank

Relates to sample(s) 22-262685-1

Test	Result	Unit	Method Reference
Poly- and Perfluorinated Alkyl Substances (PFAS) in Potable Water			
Perfluoroalkylsulfonic acids			
PFPrS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFBS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFPeS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
di-PFHxS (1)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
mono-PFHxS (1)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
L-PFHxS (1)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Total PFHxS (3)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFHpS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
di-PFOS (5)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
mono-PFOS (5)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
L-PFOS (5)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Total PFOS (7)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Sum PFHxS+PFOS (1)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFNS	NR	µg/L	AsureQuality Method (LC-MS/MS)
PFDS	NR	µg/L	AsureQuality Method (LC-MS/MS)
PFECHS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Perfluoroalkylcarboxylic acids			
PFBA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFPeA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFHxA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFHpA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFOA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFNA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFDA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFUnDA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFDoDA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFTrDA	NR	µg/L	AsureQuality Method (LC-MS/MS)
PFTeDA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
P37DMOA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Perfluorooctanesulfonamides			
PFOSA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
NEtFOSA-M	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
NMeFOSA-M	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Perfluorooctanesulfonamidoacetic acids			
NEtFOSAA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)

Test	Result	Unit	Method Reference
NMeFOSAA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Perfluoroctanesulfonamidoethanols			
NEtFOSE-M	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
NMeFOSE-M	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Telomere Sulfonic acids			
4:2 FTS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
6:2 FTS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
8:2 FTS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
10:2 FTS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Telomere Carboxylic acids			
FPrPA (3:3FTA)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
FPePA (5:3FTA)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
FHpPA (7:3FTA)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Miscellaneous			
F-53B (major)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
F-53B (minor)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Sum F-53B	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
ADONA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
HFPO-DA (GenX)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Internal Standards			
M3PFBS	112	%	AsureQuality Method (LC-MS/MS)
M3PFHxS	125	%	AsureQuality Method (LC-MS/MS)
M8PFOS	119	%	AsureQuality Method (LC-MS/MS)
M4PFBA	111	%	AsureQuality Method (LC-MS/MS)
M5PFPeA	115	%	AsureQuality Method (LC-MS/MS)
M5PFHxA	115	%	AsureQuality Method (LC-MS/MS)
MPFHpA	116	%	AsureQuality Method (LC-MS/MS)
M8PFOA	119	%	AsureQuality Method (LC-MS/MS)
M9PFNA	132	%	AsureQuality Method (LC-MS/MS)
M6PFDA	110	%	AsureQuality Method (LC-MS/MS)
M7PFUnDA	148	%	AsureQuality Method (LC-MS/MS)
MPFDoDA	107	%	AsureQuality Method (LC-MS/MS)
MPFTeDA	99	%	AsureQuality Method (LC-MS/MS)
MPFOSA	98	%	AsureQuality Method (LC-MS/MS)
DNEtFOSA	85	%	AsureQuality Method (LC-MS/MS)
DNMeFOSA	73	%	AsureQuality Method (LC-MS/MS)
DNEtFOSAA	103	%	AsureQuality Method (LC-MS/MS)
DNMeFOSAA	105	%	AsureQuality Method (LC-MS/MS)
DNEtFOSE	84	%	AsureQuality Method (LC-MS/MS)
DNMeFOSE	67	%	AsureQuality Method (LC-MS/MS)
M4:2FTS	113	%	AsureQuality Method (LC-MS/MS)
M6:2FTS	124	%	AsureQuality Method (LC-MS/MS)
M8:2FTS	129	%	AsureQuality Method (LC-MS/MS)
M3HFPO-DA	111	%	AsureQuality Method (LC-MS/MS)

Analysis Summary

Wellington Laboratory

Analysis	Method	Accreditation	Authorised by
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Poly- and Perfluorinated Alkyl Substances (PFAS) in Potable Water

DX-PFCS01, 03-SUITE_B AsureQuality Method (LC-MS/MS)

IANZ

Amelie Sellier

di-PFHxS (1) = Concentration determined using a branched di-PFHxS isomer standard (399>80 transition)

mono-PFHxS (1) = Concentration determined using a branched mono-PFHxS isomer standard (399>80 transition)

L-PFHxS (1) = Concentration determined using the linear PFHxS isomer standard (399>80 transition)

Total PFHxS (3) = The numerical sum of di-PFHxS (1), mono-PFHxS (1), and L-PFHxS (1)

di-PFOS (5) = Concentration determined using a branched di-PFOS isomer standard (499>80 transition)

mono-PFOS (5) = Concentration determined using a branched mono-PFOS isomer standard (499>80 transition)

L-PFOS (5) = Concentration determined using the linear PFOS isomer standard (499>230 transition)

Total PFOS (7) = The numerical sum of di-PFOS (5), mono-PFOS (5), and L-PFOS (5)

Sum PFHxS+PFOS (1) = The numerical sum of Total PFHxS (3) and Total PFOS (7)

Sum F-53B = The numerical sum of 9Cl-PF3ONS (F-53B major) and 11Cl-PF3OUdS (F-53B minor)

For all Totals, where a component is detected below the LOR, the value of zero is used in the calculation of the sum. The result represents the lower-bound concentration present in the sample.

Reported results are corrected for internal standard recovery

Results that are prefixed with '<' indicate the lowest level at which the analyte can be reported, and that in this case the analyte was not observed above this limit.

NR = Not Reportable

Amelie Sellier

Scientist

Accreditation



Appendix

Analyte LOR Summary

Poly- and Perfluorinated Alkyl Substances (PFAS) in Potable Water - AsureQuality Method (LC-MS/MS)

Analyte	LOR
Perfluoroalkylsulfonic acids	
PFPrS	0.0010 µg/L
PFBS	0.0010 µg/L
PPPeS	0.0010 µg/L
di-PFHxS (1)	0.0010 µg/L
mono-PFHxS (1)	0.0010 µg/L
L-PFHxS (1)	0.0010 µg/L
Total PFHxS (3)	0.0010 µg/L
PFHpS	0.0010 µg/L
di-PFOS (5)	0.0010 µg/L
mono-PFOS (5)	0.0010 µg/L
L-PFOS (5)	0.0010 µg/L
Total PFOS (7)	0.0010 µg/L
Sum PFHxS+PFOS (1)	0.0010 µg/L
PFNS	NR µg/L
PFDS	NR µg/L
PFECHS	0.0010 µg/L
Perfluoroalkylcarboxylic acids	
PFBA	0.0010 µg/L
PPPeA	0.0010 µg/L
PFHxA	0.0010 µg/L
PFHpA	0.0010 µg/L
PFOA	0.0010 µg/L
PFNA	0.0010 µg/L
PFDA	0.0010 µg/L
PFUnDA	0.0010 µg/L
PFDoDA	0.0010 µg/L
PFTrDA	NR µg/L
PFTeDA	NR µg/L
P37DMOA	0.0010 µg/L
Perfluoroctanesulfonamides	
PFOSA	0.0010 µg/L
NEtFOSA-M	0.0010 µg/L
NMeFOSA-M	0.0010 µg/L
Perfluoroctanesulfonamidoacetic acids	
NEtFOSAA	0.0010 µg/L
NMeFOSAA	0.0010 µg/L
Perfluoroctanesulfonamidoethanols	
NEtFOSE-M	0.0010 µg/L
NMeFOSE-M	0.0010 µg/L
Telomere Sulfonic acids	
4:2 FTS	0.0010 µg/L
6:2 FTS	0.0010 µg/L
8:2 FTS	0.0010 µg/L
10:2 FTS	0.0010 µg/L
Telomere Carboxylic acids	
FPrPA (3:3FTA)	0.0010 µg/L
FPePA (5:3FTA)	0.0010 µg/L

FHpPA (7:3FTA)	0.0010 µg/L
Miscellaneous	
F-53B (major)	0.0010 µg/L
F-53B (minor)	0.0010 µg/L
Sum F-53B	0.0010 µg/L
ADONA	0.0010 µg/L
HFPO-DA (GenX)	0.0010 µg/L

Analyte Definitions

Poly- and Perfluorinated Alkyl Substances (PFAS) in Potable Water - AsureQuality Method (LC-MS/MS)

Analyte	Full Name
Perfluoroalkylsulfonic acids	
PPrS	Perfluoro-1-propanesulfonic acid
PFBS	Perfluoro-1-butanesulfonic acid
PPeS	Perfluoro-1-pentanesulfonic acid
di-PFHxS (1)	Total Perfluorodimethylbutane sulfonic acids
mono-PFHxS (1)	Total Perfluoromethylpentane sulfonic acids
L-PFHxS (1)	Linear Perfluorohexanesulfonic acid
PFHpS	Perfluoro-1-heptanesulfonic acid
di-PFOS (5)	Total Perfluorodimethylhexane sulfonic acids
mono-PFOS (5)	Total Perfluoromethylheptane sulfonic acids
L-PFOS (5)	Linear Perfluoroctanesulfonic acid
PFNS	Perfluoro-1-nonanesulfonic acid
PFDS	Perfluoro-1-decanesulfonic acid
PFECHS	Perfluoro-4-ethylcyclohexanesulfonic acid
Perfluoroalkylcarboxylic acids	
PFBA	Perfluoro-n-butanoic acid
PPeA	Perfluoro-n-pentanoic acid
PFHxA	Perfluoro-n-hexanoic acid
PFHpA	Perfluoro-n-heptanoic acid
PFOA	Perfluoro-n-octanoic acid
PFNA	Perfluoro-n-nonanoic acid
PFDA	Perfluoro-n-decanoic acid
PFUnDA	Perfluoro-n-undecanoic acid
PFDoDA	Perfluoro-n-dodecanoic acid
PFTrDA	Perfluoro-n-tridecanoic acid
PFTeDA	Perfluoro-n-tetradecanoic acid
P37DMOA	Perfluoro-3,7-dimethyloctanoic acid
Perfluoroctanesulfonamides	
PFOSA	Perfluoro-1-octanesulfonamide
NEtFOSA-M	N-ethylperfluoro-1-octanesulfonamide
NMeFOSA-M	N-methylperfluoro-1-octanesulfonamide
Perfluoroctanesulfonamidoacetic acids	
NETFOSAA	N-ethylperfluoro-1-octanesulfonamidoacetic acid
NMeFOSAA	N-methylperfluoro-1-octanesulfonamidoacetic acid
Perfluoroctanesulfonamidoethanols	
NETFOSE-M	2-(N-ethylperfluoro-1-octanesulfonamido)-ethanol
NMeFOSE-M	2-(N-methylperfluoro-1-octanesulfonamido)-ethanol
Telomere Sulfonic acids	
4:2 FTS	1H,1H,2H,2H-perfluoro-1-hexanesulfonic acid
6:2 FTS	1H,1H,2H,2H-perfluoro-1-octanesulfonic acid
8:2 FTS	1H,1H,2H,2H-perfluoro-1-decanesulfonic acid
10:2 FTS	1H,1H,2H,2H-perfluorododecanesulfonic acid
Telomere Carboxylic acids	
FPrPA (3:3FTA)	3-Perfluoropropyl propanoic acid

Analyte	Full Name
FPePA (5:3FTA)	3-Perfluoropentyl propanoic acid
FHpPA (7:3FTA)	3-Perfluoroheptyl propanoic acid
Miscellaneous	
F-53B (major)	9-chlorohexadecafluoro-3-oxanonane-1-sulfonic acid
F-53B (minor)	11-chloroeicosfluoro-3-oxaundecane-1-sulfonic acid
Sum F-53B	Sum of F-53B components (major + minor)
ADONA	Dodecafluoro-3H-4,8-dioxanonanoic acid
HFPO-DA (GenX)	Tetrafluoro-2-(heptafluoropropoxy)propanoic acid
Internal Standards	
M3PFBS	Perfluoro-1-[2,3,4-13C3]butanesulfonic acid
M3PFHxS	Perfluoro-1-[1,2,3-13C3]hexanesulfonic acid
M8PFOS	Perfluoro-1-[13C8]octanesulfonic acid
M4PFBA	Perfluoro-n-[1,2,3,4-13C4]butanoic acid
M5PFPeA	Perfluoro-n-[1,2,3,4,5-13C5]pentanoic acid
M5PFHxA	Perfluoro-n-[1,2,3,4,6-13C5]hexanoic acid
MPFHxA	Perfluoro-n-[1,2,3,4-13C4]heptanoic acid
M8PFOA	Perfluoro-n-[13C8]octanoic acid
M9PFNA	Perfluoro-n-[13C9]nonanoic acid
M6PFDA	Perfluoro-n-[1,2,3,4,5,6-13C6]decanoic acid
M7PFUnDA	Perfluoro-n-[1,2,3,4,5,6,7-13C7]undecanoic acid
MPFDoDA	Perfluoro-n-[1,2-13C2]dodecanoic acid
MPFTeDA	Perfluoro-n-[1,2-13C2]tetradecanoic acid
MPFOSA	Perfluoro-1-[13C8]octanesulfonamide
DNEtFOSA	N-ethyl-D5-perfluoro-1-octanesulfonamide
DNMeFOSA	N-methyl-D3-perfluoro-1-octanesulfonamide
DNEtFOSAA	N-ethyl-D5-perfluoro-1-octanesulfonamidoacetic acid
DNMeFOSAA	N-methyl-D3-perfluoro-1-octanesulfonamidoacetic acid
DNEtFOSE	2-(N-ethyl-D5-perfluoro-1-octanesulfonamido)ethan-D4-ol
DNMeFOSE	2-(N-methyl-D3-perfluoro-1-octanesulfonamido)ethan-D4-ol
M4:2FTS	1H,1H,2H,2H-perfluoro-1-[1,2-13C2]-hexane sulfonic acid
M6:2FTS	1H,1H,2H,2H-perfluoro-1-[1,2-13C2]-octane sulfonic acid
M8:2FTS	1H,1H,2H,2H-perfluoro-1-[1,2-13C2]-decane sulfonic acid
M3HFPO-DA	Tetrafluoro-2-(heptafluoropropoxy)-13C3-propanoic acid

LOR = Limit of Reporting

LOD = Limit of Detection

NR = Not Reportable

Certificate of Analysis

Submission Reference: A02744123
Amended Report

James Conway
Pattle Delamore Partners Limited
P O Box 9528
Auckland 1149
New Zealand

PO Number: OHA_PFAS

Report Issued: 20-Oct-2022**AsureQuality Reference:** 22-264758**Sample(s) Received:** 03-Oct-2022 08:30**Testing Period:** 03-Oct-2022 to 14-Oct-2022

Date of analysis is available on request.

Comments

Amended Report: Customer Sample Name amended for 22-264758-1.

Results

The tests were performed on the samples as received.

Customer Sample Name: OHA_ADJ_GW107_4_300922 Lab ID: 22-264758-1			
Sample Condition: Acceptable	Sampled Date: 30-Sep-2022		
Test	Result	Unit	Method Reference
Poly- and Perfluorinated Alkyl Substances (PFAS) in Potable Water			
Perfluoroalkylsulfonic acids			
PFPrS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFBS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PPeS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
di-PFHxS (1)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
mono-PFHxS (1)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
L-PFHxS (1)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Total PFHxS (3)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFHpS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
di-PFOS (5)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
mono-PFOS (5)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
L-PFOS (5)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Total PFOS (7)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Sum PFHxS+PFOS (1)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFNS	NR	µg/L	AsureQuality Method (LC-MS/MS)
PFDS	NR	µg/L	AsureQuality Method (LC-MS/MS)
PFECHS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Perfluoroalkylcarboxylic acids			
PFBA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PPeA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFHxA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFHpA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFOA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)

AsureQuality Ltd has used reasonable skill, care, and effort to provide an accurate analysis of the sample(s) which form(s) the subject of this report. However, the accuracy of this analysis is reliant on, and subject to, the sample(s) provided by you and your responsibility as to transportation of the sample(s). AsureQuality Ltd's standard terms of business apply to the analysis set out in this report.

Test	Result	Unit	Method Reference
PFNA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFDA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFUnDA	NR	µg/L	AsureQuality Method (LC-MS/MS)
PFDaDA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFTrDA	NR	µg/L	AsureQuality Method (LC-MS/MS)
PFTeDA	NR	µg/L	AsureQuality Method (LC-MS/MS)
P37DMOA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Perfluoroctanesulfonamides			
PFOSA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
NEtFOSA-M	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
NMeFOSA-M	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Perfluoroctanesulfonamidoacetic acids			
NEtFOSAA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
NMeFOSAA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Perfluoroctanesulfonamidoethanols			
NEtFOSE-M	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
NMeFOSE-M	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Telomere Sulfonic acids			
4:2 FTS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
6:2 FTS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
8:2 FTS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
10:2 FTS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Telomere Carboxylic acids			
FPrPA (3:FTA)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
FPePA (5:FTA)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
FHpPA (7:FTA)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Miscellaneous			
F-53B (major)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
F-53B (minor)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Sum F-53B	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
ADONA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
HFPO-DA (GenX)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Internal Standards			
M3PFBS	112	%	AsureQuality Method (LC-MS/MS)
M3PFHxS	159 (R)	%	AsureQuality Method (LC-MS/MS)
M8PFOS	123	%	AsureQuality Method (LC-MS/MS)
M4PFBA	88	%	AsureQuality Method (LC-MS/MS)
M5PFPeA	103	%	AsureQuality Method (LC-MS/MS)
M5PFHxA	106	%	AsureQuality Method (LC-MS/MS)
MPFHpA	123	%	AsureQuality Method (LC-MS/MS)
M8PFOA	171 (R)	%	AsureQuality Method (LC-MS/MS)
M9PFNA	141	%	AsureQuality Method (LC-MS/MS)
M6PFDA	186 (R)	%	AsureQuality Method (LC-MS/MS)
M7PFUnDA	390 (R)	%	AsureQuality Method (LC-MS/MS)
MPFDoDA	122	%	AsureQuality Method (LC-MS/MS)
MPFTeDA	304 (R)	%	AsureQuality Method (LC-MS/MS)
MPFOSA	115	%	AsureQuality Method (LC-MS/MS)
DNEtFOSA	76	%	AsureQuality Method (LC-MS/MS)
DNMeFOSA	66	%	AsureQuality Method (LC-MS/MS)
DNEtFOSAA	147	%	AsureQuality Method (LC-MS/MS)

Test	Result	Unit	Method Reference
DNMeFOSAA	166 (R)	%	AsureQuality Method (LC-MS/MS)
DNEtFOSE	75	%	AsureQuality Method (LC-MS/MS)
DNMeFOSE	63	%	AsureQuality Method (LC-MS/MS)
M4:2FTS	151 (R)	%	AsureQuality Method (LC-MS/MS)
M6:2FTS	158 (R)	%	AsureQuality Method (LC-MS/MS)
M8:2FTS	95	%	AsureQuality Method (LC-MS/MS)
M3HFPO-DA	103	%	AsureQuality Method (LC-MS/MS)

R = Recovery outside method limits

Customer Sample Name: Dupl.of 2-246758-1A

Lab ID: 22-264758-2

Sample Description: 20162497_Duplicate

Sample Condition: Acceptable

Test	Result	Unit	Method Reference
Poly- and Perfluorinated Alkyl Substances (PFAS) in Potable Water			
Perfluoroalkylsulfonic acids			
PPrS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFBS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PPeS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
di-PFHxS (1)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
mono-PFHxS (1)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
L-PFHxS (1)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Total PFHxS (3)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFHpS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
di-PFOS (5)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
mono-PFOS (5)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
L-PFOS (5)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Total PFOS (7)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Sum PFHxS+PFOS (1)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFNS	NR	µg/L	AsureQuality Method (LC-MS/MS)
PFDS	NR	µg/L	AsureQuality Method (LC-MS/MS)
PFECHS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Perfluoroalkylcarboxylic acids			
PFBA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PPeA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFHxA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFHpA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFOA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFNA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFDA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFUnDA	NR	µg/L	AsureQuality Method (LC-MS/MS)
PFDoDA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFTrDA	NR	µg/L	AsureQuality Method (LC-MS/MS)
PFTeDA	NR	µg/L	AsureQuality Method (LC-MS/MS)
P37DMOA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Perfluoroctanesulfonamides			
PFOSA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
NEtFOSA-M	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
NMeFOSA-M	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Perfluoroctanesulfonamidoacetic acids			
NEtFOSAA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)

Test	Result	Unit	Method Reference
NMeFOSAA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Perfluoroctanesulfonamidoethanols			
NEtFOSE-M	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
NMeFOSE-M	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Telomere Sulfonic acids			
4:2 FTS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
6:2 FTS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
8:2 FTS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
10:2 FTS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Telomere Carboxylic acids			
FPrPA (3:3FTA)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
FPePA (5:3FTA)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
FHpPA (7:3FTA)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Miscellaneous			
F-53B (major)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
F-53B (minor)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Sum F-53B	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
ADONA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
HFPO-DA (GenX)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Internal Standards			
M3PFBS	109	%	AsureQuality Method (LC-MS/MS)
M3PFHxS	157 (R)	%	AsureQuality Method (LC-MS/MS)
M8PFOS	131	%	AsureQuality Method (LC-MS/MS)
M4PFBA	88	%	AsureQuality Method (LC-MS/MS)
M5PFPeA	106	%	AsureQuality Method (LC-MS/MS)
M5PFHxA	104	%	AsureQuality Method (LC-MS/MS)
MPFHpA	127	%	AsureQuality Method (LC-MS/MS)
M8PFOA	165 (R)	%	AsureQuality Method (LC-MS/MS)
M9PFNA	142	%	AsureQuality Method (LC-MS/MS)
M6PFDA	188 (R)	%	AsureQuality Method (LC-MS/MS)
M7PFUnDA	382 (R)	%	AsureQuality Method (LC-MS/MS)
MPFDoDA	185 (R)	%	AsureQuality Method (LC-MS/MS)
MPFTeDA	544 (R)	%	AsureQuality Method (LC-MS/MS)
MPFOSA	116	%	AsureQuality Method (LC-MS/MS)
DNEtFOSA	102	%	AsureQuality Method (LC-MS/MS)
DNMeFOSA	80	%	AsureQuality Method (LC-MS/MS)
DNEtFOSAA	169 (R)	%	AsureQuality Method (LC-MS/MS)
DNMeFOSAA	177 (R)	%	AsureQuality Method (LC-MS/MS)
DNEtFOSE	107	%	AsureQuality Method (LC-MS/MS)
DNMeFOSE	82	%	AsureQuality Method (LC-MS/MS)
M4:2FTS	150	%	AsureQuality Method (LC-MS/MS)
M6:2FTS	153 (R)	%	AsureQuality Method (LC-MS/MS)
M8:2FTS	124	%	AsureQuality Method (LC-MS/MS)
M3HFPO-DA	120	%	AsureQuality Method (LC-MS/MS)

R = Recovery outside method limits

QC Results

Blank

Relates to sample(s) 22-264758-1, 22-264758-2

Test	Result	Unit	Method Reference
Poly- and Perfluorinated Alkyl Substances (PFAS) in Potable Water			
Perfluoroalkylsulfonic acids			
PFPrS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFBS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PPeS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
di-PFHxS (1)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
mono-PFHxS (1)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
L-PFHxS (1)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Total PFHxS (3)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFHpS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
di-PFOS (5)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
mono-PFOS (5)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
L-PFOS (5)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Total PFOS (7)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Sum PFHxS+PFOS (1)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFNS	NR	µg/L	AsureQuality Method (LC-MS/MS)
PFDS	NR	µg/L	AsureQuality Method (LC-MS/MS)
PFECHS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Perfluoroalkylcarboxylic acids			
PFBA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PPeA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFHxA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFHpA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFOA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFNA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFDA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFUnDA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFDoDA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFTrDA	NR	µg/L	AsureQuality Method (LC-MS/MS)
PFTeDA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
P37DMOA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Perfluoroctanesulfonamides			
PFOSA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
NEtFOSA-M	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
NMeFOSA-M	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Perfluoroctanesulfonamidoacetic acids			
NEtFOSAA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
NMeFOSAA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Perfluoroctanesulfonamidoethanols			
NEtFOSE-M	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
NMeFOSE-M	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Telomere Sulfonic acids			
4:2 FTS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
6:2 FTS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)

Test	Result	Unit	Method Reference
8:2 FTS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
10:2 FTS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Telomere Carboxylic acids			
FPrPA (3:3FTA)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
FPePA (5:3FTA)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
FHpPA (7:3FTA)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Miscellaneous			
F-53B (major)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
F-53B (minor)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Sum F-53B	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
ADONA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
HFPO-DA (GenX)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Internal Standards			
M3PFBS	112	%	AsureQuality Method (LC-MS/MS)
M3PFHxS	125	%	AsureQuality Method (LC-MS/MS)
M8PFOS	119	%	AsureQuality Method (LC-MS/MS)
M4PFBA	111	%	AsureQuality Method (LC-MS/MS)
M5PPeA	115	%	AsureQuality Method (LC-MS/MS)
M5PFHxA	115	%	AsureQuality Method (LC-MS/MS)
MPFHpA	116	%	AsureQuality Method (LC-MS/MS)
M8PFOA	119	%	AsureQuality Method (LC-MS/MS)
M9PFNA	132	%	AsureQuality Method (LC-MS/MS)
M6PFDA	110	%	AsureQuality Method (LC-MS/MS)
M7PFUnDA	148	%	AsureQuality Method (LC-MS/MS)
MPFDoDA	107	%	AsureQuality Method (LC-MS/MS)
MPFTeDA	99	%	AsureQuality Method (LC-MS/MS)
MPFOSA	98	%	AsureQuality Method (LC-MS/MS)
DNEtFOSA	85	%	AsureQuality Method (LC-MS/MS)
DNMeFOSA	73	%	AsureQuality Method (LC-MS/MS)
DNEtFOSAA	103	%	AsureQuality Method (LC-MS/MS)
DNMeFOSAA	105	%	AsureQuality Method (LC-MS/MS)
DNEtFOSE	84	%	AsureQuality Method (LC-MS/MS)
DNMeFOSE	67	%	AsureQuality Method (LC-MS/MS)
M4:2FTS	113	%	AsureQuality Method (LC-MS/MS)
M6:2FTS	124	%	AsureQuality Method (LC-MS/MS)
M8:2FTS	129	%	AsureQuality Method (LC-MS/MS)
M3HFPO-DA	111	%	AsureQuality Method (LC-MS/MS)

Analysis Summary

Wellington Laboratory

Analysis	Method	Accreditation	Authorised by
Poly- and Perfluorinated Alkyl Substances (PFAS) in Potable Water			
DX-PFCS01, 03-SUITE_B	AsureQuality Method (LC-MS/MS)	IANZ	Amelie Sellier

di-PFHxS (1) = Concentration determined using a branched di-PFHxS isomer standard (399>80 transition)

mono-PFHxS (1) = Concentration determined using a branched mono-PFHxS isomer standard (399>80 transition)

L-PFHxS (1) = Concentration determined using the linear PFHxS isomer standard (399>80 transition)

Total PFHxS (3) = The numerical sum of di-PFHxS (1), mono-PFHxS (1), and L-PFHxS (1)

di-PFOS (5) = Concentration determined using a branched di-PFOS isomer standard (499>80 transition)

mono-PFOS (5) = Concentration determined using a branched mono-PFOS isomer standard (499>80 transition)

L-PFOS (5) = Concentration determined using the linear PFOS isomer standard (499>230 transition)

Total PFOS (7) = The numerical sum of di-PFOS (5), mono-PFOS (5), and L-PFOS (5)

Sum PFHxS+PFOS (1) = The numerical sum of Total PFHxS (3) and Total PFOS (7)

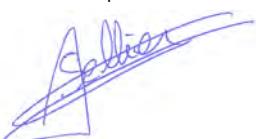
Sum F-53B = The numerical sum of 9Cl-PF3ONS (F-53B major) and 11Cl-PF3OUDS (F-53B minor)

For all Totals, where a component is detected below the LOR, the value of zero is used in the calculation of the sum. The result represents the lower-bound concentration present in the sample.

Reported results are corrected for internal standard recovery

Results that are prefixed with '<' indicate the lowest level at which the analyte can be reported, and that in this case the analyte was not observed above this limit.

NR = Not Reportable



Amelie Sellier

Scientist

Accreditation



Appendix

Analyte LOR Summary

Poly- and Perfluorinated Alkyl Substances (PFAS) in Potable Water - AsureQuality Method (LC-MS/MS)

Analyte LOR

Perfluoroalkylsulfonic acids

PFPrS	0.0010 µg/L
PFBS	0.0010 µg/L
PPeS	0.0010 µg/L
di-PFHxS (1)	0.0010 µg/L
mono-PFHxS (1)	0.0010 µg/L
L-PFHxS (1)	0.0010 µg/L
Total PFHxS (3)	0.0010 µg/L
PFHpS	0.0010 µg/L
di-PFOS (5)	0.0010 µg/L
mono-PFOS (5)	0.0010 µg/L
L-PFOS (5)	0.0010 µg/L
Total PFOS (7)	0.0010 µg/L
Sum PFHxS+PFOS (1)	0.0010 µg/L
PFNS	NR µg/L
PFDS	NR µg/L
PFECHS	0.0010 µg/L

Perfluoroalkylcarboxylic acids

PFBA	0.0010 µg/L
PPeA	0.0010 µg/L
PFHxA	0.0010 µg/L
PFHpA	0.0010 µg/L
PFOA	0.0010 µg/L
PFNA	0.0010 µg/L
PFDA	0.0010 µg/L
PFUnDA	NR µg/L
PFDoDA	0.0010 µg/L
PFTrDA	NR µg/L
PFTeDA	NR µg/L
P37DMOA	0.0010 µg/L

Perfluoroctanesulfonamides

PFOSA	0.0010 µg/L
NEtFOSA-M	0.0010 µg/L
NMeFOSA-M	0.0010 µg/L

Perfluoroctanesulfonamidoacetic acids

NEtFOSAA	0.0010 µg/L
NMeFOSAA	0.0010 µg/L

Perfluoroctanesulfonamidoethanols

NEtFOSE-M	0.0010 µg/L
NMeFOSE-M	0.0010 µg/L

Telomere Sulfonic acids

4:2 FTS	0.0010 µg/L
6:2 FTS	0.0010 µg/L
8:2 FTS	0.0010 µg/L
10:2 FTS	0.0010 µg/L

Telomere Carboxylic acids

FPrPA (3:3FTA)	0.0010 µg/L
FPePA (5:3FTA)	0.0010 µg/L

FHpPA (7:3FTA)	0.0010 µg/L
Miscellaneous	
F-53B (major)	0.0010 µg/L
F-53B (minor)	0.0010 µg/L
Sum F-53B	0.0010 µg/L
ADONA	0.0010 µg/L
HFPO-DA (GenX)	0.0010 µg/L

Analyte Definitions

Poly- and Perfluorinated Alkyl Substances (PFAS) in Potable Water - AsureQuality Method (LC-MS/MS)

Analyte	Full Name
Perfluoroalkylsulfonic acids	
PPrS	Perfluoro-1-propanesulfonic acid
PFBS	Perfluoro-1-butanesulfonic acid
PPeS	Perfluoro-1-pentanesulfonic acid
di-PFHxS (1)	Total Perfluorodimethylbutane sulfonic acids
mono-PFHxS (1)	Total Perfluoromethylpentane sulfonic acids
L-PFHxS (1)	Linear Perfluorohexanesulfonic acid
PFHpS	Perfluoro-1-heptanesulfonic acid
di-PFOS (5)	Total Perfluorodimethylhexane sulfonic acids
mono-PFOS (5)	Total Perfluoromethylheptane sulfonic acids
L-PFOS (5)	Linear Perfluoroctanesulfonic acid
PFNS	Perfluoro-1-nonanesulfonic acid
PFDS	Perfluoro-1-decanesulfonic acid
PFECHS	Perfluoro-4-ethylcyclohexanesulfonic acid
Perfluoroalkylcarboxylic acids	
PFBA	Perfluoro-n-butanoic acid
PPeA	Perfluoro-n-pentanoic acid
PFHxA	Perfluoro-n-hexanoic acid
PFHpA	Perfluoro-n-heptanoic acid
PFOA	Perfluoro-n-octanoic acid
PFNA	Perfluoro-n-nonanoic acid
PFDA	Perfluoro-n-decanoic acid
PFUnDA	Perfluoro-n-undecanoic acid
PFDoDA	Perfluoro-n-dodecanoic acid
PFTrDA	Perfluoro-n-tridecanoic acid
PFTeDA	Perfluoro-n-tetradecanoic acid
P37DMOA	Perfluoro-3,7-dimethyloctanoic acid
Perfluoroctanesulfonamides	
PFOSA	Perfluoro-1-octanesulfonamide
NEtFOSA-M	N-ethylperfluoro-1-octanesulfonamide
NMeFOSA-M	N-methylperfluoro-1-octanesulfonamide
Perfluoroctanesulfonamidoacetic acids	
NETFOSAA	N-ethylperfluoro-1-octanesulfonamidoacetic acid
NMeFOSAA	N-methylperfluoro-1-octanesulfonamidoacetic acid
Perfluoroctanesulfonamidoethanols	
NETFOSE-M	2-(N-ethylperfluoro-1-octanesulfonamido)-ethanol
NMeFOSE-M	2-(N-methylperfluoro-1-octanesulfonamido)-ethanol
Telomere Sulfonic acids	
4:2 FTS	1H,1H,2H,2H-perfluoro-1-hexanesulfonic acid
6:2 FTS	1H,1H,2H,2H-perfluoro-1-octanesulfonic acid
8:2 FTS	1H,1H,2H,2H-perfluoro-1-decanesulfonic acid
10:2 FTS	1H,1H,2H,2H-perfluorododecanesulfonic acid
Telomere Carboxylic acids	
FPrPA (3:3FTA)	3-Perfluoropropyl propanoic acid

Analyte	Full Name
FPePA (5:3FTA)	3-Perfluoropentyl propanoic acid
FHpPA (7:3FTA)	3-Perfluoroheptyl propanoic acid
Miscellaneous	
F-53B (major)	9-chlorohexadecafluoro-3-oxanonane-1-sulfonic acid
F-53B (minor)	11-chloroeicosfluoro-3-oxaundecane-1-sulfonic acid
Sum F-53B	Sum of F-53B components (major + minor)
ADONA	Dodecafluoro-3H-4,8-dioxanonanoic acid
HFPO-DA (GenX)	Tetrafluoro-2-(heptafluoropropoxy)propanoic acid
Internal Standards	
M3PFBS	Perfluoro-1-[2,3,4-13C3]butanesulfonic acid
M3PFHxS	Perfluoro-1-[1,2,3-13C3]hexanesulfonic acid
M8PFOS	Perfluoro-1-[13C8]octanesulfonic acid
M4PFBA	Perfluoro-n-[1,2,3,4-13C4]butanoic acid
M5PFPeA	Perfluoro-n-[1,2,3,4,5-13C5]pentanoic acid
M5PFHxA	Perfluoro-n-[1,2,3,4,6-13C5]hexanoic acid
MPFhpA	Perfluoro-n-[1,2,3,4-13C4]heptanoic acid
M8PFOA	Perfluoro-n-[13C8]octanoic acid
M9PFNA	Perfluoro-n-[13C9]nonanoic acid
M6PFDA	Perfluoro-n-[1,2,3,4,5,6-13C6]decanoic acid
M7PFUnDA	Perfluoro-n-[1,2,3,4,5,6,7-13C7]undecanoic acid
MPFDoDA	Perfluoro-n-[1,2-13C2]dodecanoic acid
MPFTeDA	Perfluoro-n-[1,2-13C2]tetradecanoic acid
MPFOSA	Perfluoro-1-[13C8]octanesulfonamide
DNEtFOSA	N-ethyl-D5-perfluoro-1-octanesulfonamide
DNMeFOSA	N-methyl-D3-perfluoro-1-octanesulfonamide
DNEtFOSAA	N-ethyl-D5-perfluoro-1-octanesulfonamidoacetic acid
DNMeFOSAA	N-methyl-D3-perfluoro-1-octanesulfonamidoacetic acid
DNEtFOSE	2-(N-ethyl-D5-perfluoro-1-octanesulfonamido)ethan-D4-ol
DNMeFOSE	2-(N-methyl-D3-perfluoro-1-octanesulfonamido)ethan-D4-ol
M4:2FTS	1H,1H,2H,2H-perfluoro-1-[1,2-13C2]-hexane sulfonic acid
M6:2FTS	1H,1H,2H,2H-perfluoro-1-[1,2-13C2]-octane sulfonic acid
M8:2FTS	1H,1H,2H,2H-perfluoro-1-[1,2-13C2]-decane sulfonic acid
M3HFPO-DA	Tetrafluoro-2-(heptafluoropropoxy)-13C3-propanoic acid

LOR = Limit of Reporting

LOD = Limit of Detection

NR = Not Reportable

Certificate of Analysis

Submission Reference: A02744123
Final Report

James Conway
Pattle Delamore Partners Limited
P O Box 9528
Auckland 1149
New Zealand

PO Number: OHA_PFAS

Report Issued: 14-Oct-2022

AsureQuality Reference: 22-262745

Sample(s) Received: 30-Sep-2022 08:20

Testing Period: 30-Sep-2022 to 14-Oct-2022

Date of analysis is available on request.

Results

The tests were performed on the samples as received.

Customer Sample Name: OHA_ADJ_GW108_5_290922		Lab ID: 22-262745-1	
Sample Condition: Acceptable	Sampled Date: 29-Sep-2022		
Test	Result	Unit	Method Reference
Poly- and Perfluorinated Alkyl Substances (PFAS) in Potable Water			
Perfluoroalkylsulfonic acids			
PFPrS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFBS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PPeS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
di-PFHxS (1)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
mono-PFHxS (1)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
L-PFHxS (1)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Total PFHxS (3)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFHpS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
di-PFOS (5)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
mono-PFOS (5)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
L-PFOS (5)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Total PFOS (7)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Sum PFHxS+PFOS (1)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFNS	NR	µg/L	AsureQuality Method (LC-MS/MS)
PFDS	NR	µg/L	AsureQuality Method (LC-MS/MS)
PFECHS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Perfluoroalkylcarboxylic acids			
PFBA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PPeA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFHxA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFHpA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFOA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFNA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFDA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFUnDA	NR	µg/L	AsureQuality Method (LC-MS/MS)

AsureQuality Ltd has used reasonable skill, care, and effort to provide an accurate analysis of the sample(s) which form(s) the subject of this report. However, the accuracy of this analysis is reliant on, and subject to, the sample(s) provided by you and your responsibility as to transportation of the sample(s). AsureQuality Ltd's standard terms of business apply to the analysis set out in this report.

Test	Result	Unit	Method Reference
PFDoDA	NR	µg/L	AsureQuality Method (LC-MS/MS)
PFTrDA	NR	µg/L	AsureQuality Method (LC-MS/MS)
PFTeDA	NR	µg/L	AsureQuality Method (LC-MS/MS)
P37DMOA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Perfluoroctanesulfonamides			
PFOSA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
NEtFOSA-M	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
NMeFOSA-M	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Perfluoroctanesulfonamidoacetic acids			
NEtFOSAA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
NMeFOSAA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Perfluoroctanesulfonamidoethanols			
NEtFOSE-M	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
NMeFOSE-M	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Telomere Sulfonic acids			
4:2 FTS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
6:2 FTS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
8:2 FTS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
10:2 FTS	NR	µg/L	AsureQuality Method (LC-MS/MS)
Telomere Carboxylic acids			
FPrPA (3:3FTA)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
FPePA (5:3FTA)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
FHpPA (7:3FTA)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Miscellaneous			
F-53B (major)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
F-53B (minor)	NR	µg/L	AsureQuality Method (LC-MS/MS)
Sum F-53B	<0.0010 (P)	µg/L	AsureQuality Method (LC-MS/MS)
ADONA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
HFPO-DA (GenX)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Internal Standards			
M3PFBS	113	%	AsureQuality Method (LC-MS/MS)
M3PFHxS	169 (R)	%	AsureQuality Method (LC-MS/MS)
M8PFOS	154 (R)	%	AsureQuality Method (LC-MS/MS)
M4PFBA	72	%	AsureQuality Method (LC-MS/MS)
M5PFPeA	102	%	AsureQuality Method (LC-MS/MS)
M5PFHxA	97	%	AsureQuality Method (LC-MS/MS)
MPFHpA	134	%	AsureQuality Method (LC-MS/MS)
M8PFOA	155 (R)	%	AsureQuality Method (LC-MS/MS)
M9PFNA	132	%	AsureQuality Method (LC-MS/MS)
M6PFDA	161 (R)	%	AsureQuality Method (LC-MS/MS)
M7PFUnDA	315 (R)	%	AsureQuality Method (LC-MS/MS)
MPFDoDA	280 (R)	%	AsureQuality Method (LC-MS/MS)
MPFTeDA	1098 (R)	%	AsureQuality Method (LC-MS/MS)
MPFOSA	120	%	AsureQuality Method (LC-MS/MS)
DNEtFOSA	100	%	AsureQuality Method (LC-MS/MS)
DNMeFOSA	83	%	AsureQuality Method (LC-MS/MS)
DNEtFOSAA	137	%	AsureQuality Method (LC-MS/MS)
DNMeFOSAA	152 (R)	%	AsureQuality Method (LC-MS/MS)
DNEtFOSE	107	%	AsureQuality Method (LC-MS/MS)
DNMeFOSE	78	%	AsureQuality Method (LC-MS/MS)

Test	Result	Unit	Method Reference
M4:2FTS	158 (R)	%	AsureQuality Method (LC-MS/MS)
M6:2FTS	143	%	AsureQuality Method (LC-MS/MS)
M8:2FTS	99	%	AsureQuality Method (LC-MS/MS)
M3HFPO-DA	103	%	AsureQuality Method (LC-MS/MS)

P = Partial result - one or more individual components could not be reported

R = Recovery outside method limits

QC Results

Blank

Relates to sample(s) 22-262745-1

Test	Result	Unit	Method Reference
Poly- and Perfluorinated Alkyl Substances (PFAS) in Potable Water			
Perfluoroalkylsulfonic acids			
PFPrS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFBS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFPeS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
di-PFHxS (1)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
mono-PFHxS (1)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
L-PFHxS (1)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Total PFHxS (3)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFHpS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
di-PFOS (5)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
mono-PFOS (5)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
L-PFOS (5)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Total PFOS (7)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Sum PFHxS+PFOS (1)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFNS	NR	µg/L	AsureQuality Method (LC-MS/MS)
PFDS	NR	µg/L	AsureQuality Method (LC-MS/MS)
PFECHS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Perfluoroalkylcarboxylic acids			
PFBA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFPeA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFHxA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFHpA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFOA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFNA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFDA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFUnDA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFDoDA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFTrDA	NR	µg/L	AsureQuality Method (LC-MS/MS)
PFTeDA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
P37DMOA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Perfluoroctanesulfonamides			
PFOSA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
NEtFOSA-M	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
NMeFOSA-M	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)

Perfluoroctanesulfonamidoacetic acids			
NEtFOSAA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
NMeFOSAA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Perfluoroctanesulfonamidoethanols			
NEtFOSE-M	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
NMeFOSE-M	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Telomere Sulfonic acids			
4:2 FTS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
6:2 FTS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
8:2 FTS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
10:2 FTS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Telomere Carboxylic acids			
FPrPA (3:3FTA)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
FPePA (5:3FTA)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
FHpPA (7:3FTA)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Miscellaneous			
F-53B (major)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
F-53B (minor)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Sum F-53B	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
ADONA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
HFPO-DA (GenX)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Internal Standards			
M3PFBS	112	%	AsureQuality Method (LC-MS/MS)
M3PFHxS	125	%	AsureQuality Method (LC-MS/MS)
M8PFOS	119	%	AsureQuality Method (LC-MS/MS)
M4PFBA	111	%	AsureQuality Method (LC-MS/MS)
M5PFPeA	115	%	AsureQuality Method (LC-MS/MS)
M5PFHxA	115	%	AsureQuality Method (LC-MS/MS)
MPFHxA	116	%	AsureQuality Method (LC-MS/MS)
M8PFOA	119	%	AsureQuality Method (LC-MS/MS)
M9PFNA	132	%	AsureQuality Method (LC-MS/MS)
M6PFDA	110	%	AsureQuality Method (LC-MS/MS)
M7PFUnDA	148	%	AsureQuality Method (LC-MS/MS)
MPFDaDA	107	%	AsureQuality Method (LC-MS/MS)
MPFTeDA	99	%	AsureQuality Method (LC-MS/MS)
MPFOSA	98	%	AsureQuality Method (LC-MS/MS)
DNEtFOSA	85	%	AsureQuality Method (LC-MS/MS)
DNMeFOSA	73	%	AsureQuality Method (LC-MS/MS)
DNEtFOSAA	103	%	AsureQuality Method (LC-MS/MS)
DNMeFOSAA	105	%	AsureQuality Method (LC-MS/MS)
DNEtFOSE	84	%	AsureQuality Method (LC-MS/MS)
DNMeFOSE	67	%	AsureQuality Method (LC-MS/MS)
M4:2FTS	113	%	AsureQuality Method (LC-MS/MS)
M6:2FTS	124	%	AsureQuality Method (LC-MS/MS)
M8:2FTS	129	%	AsureQuality Method (LC-MS/MS)
M3HFPO-DA	111	%	AsureQuality Method (LC-MS/MS)

Analysis Summary

Wellington Laboratory

Analysis	Method	Accreditation	Authorised by
Poly- and Perfluorinated Alkyl Substances (PFAS) in Potable Water	AsureQuality Method (LC-MS/MS)	IANZ	Amelie Sellier

di-PFHxS (1) = Concentration determined using a branched di-PFHxS isomer standard (399>80 transition)

mono-PFHxS (1) = Concentration determined using a branched mono-PFHxS isomer standard (399>80 transition)

L-PFHxS (1) = Concentration determined using the linear PFHxS isomer standard (399>80 transition)

Total PFHxS (3) = The numerical sum of di-PFHxS (1), mono-PFHxS (1), and L-PFHxS (1)

di-PFOS (5) = Concentration determined using a branched di-PFOS isomer standard (499>80 transition)

mono-PFOS (5) = Concentration determined using a branched mono-PFOS isomer standard (499>80 transition)

L-PFOS (5) = Concentration determined using the linear PFOS isomer standard (499>230 transition)

Total PFOS (7) = The numerical sum of di-PFOS (5), mono-PFOS (5), and L-PFOS (5)

Sum PFHxS+PFOS (1) = The numerical sum of Total PFHxS (3) and Total PFOS (7)

Sum F-53B = The numerical sum of 9Cl-PF3ONS (F-53B major) and 11Cl-PF3OUdS (F-53B minor)

For all Totals, where a component is detected below the LOR, the value of zero is used in the calculation of the sum. The result represents the lower-bound concentration present in the sample.

Reported results are corrected for internal standard recovery

Results that are prefixed with '<' indicate the lowest level at which the analyte can be reported, and that in this case the analyte was not observed above this limit.

NR = Not Reportable

Amelie Sellier

Scientist

Accreditation



Appendix

Analyte LOR Summary

Poly- and Perfluorinated Alkyl Substances (PFAS) in Potable Water - AsureQuality Method (LC-MS/MS)

Analyte LOR

Perfluoroalkylsulfonic acids

PFPrS	0.0010 µg/L
PFBS	0.0010 µg/L
PPPeS	0.0010 µg/L
di-PFHxS (1)	0.0010 µg/L
mono-PFHxS (1)	0.0010 µg/L
L-PFHxS (1)	0.0010 µg/L
Total PFHxS (3)	0.0010 µg/L
PFHpS	0.0010 µg/L
di-PFOS (5)	0.0010 µg/L
mono-PFOS (5)	0.0010 µg/L
L-PFOS (5)	0.0010 µg/L
Total PFOS (7)	0.0010 µg/L
Sum PFHxS+PFOS (1)	0.0010 µg/L
PFNS	NR µg/L
PFDS	NR µg/L
PFECHS	0.0010 µg/L

Perfluoroalkylcarboxylic acids

PFBA	0.0010 µg/L
PPPeA	0.0010 µg/L
PFHxA	0.0010 µg/L
PFHpA	0.0010 µg/L
PFOA	0.0010 µg/L
PFNA	0.0010 µg/L
PFDA	0.0010 µg/L
PFUnDA	NR µg/L
PFDoDA	NR µg/L
PFTrDA	NR µg/L
PFTeDA	NR µg/L
P37DMOA	0.0010 µg/L

Perfluoroctanesulfonamides

PFOSA	0.0010 µg/L
NEtFOSA-M	0.0010 µg/L
NMeFOSA-M	0.0010 µg/L

Perfluoroctanesulfonamidoacetic acids

NEtFOSAA	0.0010 µg/L
NMeFOSAA	0.0010 µg/L

Perfluoroctanesulfonamidoethanols

NETFOSE-M	0.0010 µg/L
NMeFOSE-M	0.0010 µg/L

Telomere Sulfonic acids

4:2 FTS	0.0010 µg/L
6:2 FTS	0.0010 µg/L
8:2 FTS	0.0010 µg/L
10:2 FTS	NR µg/L

Telomere Carboxylic acids

FPrPA (3:3FTA)	0.0010 µg/L
FPePA (5:3FTA)	0.0010 µg/L

FHpPA (7:3FTA)	0.0010 µg/L
Miscellaneous	
F-53B (major)	0.0010 µg/L
F-53B (minor)	NR µg/L
Sum F-53B	0.0010 µg/L
ADONA	0.0010 µg/L
HFPO-DA (GenX)	0.0010 µg/L

Analyte Definitions

Poly- and Perfluorinated Alkyl Substances (PFAS) in Potable Water - AsureQuality Method (LC-MS/MS)

Analyte	Full Name
Perfluoroalkylsulfonic acids	
PPrS	Perfluoro-1-propanesulfonic acid
PFBS	Perfluoro-1-butanesulfonic acid
PPeS	Perfluoro-1-pentanesulfonic acid
di-PFHxS (1)	Total Perfluorodimethylbutane sulfonic acids
mono-PFHxS (1)	Total Perfluoromethylpentane sulfonic acids
L-PFHxS (1)	Linear Perfluorohexanesulfonic acid
PFHpS	Perfluoro-1-heptanesulfonic acid
di-PFOS (5)	Total Perfluorodimethylhexane sulfonic acids
mono-PFOS (5)	Total Perfluoromethylheptane sulfonic acids
L-PFOS (5)	Linear Perfluoroctanesulfonic acid
PFNS	Perfluoro-1-nonanesulfonic acid
PFDS	Perfluoro-1-decanesulfonic acid
PFECHS	Perfluoro-4-ethylcyclohexanesulfonic acid
Perfluoroalkylcarboxylic acids	
PFBA	Perfluoro-n-butanoic acid
PPeA	Perfluoro-n-pentanoic acid
PFHxA	Perfluoro-n-hexanoic acid
PFHpA	Perfluoro-n-heptanoic acid
PFOA	Perfluoro-n-octanoic acid
PFNA	Perfluoro-n-nonanoic acid
PFDA	Perfluoro-n-decanoic acid
PFUnDA	Perfluoro-n-undecanoic acid
PFDoDA	Perfluoro-n-dodecanoic acid
PFTrDA	Perfluoro-n-tridecanoic acid
PFTeDA	Perfluoro-n-tetradecanoic acid
P37DMOA	Perfluoro-3,7-dimethyloctanoic acid
Perfluoroctanesulfonamides	
PFOSA	Perfluoro-1-octanesulfonamide
NEtFOSA-M	N-ethylperfluoro-1-octanesulfonamide
NMeFOSA-M	N-methylperfluoro-1-octanesulfonamide
Perfluoroctanesulfonamidoacetic acids	
NETFOSAA	N-ethylperfluoro-1-octanesulfonamidoacetic acid
NMeFOSAA	N-methylperfluoro-1-octanesulfonamidoacetic acid
Perfluoroctanesulfonamidoethanols	
NETFOSE-M	2-(N-ethylperfluoro-1-octanesulfonamido)-ethanol
NMeFOSE-M	2-(N-methylperfluoro-1-octanesulfonamido)-ethanol
Telomere Sulfonic acids	
4:2 FTS	1H,1H,2H,2H-perfluoro-1-hexanesulfonic acid
6:2 FTS	1H,1H,2H,2H-perfluoro-1-octanesulfonic acid
8:2 FTS	1H,1H,2H,2H-perfluoro-1-decanesulfonic acid
10:2 FTS	1H,1H,2H,2H-perfluorododecanesulfonic acid
Telomere Carboxylic acids	
FPrPA (3:3FTA)	3-Perfluoropropyl propanoic acid

Analyte	Full Name
FPePA (5:3FTA)	3-Perfluoropentyl propanoic acid
FHpPA (7:3FTA)	3-Perfluoroheptyl propanoic acid
Miscellaneous	
F-53B (major)	9-chlorohexadecafluoro-3-oxanonane-1-sulfonic acid
F-53B (minor)	11-chloroeicosfluoro-3-oxaundecane-1-sulfonic acid
Sum F-53B	Sum of F-53B components (major + minor)
ADONA	Dodecafluoro-3H-4,8-dioxanonanoic acid
HFPO-DA (GenX)	Tetrafluoro-2-(heptafluoropropoxy)propanoic acid
Internal Standards	
M3PFBS	Perfluoro-1-[2,3,4-13C3]butanesulfonic acid
M3PFHxS	Perfluoro-1-[1,2,3-13C3]hexanesulfonic acid
M8PFOS	Perfluoro-1-[13C8]octanesulfonic acid
M4PFBA	Perfluoro-n-[1,2,3,4-13C4]butanoic acid
M5PFPeA	Perfluoro-n-[1,2,3,4,5-13C5]pentanoic acid
M5PFHxA	Perfluoro-n-[1,2,3,4,6-13C5]hexanoic acid
MPFHxA	Perfluoro-n-[1,2,3,4-13C4]heptanoic acid
M8PFOA	Perfluoro-n-[13C8]octanoic acid
M9PFNA	Perfluoro-n-[13C9]nonanoic acid
M6PFDA	Perfluoro-n-[1,2,3,4,5,6-13C6]decanoic acid
M7PFUnDA	Perfluoro-n-[1,2,3,4,5,6,7-13C7]undecanoic acid
MPFDoDA	Perfluoro-n-[1,2-13C2]dodecanoic acid
MPFTeDA	Perfluoro-n-[1,2-13C2]tetradecanoic acid
MPFOSA	Perfluoro-1-[13C8]octanesulfonamide
DNEtFOSA	N-ethyl-D5-perfluoro-1-octanesulfonamide
DNMeFOSA	N-methyl-D3-perfluoro-1-octanesulfonamide
DNEtFOSAA	N-ethyl-D5-perfluoro-1-octanesulfonamidoacetic acid
DNMeFOSAA	N-methyl-D3-perfluoro-1-octanesulfonamidoacetic acid
DNEtFOSE	2-(N-ethyl-D5-perfluoro-1-octanesulfonamido)ethan-D4-ol
DNMeFOSE	2-(N-methyl-D3-perfluoro-1-octanesulfonamido)ethan-D4-ol
M4:2FTS	1H,1H,2H,2H-perfluoro-1-[1,2-13C2]-hexane sulfonic acid
M6:2FTS	1H,1H,2H,2H-perfluoro-1-[1,2-13C2]-octane sulfonic acid
M8:2FTS	1H,1H,2H,2H-perfluoro-1-[1,2-13C2]-decane sulfonic acid
M3HFPO-DA	Tetrafluoro-2-(heptafluoropropoxy)-13C3-propanoic acid

LOR = Limit of Reporting

LOD = Limit of Detection

NR = Not Reportable

Certificate of Analysis

Submission Reference: A02744123
Final Report

Bryn Taiapa
Pattle Delamore Partners Limited
P O Box 9528
Auckland 1149
New Zealand

Report Issued: 12-Oct-2022

AsureQuality Reference: 22-262508

Sample(s) Received: 29-Sep-2022 08:30

Testing Period: 30-Sep-2022 to 11-Oct-2022

Date of analysis is available on request.

Results

The tests were performed on the samples as received.

Customer Sample Name:	OHA_ADJ_GW109_5_280922	Lab ID:	22-262508-1
Sample Condition:	Acceptable	Sampled Date:	28-Sep-2022
Test	Result	Unit	Method Reference
Poly- and Perfluorinated Alkyl Substances (PFAS) in Potable Water			
Perfluoroalkylsulfonic acids			
PFPrS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFBS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PPeS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
di-PFHxS (1)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
mono-PFHxS (1)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
L-PFHxS (1)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Total PFHxS (3)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFHpS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
di-PFOS (5)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
mono-PFOS (5)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
L-PFOS (5)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Total PFOS (7)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Sum PFHxS+PFOS (1)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFNS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFDS	NR	µg/L	AsureQuality Method (LC-MS/MS)
PFECHS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Perfluoroalkylcarboxylic acids			
PFBA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PPeA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFHxA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFHpA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFOA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFNA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFDA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFUnDA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)

AsureQuality Ltd has used reasonable skill, care, and effort to provide an accurate analysis of the sample(s) which form(s) the subject of this report. However, the accuracy of this analysis is reliant on, and subject to, the sample(s) provided by you and your responsibility as to transportation of the sample(s). AsureQuality Ltd's standard terms of business apply to the analysis set out in this report.

Test	Result	Unit	Method Reference
PFDoDA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFTrDA	NR	µg/L	AsureQuality Method (LC-MS/MS)
PFTeDA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
P37DMOA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Perfluoroctanesulfonamides			
PFOSA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
NEtFOSA-M	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
NMeFOSA-M	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Perfluoroctanesulfonamidoacetic acids			
NEtFOSAA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
NMeFOSAA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Perfluoroctanesulfonamidoethanols			
NEtFOSE-M	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
NMeFOSE-M	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Telomere Sulfonic acids			
4:2 FTS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
6:2 FTS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
8:2 FTS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
10:2 FTS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Telomere Carboxylic acids			
FPrPA (3:3FTA)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
FPePA (5:3FTA)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
FHpPA (7:3FTA)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Miscellaneous			
F-53B (major)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
F-53B (minor)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Sum F-53B	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
ADONA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
HFPO-DA (GenX)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Internal Standards			
M3PFBS	111	%	AsureQuality Method (LC-MS/MS)
M3PFHxS	104	%	AsureQuality Method (LC-MS/MS)
M8PFOS	107	%	AsureQuality Method (LC-MS/MS)
M4PFBA	93	%	AsureQuality Method (LC-MS/MS)
M5PFPeA	103	%	AsureQuality Method (LC-MS/MS)
M5PFHxA	106	%	AsureQuality Method (LC-MS/MS)
MPFHpA	106	%	AsureQuality Method (LC-MS/MS)
M8PFOA	102	%	AsureQuality Method (LC-MS/MS)
M9PFNA	107	%	AsureQuality Method (LC-MS/MS)
M6PFDA	103	%	AsureQuality Method (LC-MS/MS)
M7PFUnDA	92	%	AsureQuality Method (LC-MS/MS)
MPFDoDA	54	%	AsureQuality Method (LC-MS/MS)
MPFTeDA	96	%	AsureQuality Method (LC-MS/MS)
MPFOSA	81	%	AsureQuality Method (LC-MS/MS)
DNEtFOSA	53	%	AsureQuality Method (LC-MS/MS)
DNMeFOSA	52	%	AsureQuality Method (LC-MS/MS)
DNEtFOSAA	75	%	AsureQuality Method (LC-MS/MS)
DNMeFOSAA	91	%	AsureQuality Method (LC-MS/MS)
DNEtFOSE	49	%	AsureQuality Method (LC-MS/MS)
DNMeFOSE	50	%	AsureQuality Method (LC-MS/MS)

Test	Result	Unit	Method Reference
M4:2FTS	132	%	AsureQuality Method (LC-MS/MS)
M6:2FTS	104	%	AsureQuality Method (LC-MS/MS)
M8:2FTS	111	%	AsureQuality Method (LC-MS/MS)
M3HFPO-DA	104	%	AsureQuality Method (LC-MS/MS)

QC Results

Blank

Relates to sample(s) 22-262508-1

Test	Result	Unit	Method Reference
Poly- and Perfluorinated Alkyl Substances (PFAS) in Potable Water			
Perfluoroalkylsulfonic acids			
PFPrS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFBS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PPeS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
di-PFHxS (1)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
mono-PFHxS (1)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
L-PFHxS (1)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Total PFHxS (3)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFHpS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
di-PFOS (5)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
mono-PFOS (5)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
L-PFOS (5)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Total PFOS (7)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Sum PFHxS+PFOS (1)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFNS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFDS	NR	µg/L	AsureQuality Method (LC-MS/MS)
PFECHS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Perfluoroalkylcarboxylic acids			
PFBA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PPeA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFHxA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFHpA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFOA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFNA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFDA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFUnDA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFDoDA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFTrDA	NR	µg/L	AsureQuality Method (LC-MS/MS)
PFTeDA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
P37DMOA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Perfluoroctanesulfonamides			
PFOSA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
NEtFOSA-M	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
NMeFOSA-M	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Perfluoroctanesulfonamidoacetic acids			
NEtFOSAA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
NMeFOSAA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)

Perfluoroctanesulfonamidoethanols			
NEtFOSE-M	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
NMeFOSE-M	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Telomere Sulfonic acids			
4:2 FTS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
6:2 FTS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
8:2 FTS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
10:2 FTS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Telomere Carboxylic acids			
FPrPA (3:3FTA)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
FPePA (5:3FTA)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
FHpPA (7:3FTA)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Miscellaneous			
F-53B (major)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
F-53B (minor)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Sum F-53B	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
ADONA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
HFPO-DA (GenX)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Internal Standards			
M3PFBS	105	%	AsureQuality Method (LC-MS/MS)
M3PFHxS	106	%	AsureQuality Method (LC-MS/MS)
M8PFOS	111	%	AsureQuality Method (LC-MS/MS)
M4PFBA	109	%	AsureQuality Method (LC-MS/MS)
M5PFPeA	107	%	AsureQuality Method (LC-MS/MS)
M5PFHxA	102	%	AsureQuality Method (LC-MS/MS)
MPFHpA	106	%	AsureQuality Method (LC-MS/MS)
M8PFOA	112	%	AsureQuality Method (LC-MS/MS)
M9PFNA	110	%	AsureQuality Method (LC-MS/MS)
M6PFDA	117	%	AsureQuality Method (LC-MS/MS)
M7PFUnDA	113	%	AsureQuality Method (LC-MS/MS)
MPFDoDA	86	%	AsureQuality Method (LC-MS/MS)
MPFTeDA	83	%	AsureQuality Method (LC-MS/MS)
MPFOSA	80	%	AsureQuality Method (LC-MS/MS)
DNEtFOSA	40	%	AsureQuality Method (LC-MS/MS)
DNMeFOSA	37	%	AsureQuality Method (LC-MS/MS)
DNEtFOSAA	104	%	AsureQuality Method (LC-MS/MS)
DNMeFOSAA	116	%	AsureQuality Method (LC-MS/MS)
DNEtFOSE	41	%	AsureQuality Method (LC-MS/MS)
DNMeFOSE	44	%	AsureQuality Method (LC-MS/MS)
M4:2FTS	100	%	AsureQuality Method (LC-MS/MS)
M6:2FTS	111	%	AsureQuality Method (LC-MS/MS)
M8:2FTS	120	%	AsureQuality Method (LC-MS/MS)
M3HFPO-DA	117	%	AsureQuality Method (LC-MS/MS)

Analysis Summary

Wellington Laboratory

Analysis	Method	Accreditation	Authorised by
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Poly- and Perfluorinated Alkyl Substances (PFAS) in Potable Water

DX-PFCS01, 03-SUITE_B AsureQuality Method (LC-MS/MS)

IANZ

Amelie Sellier

di-PFHxS (1) = Concentration determined using a branched di-PFHxS isomer standard (399>80 transition)

mono-PFHxS (1) = Concentration determined using a branched mono-PFHxS isomer standard (399>80 transition)

L-PFHxS (1) = Concentration determined using the linear PFHxS isomer standard (399>80 transition)

Total PFHxS (3) = The numerical sum of di-PFHxS (1), mono-PFHxS (1), and L-PFHxS (1)

di-PFOS (5) = Concentration determined using a branched di-PFOS isomer standard (499>80 transition)

mono-PFOS (5) = Concentration determined using a branched mono-PFOS isomer standard (499>80 transition)

L-PFOS (5) = Concentration determined using the linear PFOS isomer standard (499>230 transition)

Total PFOS (7) = The numerical sum of di-PFOS (5), mono-PFOS (5), and L-PFOS (5)

Sum PFHxS+PFOS (1) = The numerical sum of Total PFHxS (3) and Total PFOS (7)

Sum F-53B = The numerical sum of 9Cl-PF3ONS (F-53B major) and 11Cl-PF3OUdS (F-53B minor)

For all Totals, where a component is detected below the LOR, the value of zero is used in the calculation of the sum. The result represents the lower-bound concentration present in the sample.

Reported results are corrected for internal standard recovery

Results that are prefixed with '<' indicate the lowest level at which the analyte can be reported, and that in this case the analyte was not observed above this limit.

NR = Not Reportable

Amelie Sellier

Scientist

Accreditation



Appendix

Analyte LOR Summary

Poly- and Perfluorinated Alkyl Substances (PFAS) in Potable Water - AsureQuality Method (LC-MS/MS)

Analyte LOR

Perfluoroalkylsulfonic acids

PFPrS	0.0010 µg/L
PFBS	0.0010 µg/L
PPeS	0.0010 µg/L
di-PFHxS (1)	0.0010 µg/L
mono-PFHxS (1)	0.0010 µg/L
L-PFHxS (1)	0.0010 µg/L
Total PFHxS (3)	0.0010 µg/L
PFHpS	0.0010 µg/L
di-PFOS (5)	0.0010 µg/L
mono-PFOS (5)	0.0010 µg/L
L-PFOS (5)	0.0010 µg/L
Total PFOS (7)	0.0010 µg/L
Sum PFHxS+PFOS (1)	0.0010 µg/L
PFNS	0.0010 µg/L
PFDS	NR µg/L
PFECHS	0.0010 µg/L

Perfluoroalkylcarboxylic acids

PFBA	0.0010 µg/L
PPeA	0.0010 µg/L
PFHxA	0.0010 µg/L
PFHpA	0.0010 µg/L
PFOA	0.0010 µg/L
PFNA	0.0010 µg/L
PFDA	0.0010 µg/L
PFUnDA	0.0010 µg/L
PFDoDA	0.0010 µg/L
PFTrDA	NR µg/L
PFTeDA	0.0010 µg/L
P37DMOA	0.0010 µg/L

Perfluoroctanesulfonamides

PFOSA	0.0010 µg/L
NEtFOSA-M	0.0010 µg/L
NMeFOSA-M	0.0010 µg/L

Perfluoroctanesulfonamidoacetic acids

NEtFOSAA	0.0010 µg/L
NMeFOSAA	0.0010 µg/L

Perfluoroctanesulfonamidoethanols

NETFOSE-M	0.0010 µg/L
NMeFOSE-M	0.0010 µg/L

Telomere Sulfonic acids

4:2 FTS	0.0010 µg/L
6:2 FTS	0.0010 µg/L
8:2 FTS	0.0010 µg/L
10:2 FTS	0.0010 µg/L

Telomere Carboxylic acids

FPrPA (3:3FTA)	0.0010 µg/L
FPePA (5:3FTA)	0.0010 µg/L

FHpPA (7:3FTA)	0.0010 µg/L
Miscellaneous	
F-53B (major)	0.0010 µg/L
F-53B (minor)	0.0010 µg/L
Sum F-53B	0.0010 µg/L
ADONA	0.0010 µg/L
HFPO-DA (GenX)	0.0010 µg/L

Analyte Definitions

Poly- and Perfluorinated Alkyl Substances (PFAS) in Potable Water - AsureQuality Method (LC-MS/MS)

Analyte	Full Name
Perfluoroalkylsulfonic acids	
PPrS	Perfluoro-1-propanesulfonic acid
PFBS	Perfluoro-1-butanesulfonic acid
PPeS	Perfluoro-1-pentanesulfonic acid
di-PFHxS (1)	Total Perfluorodimethylbutane sulfonic acids
mono-PFHxS (1)	Total Perfluoromethylpentane sulfonic acids
L-PFHxS (1)	Linear Perfluorohexanesulfonic acid
PFHpS	Perfluoro-1-heptanesulfonic acid
di-PFOS (5)	Total Perfluorodimethylhexane sulfonic acids
mono-PFOS (5)	Total Perfluoromethylheptane sulfonic acids
L-PFOS (5)	Linear Perfluoroctanesulfonic acid
PFNS	Perfluoro-1-nonanesulfonic acid
PFDS	Perfluoro-1-decanesulfonic acid
PFECHS	Perfluoro-4-ethylcyclohexanesulfonic acid
Perfluoroalkylcarboxylic acids	
PFBA	Perfluoro-n-butanoic acid
PPeA	Perfluoro-n-pentanoic acid
PFHxA	Perfluoro-n-hexanoic acid
PFHpA	Perfluoro-n-heptanoic acid
PFOA	Perfluoro-n-octanoic acid
PFNA	Perfluoro-n-nonanoic acid
PFDA	Perfluoro-n-decanoic acid
PFUnDA	Perfluoro-n-undecanoic acid
PFDoDA	Perfluoro-n-dodecanoic acid
PFTrDA	Perfluoro-n-tridecanoic acid
PFTeDA	Perfluoro-n-tetradecanoic acid
P37DMOA	Perfluoro-3,7-dimethyloctanoic acid
Perfluoroctanesulfonamides	
PFOSA	Perfluoro-1-octanesulfonamide
NEtFOSA-M	N-ethylperfluoro-1-octanesulfonamide
NMeFOSA-M	N-methylperfluoro-1-octanesulfonamide
Perfluoroctanesulfonamidoacetic acids	
NETFOSAA	N-ethylperfluoro-1-octanesulfonamidoacetic acid
NMeFOSAA	N-methylperfluoro-1-octanesulfonamidoacetic acid
Perfluoroctanesulfonamidoethanols	
NETFOSE-M	2-(N-ethylperfluoro-1-octanesulfonamido)-ethanol
NMeFOSE-M	2-(N-methylperfluoro-1-octanesulfonamido)-ethanol
Telomere Sulfonic acids	
4:2 FTS	1H,1H,2H,2H-perfluoro-1-hexanesulfonic acid
6:2 FTS	1H,1H,2H,2H-perfluoro-1-octanesulfonic acid
8:2 FTS	1H,1H,2H,2H-perfluoro-1-decanesulfonic acid
10:2 FTS	1H,1H,2H,2H-perfluorododecanesulfonic acid
Telomere Carboxylic acids	
FPrPA (3:3FTA)	3-Perfluoropropyl propanoic acid

Analyte	Full Name
FPePA (5:3FTA)	3-Perfluoropentyl propanoic acid
FHpPA (7:3FTA)	3-Perfluoroheptyl propanoic acid
Miscellaneous	
F-53B (major)	9-chlorohexadecafluoro-3-oxanonane-1-sulfonic acid
F-53B (minor)	11-chloroeicosfluoro-3-oxaundecane-1-sulfonic acid
Sum F-53B	Sum of F-53B components (major + minor)
ADONA	Dodecafluoro-3H-4,8-dioxanonanoic acid
HFPO-DA (GenX)	Tetrafluoro-2-(heptafluoropropoxy)propanoic acid
Internal Standards	
M3PFBS	Perfluoro-1-[2,3,4-13C3]butanesulfonic acid
M3PFHxS	Perfluoro-1-[1,2,3-13C3]hexanesulfonic acid
M8PFOS	Perfluoro-1-[13C8]octanesulfonic acid
M4PFBA	Perfluoro-n-[1,2,3,4-13C4]butanoic acid
M5PFPeA	Perfluoro-n-[1,2,3,4,5-13C5]pentanoic acid
M5PFHxA	Perfluoro-n-[1,2,3,4,6-13C5]hexanoic acid
MPFHxA	Perfluoro-n-[1,2,3,4-13C4]heptanoic acid
M8PFOA	Perfluoro-n-[13C8]octanoic acid
M9PFNA	Perfluoro-n-[13C9]nonanoic acid
M6PFDA	Perfluoro-n-[1,2,3,4,5,6-13C6]decanoic acid
M7PFUnDA	Perfluoro-n-[1,2,3,4,5,6,7-13C7]undecanoic acid
MPFDoDA	Perfluoro-n-[1,2-13C2]dodecanoic acid
MPFTeDA	Perfluoro-n-[1,2-13C2]tetradecanoic acid
MPFOSA	Perfluoro-1-[13C8]octanesulfonamide
DNEtFOSA	N-ethyl-D5-perfluoro-1-octanesulfonamide
DNMeFOSA	N-methyl-D3-perfluoro-1-octanesulfonamide
DNEtFOSAA	N-ethyl-D5-perfluoro-1-octanesulfonamidoacetic acid
DNMeFOSAA	N-methyl-D3-perfluoro-1-octanesulfonamidoacetic acid
DNEtFOSE	2-(N-ethyl-D5-perfluoro-1-octanesulfonamido)ethan-D4-ol
DNMeFOSE	2-(N-methyl-D3-perfluoro-1-octanesulfonamido)ethan-D4-ol
M4:2FTS	1H,1H,2H,2H-perfluoro-1-[1,2-13C2]-hexane sulfonic acid
M6:2FTS	1H,1H,2H,2H-perfluoro-1-[1,2-13C2]-octane sulfonic acid
M8:2FTS	1H,1H,2H,2H-perfluoro-1-[1,2-13C2]-decane sulfonic acid
M3HFPO-DA	Tetrafluoro-2-(heptafluoropropoxy)-13C3-propanoic acid

LOR = Limit of Reporting

LOD = Limit of Detection

NR = Not Reportable

Certificate of Analysis

Submission Reference: A02744122
Amended Report

Bryn Taiapa
Pattle Delamore Partners Limited
P O Box 9528
Auckland 1149
New Zealand

PO Number: OHA_PFAS

Report Issued: 21-Oct-2022**AsureQuality Reference:** 22-262920**Sample(s) Received:** 29-Sep-2022 08:30**Testing Period:** 30-Sep-2022 to 14-Oct-2022

Date of analysis is available on request.

Comments

Amended Report: Customer Sample Name of -3, -4, -5, -6, and -7 amended.

Results

The tests were performed on the samples as received.

Customer Sample Name: OHA_BAI_GW111.2_5_270922 Lab ID: 22-262920-1			
Sample Condition: Acceptable	Sampled Date: 27-Sep-2022		
Test	Result	Unit	Method Reference
Poly- and Perfluorinated Alkyl Substances (PFAS) in Potable Water			
Perfluoroalkylsulfonic acids			
PFPrS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFBS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PPeS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
di-PFHxS (1)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
mono-PFHxS (1)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
L-PFHxS (1)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Total PFHxS (3)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFHpS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
di-PFOS (5)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
mono-PFOS (5)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
L-PFOS (5)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Total PFOS (7)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Sum PFHxS+PFOS (1)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFNS	NR	µg/L	AsureQuality Method (LC-MS/MS)
PFDS	NR	µg/L	AsureQuality Method (LC-MS/MS)
PFECHS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Perfluoroalkylcarboxylic acids			
PFBA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PPeA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFHxA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFHpA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFOA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)

AsureQuality Ltd has used reasonable skill, care, and effort to provide an accurate analysis of the sample(s) which form(s) the subject of this report. However, the accuracy of this analysis is reliant on, and subject to, the sample(s) provided by you and your responsibility as to transportation of the sample(s). AsureQuality Ltd's standard terms of business apply to the analysis set out in this report.

Test	Result	Unit	Method Reference
PFNA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFDA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFUnDA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFDaDA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFTrDA	NR	µg/L	AsureQuality Method (LC-MS/MS)
PFTeDA	NR	µg/L	AsureQuality Method (LC-MS/MS)
P37DMOA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Perfluoroctanesulfonamides			
PFOSA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
NEtFOSA-M	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
NMeFOSA-M	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Perfluoroctanesulfonamidoacetic acids			
NEtFOSAA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
NMeFOSAA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Perfluoroctanesulfonamidoethanols			
NEtFOSE-M	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
NMeFOSE-M	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Telomere Sulfonic acids			
4:2 FTS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
6:2 FTS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
8:2 FTS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
10:2 FTS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Telomere Carboxylic acids			
FPrPA (3:3FTA)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
FPePA (5:3FTA)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
FHpPA (7:3FTA)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Miscellaneous			
F-53B (major)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
F-53B (minor)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Sum F-53B	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
ADONA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
HFPO-DA (GenX)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Internal Standards			
M3PFBs	92	%	AsureQuality Method (LC-MS/MS)
M3PFHxS	87	%	AsureQuality Method (LC-MS/MS)
M8PFOS	85	%	AsureQuality Method (LC-MS/MS)
M4PFBA	86	%	AsureQuality Method (LC-MS/MS)
M5PFPeA	90	%	AsureQuality Method (LC-MS/MS)
M5PFHxA	96	%	AsureQuality Method (LC-MS/MS)
MPFHxA	86	%	AsureQuality Method (LC-MS/MS)
M8PFOA	97	%	AsureQuality Method (LC-MS/MS)
M9PFNA	93	%	AsureQuality Method (LC-MS/MS)
M6PFDA	88	%	AsureQuality Method (LC-MS/MS)
M7PFUnDA	81	%	AsureQuality Method (LC-MS/MS)
MPFDoDA	80	%	AsureQuality Method (LC-MS/MS)
MPFTeDA	574 (R)	%	AsureQuality Method (LC-MS/MS)
MPFOSA	70	%	AsureQuality Method (LC-MS/MS)
DNEtFOSA	40	%	AsureQuality Method (LC-MS/MS)
DNMeFOSA	50	%	AsureQuality Method (LC-MS/MS)
DNEtFOSAA	71	%	AsureQuality Method (LC-MS/MS)

Test	Result	Unit	Method Reference
DNMeFOSAA	77	%	AsureQuality Method (LC-MS/MS)
DNEtFOSE	51	%	AsureQuality Method (LC-MS/MS)
DNMeFOSE	51	%	AsureQuality Method (LC-MS/MS)
M4:2FTS	129	%	AsureQuality Method (LC-MS/MS)
M6:2FTS	115	%	AsureQuality Method (LC-MS/MS)
M8:2FTS	88	%	AsureQuality Method (LC-MS/MS)
M3HFPO-DA	121	%	AsureQuality Method (LC-MS/MS)

R = Recovery outside method limits

Customer Sample Name: OHA_BAI_GW111.3_4_270922

Lab ID: 22-262920-2

Sample Condition: Acceptable

Sampled Date: 27-Sep-2022

Test	Result	Unit	Method Reference
Poly- and Perfluorinated Alkyl Substances (PFAS) in Potable Water			
Perfluoroalkylsulfonic acids			
PPrS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFBS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PPeS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
di-PFHxS (1)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
mono-PFHxS (1)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
L-PFHxS (1)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Total PFHxS (3)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFhpS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
di-PFOS (5)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
mono-PFOS (5)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
L-PFOS (5)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Total PFOS (7)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Sum PFHxS+PFOS (1)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFNS	NR	µg/L	AsureQuality Method (LC-MS/MS)
PFDS	NR	µg/L	AsureQuality Method (LC-MS/MS)
PFECHS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Perfluoroalkylcarboxylic acids			
PFBA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PPeA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFHxA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFHpA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFOA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFNA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFDA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFUnDA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFDoDA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFTrDA	NR	µg/L	AsureQuality Method (LC-MS/MS)
PFTeDA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
P37DMOA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Perfluoroctanesulfonamides			
PFOSA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
NEtFOSA-M	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
NMeFOSA-M	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Perfluoroctanesulfonamidoacetic acids			
NEtFOSAA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
NMeFOSAA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)

Test	Result	Unit	Method Reference
Perfluoroctanesulfonamidoethanols			
NEtFOSE-M	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
NMeFOSE-M	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Telomere Sulfonic acids			
4:2 FTS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
6:2 FTS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
8:2 FTS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
10:2 FTS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Telomere Carboxylic acids			
FPrPA (3:3FTA)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
FPePA (5:3FTA)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
FHpPA (7:3FTA)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Miscellaneous			
F-53B (major)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
F-53B (minor)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Sum F-53B	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
ADONA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
HFPO-DA (GenX)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Internal Standards			
M3PFBS	126	%	AsureQuality Method (LC-MS/MS)
M3PFHxS	144	%	AsureQuality Method (LC-MS/MS)
M8PFOS	126	%	AsureQuality Method (LC-MS/MS)
M4PFBA	112	%	AsureQuality Method (LC-MS/MS)
M5PFPeA	119	%	AsureQuality Method (LC-MS/MS)
M5PFHxA	121	%	AsureQuality Method (LC-MS/MS)
MPFHpA	136	%	AsureQuality Method (LC-MS/MS)
M8PFOA	138	%	AsureQuality Method (LC-MS/MS)
M9PFNA	143	%	AsureQuality Method (LC-MS/MS)
M6PFDA	113	%	AsureQuality Method (LC-MS/MS)
M7PFUnDA	144	%	AsureQuality Method (LC-MS/MS)
MPFDoDA	113	%	AsureQuality Method (LC-MS/MS)
MPFTeDA	115	%	AsureQuality Method (LC-MS/MS)
MPFOSA	103	%	AsureQuality Method (LC-MS/MS)
DNetFOSA	84	%	AsureQuality Method (LC-MS/MS)
DNMeFOSA	83	%	AsureQuality Method (LC-MS/MS)
DNetFOSAA	115	%	AsureQuality Method (LC-MS/MS)
DNMeFOSAA	126	%	AsureQuality Method (LC-MS/MS)
DNetFOSE	85	%	AsureQuality Method (LC-MS/MS)
DNMeFOSE	74	%	AsureQuality Method (LC-MS/MS)
M4:2FTS	119	%	AsureQuality Method (LC-MS/MS)
M6:2FTS	132	%	AsureQuality Method (LC-MS/MS)
M8:2FTS	132	%	AsureQuality Method (LC-MS/MS)
M3HFPO-DA	123	%	AsureQuality Method (LC-MS/MS)

Customer Sample Name: OHA_BAI_GWKBQ_270922

Lab ID: 22-262920-3

Sample Condition: Acceptable

Sampled Date: 27-Sep-2022

Test	Result	Unit	Method Reference
Poly- and Perfluorinated Alkyl Substances (PFAS) in Potable Water			
Perfluoroalkylsulfonic acids			
PFPrS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)

Test	Result	Unit	Method Reference
PFBS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PPeS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
di-PFHxS (1)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
mono-PFHxS (1)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
L-PFHxS (1)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Total PFHxS (3)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFHpS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
di-PFOS (5)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
mono-PFOS (5)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
L-PFOS (5)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Total PFOS (7)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Sum PFHxS+PFOS (1)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFNS	NR	µg/L	AsureQuality Method (LC-MS/MS)
PFDS	NR	µg/L	AsureQuality Method (LC-MS/MS)
PFECHS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Perfluoroalkylcarboxylic acids			
PFBA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PPeA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFHxA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFHpA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFOA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFNA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFDA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFUnDA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFDoDA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PTrDA	NR	µg/L	AsureQuality Method (LC-MS/MS)
PFTeDA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
P37DMOA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Perfluoroctanesulfonamides			
PFOSA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
NEtFOSA-M	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
NMeFOSA-M	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Perfluoroctanesulfonamidoacetic acids			
NEtFOSAA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
NMeFOSAA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Perfluoroctanesulfonamidoethanols			
NEtFOSE-M	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
NMeFOSE-M	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Telomere Sulfonic acids			
4:2 FTS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
6:2 FTS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
8:2 FTS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
10:2 FTS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Telomere Carboxylic acids			
FPrPA (3:3FTA)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
FPePA (5:3FTA)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
FHpPA (7:3FTA)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Miscellaneous			
F-53B (major)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
F-53B (minor)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)

Test	Result	Unit	Method Reference
Sum F-53B	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
ADONA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
HFPO-DA (GenX)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Internal Standards			
M3PFBS	113	%	AsureQuality Method (LC-MS/MS)
M3PFHxS	131	%	AsureQuality Method (LC-MS/MS)
M8PFOS	104	%	AsureQuality Method (LC-MS/MS)
M4PFBA	105	%	AsureQuality Method (LC-MS/MS)
M5PFPeA	113	%	AsureQuality Method (LC-MS/MS)
M5PFHxA	108	%	AsureQuality Method (LC-MS/MS)
MPFHpA	121	%	AsureQuality Method (LC-MS/MS)
M8PFOA	118	%	AsureQuality Method (LC-MS/MS)
M9PFNA	122	%	AsureQuality Method (LC-MS/MS)
M6PFDA	95	%	AsureQuality Method (LC-MS/MS)
M7PFUnDA	121	%	AsureQuality Method (LC-MS/MS)
MPFDoDA	80	%	AsureQuality Method (LC-MS/MS)
MPFTeDA	146	%	AsureQuality Method (LC-MS/MS)
MPFOSA	95	%	AsureQuality Method (LC-MS/MS)
DNEtFOSA	51	%	AsureQuality Method (LC-MS/MS)
DNMeFOSA	66	%	AsureQuality Method (LC-MS/MS)
DNEtFOSAA	82	%	AsureQuality Method (LC-MS/MS)
DNMeFOSAA	101	%	AsureQuality Method (LC-MS/MS)
DNEtFOSE	72	%	AsureQuality Method (LC-MS/MS)
DNMeFOSE	66	%	AsureQuality Method (LC-MS/MS)
M4:2FTS	113	%	AsureQuality Method (LC-MS/MS)
M6:2FTS	127	%	AsureQuality Method (LC-MS/MS)
M8:2FTS	99	%	AsureQuality Method (LC-MS/MS)
M3HFPO-DA	112	%	AsureQuality Method (LC-MS/MS)

Customer Sample Name: OHA_BAI_GWKBP_270922

Lab ID: 22-262920-4

Sample Condition: Acceptable

Sampled Date: 27-Sep-2022

Test	Result	Unit	Method Reference
Poly- and Perfluorinated Alkyl Substances (PFAS) in Potable Water			
Perfluoroalkylsulfonic acids			
PFPrS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFBS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PPeS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
di-PFHxS (1)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
mono-PFHxS (1)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
L-PFHxS (1)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Total PFHxS (3)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFHpS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
di-PFOS (5)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
mono-PFOS (5)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
L-PFOS (5)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Total PFOS (7)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Sum PFHxS+PFOS (1)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFNS	NR	µg/L	AsureQuality Method (LC-MS/MS)
PFDS	NR	µg/L	AsureQuality Method (LC-MS/MS)
PFECHS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)

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Test	Result	Unit	Method Reference
Perfluoroalkylcarboxylic acids			
PFBA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PPeA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFHxA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFHpA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFOA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFNA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFDA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFUnDA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFDoDA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFTrDA	NR	µg/L	AsureQuality Method (LC-MS/MS)
PFTeDA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
P37DMOA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Perfluoroctanesulfonamides			
PFOSA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
NEtFOSA-M	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
NMeFOSA-M	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Perfluoroctanesulfonamidoacetic acids			
NEtFOSAA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
NMeFOSAA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Perfluoroctanesulfonamidoethanols			
NEtFOSE-M	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
NMeFOSE-M	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Telomere Sulfonic acids			
4:2 FTS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
6:2 FTS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
8:2 FTS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
10:2 FTS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Telomere Carboxylic acids			
FPrPA (3:3FTA)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
FPePA (5:3FTA)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
FHpPA (7:3FTA)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Miscellaneous			
F-53B (major)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
F-53B (minor)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Sum F-53B	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
ADONA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
HFPO-DA (GenX)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Internal Standards			
M3PFBS	108	%	AsureQuality Method (LC-MS/MS)
M3PFHxS	123	%	AsureQuality Method (LC-MS/MS)
M8PFOS	117	%	AsureQuality Method (LC-MS/MS)
M4PFBA	102	%	AsureQuality Method (LC-MS/MS)
M5PPeA	111	%	AsureQuality Method (LC-MS/MS)
M5PFHxA	98	%	AsureQuality Method (LC-MS/MS)
MPFHxA	122	%	AsureQuality Method (LC-MS/MS)
M8PFOA	122	%	AsureQuality Method (LC-MS/MS)
M9PFNA	127	%	AsureQuality Method (LC-MS/MS)
M6PFDA	118	%	AsureQuality Method (LC-MS/MS)
M7PFUnDA	132	%	AsureQuality Method (LC-MS/MS)

Test	Result	Unit	Method Reference
MPFDoDA	129	%	AsureQuality Method (LC-MS/MS)
MPFTeDA	83	%	AsureQuality Method (LC-MS/MS)
MPFOSA	121	%	AsureQuality Method (LC-MS/MS)
DNEtFOSA	103	%	AsureQuality Method (LC-MS/MS)
DNMeFOSA	102	%	AsureQuality Method (LC-MS/MS)
DNEtFOSAA	142	%	AsureQuality Method (LC-MS/MS)
DNMeFOSAA	148	%	AsureQuality Method (LC-MS/MS)
DNEtFOSE	121	%	AsureQuality Method (LC-MS/MS)
DNMeFOSE	106	%	AsureQuality Method (LC-MS/MS)
M4:2FTS	94	%	AsureQuality Method (LC-MS/MS)
M6:2FTS	114	%	AsureQuality Method (LC-MS/MS)
M8:2FTS	101	%	AsureQuality Method (LC-MS/MS)
M3HFPO-DA	103	%	AsureQuality Method (LC-MS/MS)

Customer Sample Name: OHA_BAI_GWKBR_270922

Lab ID: 22-262920-5

Sample Condition: Acceptable

Sampled Date: 27-Sep-2022

Test	Result	Unit	Method Reference
Poly- and Perfluorinated Alkyl Substances (PFAS) in Potable Water			
Perfluoroalkylsulfonic acids			
PFPrS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFBS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PPeS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
di-PFHxS (1)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
mono-PFHxS (1)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
L-PFHxS (1)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Total PFHxS (3)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFHpS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
di-PFOS (5)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
mono-PFOS (5)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
L-PFOS (5)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Total PFOS (7)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Sum PFHxS+PFOS (1)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFNS	NR	µg/L	AsureQuality Method (LC-MS/MS)
PFDS	NR	µg/L	AsureQuality Method (LC-MS/MS)
PFECHS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Perfluoroalkylcarboxylic acids			
PFBA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PPeA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFHxA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFHpA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFOA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFNA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFDA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFUnDA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFDoDA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFTrDA	NR	µg/L	AsureQuality Method (LC-MS/MS)
PFTeDA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
P37DMOA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Perfluoroctanesulfonamides			
PFOSA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)

Test	Result	Unit	Method Reference
NEtFOSA-M	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
NMeFOSA-M	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Perfluoroctanesulfonamidoacetic acids			
NEtFOSAA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
NMeFOSAA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Perfluoroctanesulfonamidoethanols			
NEtFOSE-M	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
NMeFOSE-M	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Telomere Sulfonic acids			
4:2 FTS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
6:2 FTS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
8:2 FTS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
10:2 FTS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Telomere Carboxylic acids			
FPrPA (3:3FTA)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
FPePA (5:3FTA)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
FHpPA (7:3FTA)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Miscellaneous			
F-53B (major)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
F-53B (minor)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Sum F-53B	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
ADONA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
HFPO-DA (GenX)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Internal Standards			
M3PFBS	100	%	AsureQuality Method (LC-MS/MS)
M3PFHxS	118	%	AsureQuality Method (LC-MS/MS)
M8PFOS	121	%	AsureQuality Method (LC-MS/MS)
M4PFBA	103	%	AsureQuality Method (LC-MS/MS)
M5PFPeA	109	%	AsureQuality Method (LC-MS/MS)
M5PFHxA	96	%	AsureQuality Method (LC-MS/MS)
MPFHpA	112	%	AsureQuality Method (LC-MS/MS)
M8PFOA	115	%	AsureQuality Method (LC-MS/MS)
M9PFNA	115	%	AsureQuality Method (LC-MS/MS)
M6PFDA	125	%	AsureQuality Method (LC-MS/MS)
M7PFUnDA	131	%	AsureQuality Method (LC-MS/MS)
MPFDoDA	158 (R)	%	AsureQuality Method (LC-MS/MS)
MPFTeDA	152 (R)	%	AsureQuality Method (LC-MS/MS)
MPFOSA	114	%	AsureQuality Method (LC-MS/MS)
DNEtFOSA	103	%	AsureQuality Method (LC-MS/MS)
DNMeFOSA	102	%	AsureQuality Method (LC-MS/MS)
DNEtFOSAA	148	%	AsureQuality Method (LC-MS/MS)
DNMeFOSAA	148	%	AsureQuality Method (LC-MS/MS)
DNEtFOSE	109	%	AsureQuality Method (LC-MS/MS)
DNMeFOSE	100	%	AsureQuality Method (LC-MS/MS)
M4:2FTS	91	%	AsureQuality Method (LC-MS/MS)
M6:2FTS	120	%	AsureQuality Method (LC-MS/MS)
M8:2FTS	96	%	AsureQuality Method (LC-MS/MS)
M3HFPO-DA	106	%	AsureQuality Method (LC-MS/MS)

R = Recovery outside method limits

Customer Sample Name: OHA_BAI_GW111.1_4_280922

Lab ID: 22-262920-6

Sample Condition: Acceptable

Sampled Date: 28-Sep-2022

Test	Result	Unit	Method Reference
Poly- and Perfluorinated Alkyl Substances (PFAS) in Potable Water			
Perfluoroalkylsulfonic acids			
PFPrS	0.0031	µg/L	AsureQuality Method (LC-MS/MS)
PFBS	0.011	µg/L	AsureQuality Method (LC-MS/MS)
PPeS	0.014	µg/L	AsureQuality Method (LC-MS/MS)
di-PFHxS (1)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
mono-PFHxS (1)	0.030	µg/L	AsureQuality Method (LC-MS/MS)
L-PFHxS (1)	0.14	µg/L	AsureQuality Method (LC-MS/MS)
Total PFHxS (3)	0.17	µg/L	AsureQuality Method (LC-MS/MS)
PFHpS	0.0045	µg/L	AsureQuality Method (LC-MS/MS)
di-PFOS (5)	0.0061	µg/L	AsureQuality Method (LC-MS/MS)
mono-PFOS (5)	0.087	µg/L	AsureQuality Method (LC-MS/MS)
L-PFOS (5)	0.14	µg/L	AsureQuality Method (LC-MS/MS)
Total PFOS (7)	0.23	µg/L	AsureQuality Method (LC-MS/MS)
Sum PFHxS+PFOS (1)	0.40	µg/L	AsureQuality Method (LC-MS/MS)
PFNS	NR	µg/L	AsureQuality Method (LC-MS/MS)
PFDS	NR	µg/L	AsureQuality Method (LC-MS/MS)
PFECHS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Perfluoroalkylcarboxylic acids			
PFBA	0.11	µg/L	AsureQuality Method (LC-MS/MS)
PPeA	0.53	µg/L	AsureQuality Method (LC-MS/MS)
PFHxA	0.33	µg/L	AsureQuality Method (LC-MS/MS)
PFHpA	0.16	µg/L	AsureQuality Method (LC-MS/MS)
PFOA	0.084	µg/L	AsureQuality Method (LC-MS/MS)
PFNA	0.044	µg/L	AsureQuality Method (LC-MS/MS)
PFDA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFUnDA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFDoDA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFTrDA	NR	µg/L	AsureQuality Method (LC-MS/MS)
PFTeDA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
P37DMOA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Perfluoroctanesulfonamides			
PFOSA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
NEtFOSA-M	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
NMeFOSA-M	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Perfluoroctanesulfonamidoacetic acids			
NEtFOSAA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
NMeFOSAA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Perfluoroctanesulfonamidoethanols			
NEtFOSE-M	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
NMeFOSE-M	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Telomere Sulfonic acids			
4:2 FTS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
6:2 FTS	0.25	µg/L	AsureQuality Method (LC-MS/MS)
8:2 FTS	0.0032	µg/L	AsureQuality Method (LC-MS/MS)
10:2 FTS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Telomere Carboxylic acids			
FPrPA (3:3FTA)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)

Test	Result	Unit	Method Reference
FPePA (5:3FTA)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
FHpPA (7:3FTA)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Miscellaneous			
F-53B (major)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
F-53B (minor)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Sum F-53B	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
ADONA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
HFPO-DA (GenX)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Internal Standards			
M3PFBS	118	%	AsureQuality Method (LC-MS/MS)
M3PFHxS	149	%	AsureQuality Method (LC-MS/MS)
M8PFOS	102	%	AsureQuality Method (LC-MS/MS)
M4PFBA	98	%	AsureQuality Method (LC-MS/MS)
M5PFPeA	110	%	AsureQuality Method (LC-MS/MS)
M5PFHxA	103	%	AsureQuality Method (LC-MS/MS)
MPFHxA	126	%	AsureQuality Method (LC-MS/MS)
M8PFOA	126	%	AsureQuality Method (LC-MS/MS)
M9PFNA	114	%	AsureQuality Method (LC-MS/MS)
M6PFDA	83	%	AsureQuality Method (LC-MS/MS)
M7PFUnDA	89	%	AsureQuality Method (LC-MS/MS)
MPFDoDA	53	%	AsureQuality Method (LC-MS/MS)
MPFTeDA	46	%	AsureQuality Method (LC-MS/MS)
MPFOSA	71	%	AsureQuality Method (LC-MS/MS)
DNEtFOSA	41	%	AsureQuality Method (LC-MS/MS)
DNMeFOSA	36	%	AsureQuality Method (LC-MS/MS)
DNEtFOSAA	61	%	AsureQuality Method (LC-MS/MS)
DNMeFOSAA	70	%	AsureQuality Method (LC-MS/MS)
DNEtFOSE	56	%	AsureQuality Method (LC-MS/MS)
DNMeFOSE	46	%	AsureQuality Method (LC-MS/MS)
M4:2FTS	104	%	AsureQuality Method (LC-MS/MS)
M6:2FTS	126	%	AsureQuality Method (LC-MS/MS)
M8:2FTS	48	%	AsureQuality Method (LC-MS/MS)
M3HFPO-DA	95	%	AsureQuality Method (LC-MS/MS)

Customer Sample Name: OHA_BAI_GWKBS_270922

Lab ID: 22-262920-7

Sample Condition: Acceptable

Sampled Date: 27-Sep-2022

Test	Result	Unit	Method Reference
Poly- and Perfluorinated Alkyl Substances (PFAS) in Potable Water			
Perfluoroalkylsulfonic acids			
PFPrS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFBs	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PPPeS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
di-PFHxS (1)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
mono-PFHxS (1)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
L-PFHxS (1)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Total PFHxS (3)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFHpS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
di-PFOS (5)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
mono-PFOS (5)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
L-PFOS (5)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)

Test	Result	Unit	Method Reference
Total PFOS (7)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Sum PFHxS+PFOS (1)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFNS	NR	µg/L	AsureQuality Method (LC-MS/MS)
PFDS	NR	µg/L	AsureQuality Method (LC-MS/MS)
PFECHS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Perfluoroalkylcarboxylic acids			
PFBA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PPeA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFHxA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFHpA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFOA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFNA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFDA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFUnDA	NR	µg/L	AsureQuality Method (LC-MS/MS)
PFDoDA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFTrDA	NR	µg/L	AsureQuality Method (LC-MS/MS)
PFTeDA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
P37DMOA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Perfluoroctanesulfonamides			
PFOSA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
NEtFOSA-M	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
NMeFOSA-M	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Perfluoroctanesulfonamidoacetic acids			
NEtFOSAA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
NMeFOSAA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Perfluoroctanesulfonamidoethanols			
NEtFOSE-M	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
NMeFOSE-M	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Telomere Sulfonic acids			
4:2 FTS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
6:2 FTS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
8:2 FTS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
10:2 FTS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Telomere Carboxylic acids			
FPrPA (3:3FTA)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
FPePA (5:3FTA)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
FHpPA (7:3FTA)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Miscellaneous			
F-53B (major)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
F-53B (minor)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Sum F-53B	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
ADONA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
HFPO-DA (GenX)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Internal Standards			
M3PFBS	89	%	AsureQuality Method (LC-MS/MS)
M3PFHxS	112	%	AsureQuality Method (LC-MS/MS)
M8PFOS	98	%	AsureQuality Method (LC-MS/MS)
M4PFBA	88	%	AsureQuality Method (LC-MS/MS)
M5PPeA	96	%	AsureQuality Method (LC-MS/MS)
M5PFHxA	92	%	AsureQuality Method (LC-MS/MS)

Test	Result	Unit	Method Reference
MPFH ₆ A	101	%	AsureQuality Method (LC-MS/MS)
M8PFOA	127	%	AsureQuality Method (LC-MS/MS)
M9PFNA	101	%	AsureQuality Method (LC-MS/MS)
M6PFDA	122	%	AsureQuality Method (LC-MS/MS)
M7PFUnDA	201 (R)	%	AsureQuality Method (LC-MS/MS)
MPFDoDA	122	%	AsureQuality Method (LC-MS/MS)
MPFTeDA	163 (R)	%	AsureQuality Method (LC-MS/MS)
MPFOSA	92	%	AsureQuality Method (LC-MS/MS)
DNEtFOSA	97	%	AsureQuality Method (LC-MS/MS)
DNMeFOSA	86	%	AsureQuality Method (LC-MS/MS)
DNEtFOSAA	124	%	AsureQuality Method (LC-MS/MS)
DNMeFOSAA	125	%	AsureQuality Method (LC-MS/MS)
DNEtFOSE	92	%	AsureQuality Method (LC-MS/MS)
DNMeFOSE	82	%	AsureQuality Method (LC-MS/MS)
M4:2FTS	82	%	AsureQuality Method (LC-MS/MS)
M6:2FTS	111	%	AsureQuality Method (LC-MS/MS)
M8:2FTS	82	%	AsureQuality Method (LC-MS/MS)
M3HFPO-DA	103	%	AsureQuality Method (LC-MS/MS)

R = Recovery outside method limits

Customer Sample Name: Dupl.of 22.262920-1A

Lab ID: 22-262920-8

Sample Description: 20150497_Duplicate

Sample Condition: Acceptable

Sampled Date: 27-Sep-2022

Test	Result	Unit	Method Reference
Poly- and Perfluorinated Alkyl Substances (PFAS) in Potable Water			
Perfluoroalkylsulfonic acids			
PFPrS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFBS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFPeS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
di-PFH _x S (1)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
mono-PFH _x S (1)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
L-PFH _x S (1)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Total PFH _x S (3)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFHpS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
di-PFOS (5)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
mono-PFOS (5)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
L-PFOS (5)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Total PFOS (7)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Sum PFH _x S+PFOS (1)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFNS	NR	µg/L	AsureQuality Method (LC-MS/MS)
PFDS	NR	µg/L	AsureQuality Method (LC-MS/MS)
PFECHS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Perfluoroalkylcarboxylic acids			
PFBA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFPeA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFHxA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFHpA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFOA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFNA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFDA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)

Test	Result	Unit	Method Reference
PFUnDA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFDoDA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFTrDA	NR	µg/L	AsureQuality Method (LC-MS/MS)
PFTeDA	NR	µg/L	AsureQuality Method (LC-MS/MS)
P37DMOA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Perfluoroctanesulfonamides			
PFOSA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
NEtFOSA-M	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
NMeFOSA-M	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Perfluoroctanesulfonamidoacetic acids			
NEtFOSAA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
NMeFOSAA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Perfluoroctanesulfonamidoethanols			
NEtFOSE-M	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
NMeFOSE-M	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Telomere Sulfonic acids			
4:2 FTS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
6:2 FTS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
8:2 FTS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
10:2 FTS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Telomere Carboxylic acids			
FPrPA (3:3FTA)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
FPePA (5:3FTA)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
FHpPA (7:3FTA)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Miscellaneous			
F-53B (major)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
F-53B (minor)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Sum F-53B	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
ADONA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
HFPO-DA (GenX)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Internal Standards			
M3PFBS	96	%	AsureQuality Method (LC-MS/MS)
M3PFHxS	94	%	AsureQuality Method (LC-MS/MS)
M8PFOS	97	%	AsureQuality Method (LC-MS/MS)
M4PFBA	82	%	AsureQuality Method (LC-MS/MS)
M5PPFPeA	85	%	AsureQuality Method (LC-MS/MS)
M5PFHxA	93	%	AsureQuality Method (LC-MS/MS)
MPFHxA	91	%	AsureQuality Method (LC-MS/MS)
M8PFOA	91	%	AsureQuality Method (LC-MS/MS)
M9PFNA	91	%	AsureQuality Method (LC-MS/MS)
M6PFDA	85	%	AsureQuality Method (LC-MS/MS)
M7PFUnDA	101	%	AsureQuality Method (LC-MS/MS)
MPFDoDA	79	%	AsureQuality Method (LC-MS/MS)
MPFTeDA	401 (R)	%	AsureQuality Method (LC-MS/MS)
MPFOSA	70	%	AsureQuality Method (LC-MS/MS)
DNEtFOSA	29 (R)	%	AsureQuality Method (LC-MS/MS)
DNMeFOSA	37	%	AsureQuality Method (LC-MS/MS)
DNEtFOSAA	68	%	AsureQuality Method (LC-MS/MS)
DNMeFOSAA	79	%	AsureQuality Method (LC-MS/MS)
DNEtFOSE	47	%	AsureQuality Method (LC-MS/MS)

Test	Result	Unit	Method Reference
DNMeFOSE	51	%	AsureQuality Method (LC-MS/MS)
M4:2FTS	138	%	AsureQuality Method (LC-MS/MS)
M6:2FTS	107	%	AsureQuality Method (LC-MS/MS)
M8:2FTS	97	%	AsureQuality Method (LC-MS/MS)
M3HFPO-DA	114	%	AsureQuality Method (LC-MS/MS)

R = Recovery outside method limits

QC Results

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Relates to sample(s) 22-262920-1, 22-262920-8

Test	Result	Unit	Method Reference
Poly- and Perfluorinated Alkyl Substances (PFAS) in Potable Water			
Perfluoroalkylsulfonic acids			
PFPrS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFBS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PPeS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
di-PFHxS (1)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
mono-PFHxS (1)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
L-PFHxS (1)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Total PFHxS (3)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFHpS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
di-PFOS (5)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
mono-PFOS (5)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
L-PFOS (5)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Total PFOS (7)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Sum PFHxS+PFOS (1)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFNS	NR	µg/L	AsureQuality Method (LC-MS/MS)
PFDS	NR	µg/L	AsureQuality Method (LC-MS/MS)
PFECHS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Perfluoroalkylcarboxylic acids			
PFBA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PPeA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFHxA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFHpA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFOA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFNA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFDA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFUnDA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFDoDA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFTrDA	NR	µg/L	AsureQuality Method (LC-MS/MS)
PFTeDA	NR	µg/L	AsureQuality Method (LC-MS/MS)
P37DMOA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Perfluoroctanesulfonamides			
PFOSA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
NEtFOSA-M	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
NMeFOSA-M	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)

Perfluoroctanesulfonamidoacetic acids			
NEtFOSAA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
NMeFOSAA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Perfluoroctanesulfonamidoethanols			
NEtFOSE-M	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
NMeFOSE-M	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Telomere Sulfonic acids			
4:2 FTS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
6:2 FTS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
8:2 FTS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
10:2 FTS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Telomere Carboxylic acids			
FPrPA (3:3FTA)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
FPePA (5:3FTA)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
FHpPA (7:3FTA)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Miscellaneous			
F-53B (major)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
F-53B (minor)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Sum F-53B	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
ADONA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
HFPO-DA (GenX)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Internal Standards			
M3PFBS	100	%	AsureQuality Method (LC-MS/MS)
M3PFHxS	96	%	AsureQuality Method (LC-MS/MS)
M8PFOS	116	%	AsureQuality Method (LC-MS/MS)
M4PFBA	106	%	AsureQuality Method (LC-MS/MS)
M5PFPeA	102	%	AsureQuality Method (LC-MS/MS)
M5PFHxA	103	%	AsureQuality Method (LC-MS/MS)
MPFHxA	97	%	AsureQuality Method (LC-MS/MS)
M8PFOA	107	%	AsureQuality Method (LC-MS/MS)
M9PFNA	101	%	AsureQuality Method (LC-MS/MS)
M6PFDA	102	%	AsureQuality Method (LC-MS/MS)
M7PFUnDA	106	%	AsureQuality Method (LC-MS/MS)
MPFDaDA	145	%	AsureQuality Method (LC-MS/MS)
MPFTeDA	61	%	AsureQuality Method (LC-MS/MS)
MPFOSA	105	%	AsureQuality Method (LC-MS/MS)
DNEtFOSA	129	%	AsureQuality Method (LC-MS/MS)
DNMeFOSA	132	%	AsureQuality Method (LC-MS/MS)
DNEtFOSAA	114	%	AsureQuality Method (LC-MS/MS)
DNMeFOSAA	111	%	AsureQuality Method (LC-MS/MS)
DNEtFOSE	108	%	AsureQuality Method (LC-MS/MS)
DNMeFOSE	101	%	AsureQuality Method (LC-MS/MS)
M4:2FTS	102	%	AsureQuality Method (LC-MS/MS)
M6:2FTS	99	%	AsureQuality Method (LC-MS/MS)
M8:2FTS	99	%	AsureQuality Method (LC-MS/MS)
M3HFPO-DA	131	%	AsureQuality Method (LC-MS/MS)

Blank

Relates to sample(s) 22-262920-2, 22-262920-3, 22-262920-4, 22-262920-5, 22-262920-6, 22-262920-7

Test	Result	Unit	Method Reference
Poly- and Perfluorinated Alkyl Substances (PFAS) in Potable Water			
Perfluoroalkylsulfonic acids			
PFPrS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFBS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFPeS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
di-PFHxS (1)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
mono-PFHxS (1)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
L-PFHxS (1)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Total PFHxS (3)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFHpS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
di-PFOS (5)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
mono-PFOS (5)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
L-PFOS (5)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Total PFOS (7)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Sum PFHxS+PFOS (1)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFNS	NR	µg/L	AsureQuality Method (LC-MS/MS)
PFDS	NR	µg/L	AsureQuality Method (LC-MS/MS)
PFECHS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Perfluoroalkylcarboxylic acids			
PFBA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFPeA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFHxA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFHpA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFOA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFNA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFDA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFUnDA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFDoDA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFTrDA	NR	µg/L	AsureQuality Method (LC-MS/MS)
PFTeDA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
P37DMOA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Perfluoroctanesulfonamides			
PFOSA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
NEtFOSA-M	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
NMeFOSA-M	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Perfluoroctanesulfonamidoacetic acids			
NEtFOSAA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
NMeFOSAA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Perfluoroctanesulfonamidoethanols			
NEtFOSE-M	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
NMeFOSE-M	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Telomere Sulfonic acids			
4:2 FTS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
6:2 FTS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
8:2 FTS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)

Test	Result	Unit	Method Reference
10:2 FTS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Telomere Carboxylic acids			
FPrPA (3:3FTA)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
FPePA (5:3FTA)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
FHpPA (7:3FTA)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Miscellaneous			
F-53B (major)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
F-53B (minor)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Sum F-53B	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
ADONA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
HFPO-DA (GenX)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Internal Standards			
M3PFBS	112	%	AsureQuality Method (LC-MS/MS)
M3PFHxS	125	%	AsureQuality Method (LC-MS/MS)
M8PFOS	119	%	AsureQuality Method (LC-MS/MS)
M4PFBA	111	%	AsureQuality Method (LC-MS/MS)
M5PFPeA	115	%	AsureQuality Method (LC-MS/MS)
M5PFHxA	115	%	AsureQuality Method (LC-MS/MS)
MPFHpA	116	%	AsureQuality Method (LC-MS/MS)
M8PFOA	119	%	AsureQuality Method (LC-MS/MS)
M9PFNA	132	%	AsureQuality Method (LC-MS/MS)
M6PFDA	110	%	AsureQuality Method (LC-MS/MS)
M7PFUnDA	148	%	AsureQuality Method (LC-MS/MS)
MPFDoDA	107	%	AsureQuality Method (LC-MS/MS)
MPFTeDA	99	%	AsureQuality Method (LC-MS/MS)
MPFOSA	98	%	AsureQuality Method (LC-MS/MS)
DNEtFOSA	85	%	AsureQuality Method (LC-MS/MS)
DNMeFOSA	73	%	AsureQuality Method (LC-MS/MS)
DNEtFOSAA	103	%	AsureQuality Method (LC-MS/MS)
DNMeFOSAA	105	%	AsureQuality Method (LC-MS/MS)
DNEtFOSE	84	%	AsureQuality Method (LC-MS/MS)
DNMeFOSE	67	%	AsureQuality Method (LC-MS/MS)
M4:2FTS	113	%	AsureQuality Method (LC-MS/MS)
M6:2FTS	124	%	AsureQuality Method (LC-MS/MS)
M8:2FTS	129	%	AsureQuality Method (LC-MS/MS)
M3HFPO-DA	111	%	AsureQuality Method (LC-MS/MS)

Analysis Summary

Wellington Laboratory

Analysis	Method	Accreditation	Authorised by
Poly- and Perfluorinated Alkyl Substances (PFAS) in Potable Water			
DX-PFCS01, 03-SUITE_B	AsureQuality Method (LC-MS/MS)	IANZ	Amelie Sellier

di-PFHxS (1) = Concentration determined using a branched di-PFHxS isomer standard (399>80 transition)
mono-PFHxS (1) = Concentration determined using a branched mono-PFHxS isomer standard (399>80 transition)
L-PFHxS (1) = Concentration determined using the linear PFHxS isomer standard (399>80 transition)
Total PFHxS (3) = The numerical sum of di-PFHxS (1), mono-PFHxS (1), and L-PFHxS (1)
di-PFOS (5) = Concentration determined using a branched di-PFOS isomer standard (499>80 transition)
mono-PFOS (5) = Concentration determined using a branched mono-PFOS isomer standard (499>80 transition)
L-PFOS (5) = Concentration determined using the linear PFOS isomer standard (499>230 transition)
Total PFOS (7) = The numerical sum of di-PFOS (5), mono-PFOS (5), and L-PFOS (5)
Sum PFHxS+PFOS (1) = The numerical sum of Total PFHxS (3) and Total PFOS (7)
Sum F-53B = The numerical sum of 9Cl-PF3ONS (F-53B major) and 11Cl-PF3OUDS (F-53B minor)
For all Totals, where a component is detected below the LOR, the value of zero is used in the calculation of the sum. The result represents the lower-bound concentration present in the sample.
Reported results are corrected for internal standard recovery

Results that are prefixed with '<' indicate the lowest level at which the analyte can be reported, and that in this case the analyte was not observed above this limit.

NR = Not Reportable



Amelie Sellier

Scientist

Accreditation



Appendix

Analyte LOR Summary

Poly- and Perfluorinated Alkyl Substances (PFAS) in Potable Water - AsureQuality Method (LC-MS/MS)

Analyte	LOR
Perfluoroalkylsulfonic acids	
PFPrS	0.0010 µg/L
PFBS	0.0010 µg/L
PPeS	0.0010 µg/L
di-PFHxS (1)	0.0010 µg/L
mono-PFHxS (1)	0.0010 µg/L
L-PFHxS (1)	0.0010 µg/L
Total PFHxS (3)	0.0010 µg/L
PFHpS	0.0010 µg/L
di-PFOS (5)	0.0010 µg/L
mono-PFOS (5)	0.0010 µg/L
L-PFOS (5)	0.0010 µg/L
Total PFOS (7)	0.0010 µg/L
Sum PFHxS+PFOS (1)	0.0010 µg/L
PFNS	NR µg/L
PFDS	NR µg/L
PFECHS	0.0010 µg/L
Perfluoroalkylcarboxylic acids	
PFBA	0.0010 µg/L
PPPeA	0.0010 µg/L
PFHxA	0.0010 µg/L
PFHpA	0.0010 µg/L
PFOA	0.0010 µg/L
PFNA	0.0010 µg/L
PFDA	0.0010 µg/L
PFUnDA	0.0010 µg/L
PFDoDA	0.0010 µg/L
PFTrDA	NR µg/L
PFTeDA	NR µg/L
P37DMOA	0.0010 µg/L
Perfluoroctanesulfonamides	
PFOSA	0.0010 µg/L
NEtFOSA-M	0.0010 µg/L
NMeFOSA-M	0.0010 µg/L
Perfluoroctanesulfonamidoacetic acids	
NEtFOSAA	0.0010 µg/L
NMeFOSAA	0.0010 µg/L
Perfluoroctanesulfonamidoethanols	
NEtFOSE-M	0.0010 µg/L
NMeFOSE-M	0.0010 µg/L
Telomere Sulfonic acids	
4:2 FTS	0.0010 µg/L
6:2 FTS	0.0010 µg/L
8:2 FTS	0.0010 µg/L
10:2 FTS	0.0010 µg/L
Telomere Carboxylic acids	
FPrPA (3:3FTA)	0.0010 µg/L
FPePA (5:3FTA)	0.0010 µg/L

FHpPA (7:3FTA)	0.0010 µg/L
Miscellaneous	
F-53B (major)	0.0010 µg/L
F-53B (minor)	0.0010 µg/L
Sum F-53B	0.0010 µg/L
ADONA	0.0010 µg/L
HFPO-DA (GenX)	0.0010 µg/L

Analyte Definitions

Poly- and Perfluorinated Alkyl Substances (PFAS) in Potable Water - AsureQuality Method (LC-MS/MS)

Analyte	Full Name
Perfluoroalkylsulfonic acids	
PPrS	Perfluoro-1-propanesulfonic acid
PFBS	Perfluoro-1-butanesulfonic acid
PPeS	Perfluoro-1-pentanesulfonic acid
di-PFHxS (1)	Total Perfluorodimethylbutane sulfonic acids
mono-PFHxS (1)	Total Perfluoromethylpentane sulfonic acids
L-PFHxS (1)	Linear Perfluorohexanesulfonic acid
PFHpS	Perfluoro-1-heptanesulfonic acid
di-PFOS (5)	Total Perfluorodimethylhexane sulfonic acids
mono-PFOS (5)	Total Perfluoromethylheptane sulfonic acids
L-PFOS (5)	Linear Perfluoroctanesulfonic acid
PFNS	Perfluoro-1-nonanesulfonic acid
PFDS	Perfluoro-1-decanesulfonic acid
PFECHS	Perfluoro-4-ethylcyclohexanesulfonic acid
Perfluoroalkylcarboxylic acids	
PFBA	Perfluoro-n-butanoic acid
PPeA	Perfluoro-n-pentanoic acid
PFHxA	Perfluoro-n-hexanoic acid
PFHpA	Perfluoro-n-heptanoic acid
PFOA	Perfluoro-n-octanoic acid
PFNA	Perfluoro-n-nonanoic acid
PFDA	Perfluoro-n-decanoic acid
PFUnDA	Perfluoro-n-undecanoic acid
PFDoDA	Perfluoro-n-dodecanoic acid
PFTrDA	Perfluoro-n-tridecanoic acid
PFTeDA	Perfluoro-n-tetradecanoic acid
P37DMOA	Perfluoro-3,7-dimethyloctanoic acid
Perfluoroctanesulfonamides	
PFOSA	Perfluoro-1-octanesulfonamide
NEtFOSA-M	N-ethylperfluoro-1-octanesulfonamide
NMeFOSA-M	N-methylperfluoro-1-octanesulfonamide
Perfluoroctanesulfonamidoacetic acids	
NETFOSAA	N-ethylperfluoro-1-octanesulfonamidoacetic acid
NMeFOSAA	N-methylperfluoro-1-octanesulfonamidoacetic acid
Perfluoroctanesulfonamidoethanols	
NETFOSE-M	2-(N-ethylperfluoro-1-octanesulfonamido)-ethanol
NMeFOSE-M	2-(N-methylperfluoro-1-octanesulfonamido)-ethanol
Telomere Sulfonic acids	
4:2 FTS	1H,1H,2H,2H-perfluoro-1-hexanesulfonic acid
6:2 FTS	1H,1H,2H,2H-perfluoro-1-octanesulfonic acid
8:2 FTS	1H,1H,2H,2H-perfluoro-1-decanesulfonic acid
10:2 FTS	1H,1H,2H,2H-perfluorododecanesulfonic acid
Telomere Carboxylic acids	
FPrPA (3:3FTA)	3-Perfluoropropyl propanoic acid

Analyte	Full Name
FPePA (5:3FTA)	3-Perfluoropentyl propanoic acid
FHpPA (7:3FTA)	3-Perfluoroheptyl propanoic acid
Miscellaneous	
F-53B (major)	9-chlorohexadecafluoro-3-oxanonane-1-sulfonic acid
F-53B (minor)	11-chloroeicosfluoro-3-oxaundecane-1-sulfonic acid
Sum F-53B	Sum of F-53B components (major + minor)
ADONA	Dodecafluoro-3H-4,8-dioxanonanoic acid
HFPO-DA (GenX)	Tetrafluoro-2-(heptafluoropropoxy)propanoic acid
Internal Standards	
M3PFBS	Perfluoro-1-[2,3,4-13C3]butanesulfonic acid
M3PFHxS	Perfluoro-1-[1,2,3-13C3]hexanesulfonic acid
M8PFOS	Perfluoro-1-[13C8]octanesulfonic acid
M4PFBA	Perfluoro-n-[1,2,3,4-13C4]butanoic acid
M5PFPeA	Perfluoro-n-[1,2,3,4,5-13C5]pentanoic acid
M5PFHxA	Perfluoro-n-[1,2,3,4,6-13C5]hexanoic acid
MPFHxA	Perfluoro-n-[1,2,3,4-13C4]heptanoic acid
M8PFOA	Perfluoro-n-[13C8]octanoic acid
M9PFNA	Perfluoro-n-[13C9]nonanoic acid
M6PFDA	Perfluoro-n-[1,2,3,4,5,6-13C6]decanoic acid
M7PFUnDA	Perfluoro-n-[1,2,3,4,5,6,7-13C7]undecanoic acid
MPFDoDA	Perfluoro-n-[1,2-13C2]dodecanoic acid
MPFTeDA	Perfluoro-n-[1,2-13C2]tetradecanoic acid
MPFOSA	Perfluoro-1-[13C8]octanesulfonamide
DNEtFOSA	N-ethyl-D5-perfluoro-1-octanesulfonamide
DNMeFOSA	N-methyl-D3-perfluoro-1-octanesulfonamide
DNEtFOSAA	N-ethyl-D5-perfluoro-1-octanesulfonamidoacetic acid
DNMeFOSAA	N-methyl-D3-perfluoro-1-octanesulfonamidoacetic acid
DNEtFOSE	2-(N-ethyl-D5-perfluoro-1-octanesulfonamido)ethan-D4-ol
DNMeFOSE	2-(N-methyl-D3-perfluoro-1-octanesulfonamido)ethan-D4-ol
M4:2FTS	1H,1H,2H,2H-perfluoro-1-[1,2-13C2]-hexane sulfonic acid
M6:2FTS	1H,1H,2H,2H-perfluoro-1-[1,2-13C2]-octane sulfonic acid
M8:2FTS	1H,1H,2H,2H-perfluoro-1-[1,2-13C2]-decane sulfonic acid
M3HFPO-DA	Tetrafluoro-2-(heptafluoropropoxy)-13C3-propanoic acid

LOR = Limit of Reporting

LOD = Limit of Detection

NR = Not Reportable

Certificate of Analysis

Submission Reference: A02744123
Amended Report

James Conway
Pattle Delamore Partners Limited
P O Box 9528
Auckland 1149
New Zealand

PO Number: OHA_PFAS

Report Issued: 20-Oct-2022

AsureQuality Reference: 22-262879

Sample(s) Received: 29-Sep-2022 08:30

Testing Period: 30-Sep-2022 to 12-Oct-2022

Date of analysis is available on request.

Comments

Amended Report: Customer Sample Name of -3, -4, and -5 amended.

Results

The tests were performed on the samples as received.

Customer Sample Name: OHA_ADJ_GW112.1_4_280922 Lab ID: 22-262879-1			
Sample Condition: Acceptable	Sampled Date: 28-Sep-2022		
Test	Result	Unit	Method Reference
Poly- and Perfluorinated Alkyl Substances (PFAS) in Non Potable Water - High Level			
Perfluoroalkylsulfonic acids			
PPrS	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
PFBS	0.031	µg/L	AsureQuality Method (LC-MS/MS)
PPeS	0.028	µg/L	AsureQuality Method (LC-MS/MS)
di-PFHxS (1)	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
mono-PFHxS (1)	0.043	µg/L	AsureQuality Method (LC-MS/MS)
L-PFHxS (1)	0.24	µg/L	AsureQuality Method (LC-MS/MS)
Total PFHxS (3)	0.28	µg/L	AsureQuality Method (LC-MS/MS)
PFHpS	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
di-PFOS (5)	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
mono-PFOS (5)	0.093	µg/L	AsureQuality Method (LC-MS/MS)
L-PFOS (5)	0.10	µg/L	AsureQuality Method (LC-MS/MS)
Total PFOS (7)	0.19	µg/L	AsureQuality Method (LC-MS/MS)
Sum PFHxS+PFOS (1)	0.47	µg/L	AsureQuality Method (LC-MS/MS)
PFNS	<0.050	µg/L	AsureQuality Method (LC-MS/MS)
PFDS	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
PFECHS	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
Perfluoroalkylcarboxylic acids			
PFBA	0.12	µg/L	AsureQuality Method (LC-MS/MS)
PPeA	0.44	µg/L	AsureQuality Method (LC-MS/MS)
PFHxA	0.34	µg/L	AsureQuality Method (LC-MS/MS)
PFHpA	0.16	µg/L	AsureQuality Method (LC-MS/MS)
PFOA	0.086	µg/L	AsureQuality Method (LC-MS/MS)

AsureQuality Ltd has used reasonable skill, care, and effort to provide an accurate analysis of the sample(s) which form(s) the subject of this report. However, the accuracy of this analysis is reliant on, and subject to, the sample(s) provided by you and your responsibility as to transportation of the sample(s). AsureQuality Ltd's standard terms of business apply to the analysis set out in this report.

Test	Result	Unit	Method Reference
PFNA	0.030	µg/L	AsureQuality Method (LC-MS/MS)
PFDA	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
PFUnDA	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
PFDaDA	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
PFTrDA	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
PFTeDA	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
P37DMOA	<0.050	µg/L	AsureQuality Method (LC-MS/MS)
Perfluoroctanesulfonamides			
PFOSA	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
NEtFOSA-M	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
NMeFOSA-M	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
Perfluoroctanesulfonamidoacetic acids			
NEtFOSAA	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
NMeFOSAA	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
Perfluoroctanesulfonamidoethanols			
NEtFOSE-M	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
NMeFOSE-M	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
Telomere Sulfonic acids			
4:2 FTS	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
6:2 FTS	0.12	µg/L	AsureQuality Method (LC-MS/MS)
8:2 FTS	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
10:2 FTS	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
Telomere Carboxylic acids			
FPrPA (3:3FTA)	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
FPePA (5:3FTA)	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
FHpPA (7:3FTA)	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
Miscellaneous			
F-53B (major)	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
F-53B (minor)	<0.050	µg/L	AsureQuality Method (LC-MS/MS)
Sum F-53B	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
ADONA	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
HFPO-DA (GenX)	<0.050	µg/L	AsureQuality Method (LC-MS/MS)
Internal Standards			
M3PFBs	99	%	AsureQuality Method (LC-MS/MS)
M3PFHxS	112	%	AsureQuality Method (LC-MS/MS)
M8PFOS	98	%	AsureQuality Method (LC-MS/MS)
M4PFBA	98	%	AsureQuality Method (LC-MS/MS)
M5PFPeA	112	%	AsureQuality Method (LC-MS/MS)
M5PFHxA	98	%	AsureQuality Method (LC-MS/MS)
MPFHpA	97	%	AsureQuality Method (LC-MS/MS)
M8PFOA	93	%	AsureQuality Method (LC-MS/MS)
M9PFNA	94	%	AsureQuality Method (LC-MS/MS)
M6PFDA	99	%	AsureQuality Method (LC-MS/MS)
M7PFUnDA	82	%	AsureQuality Method (LC-MS/MS)
MPFDoDA	92	%	AsureQuality Method (LC-MS/MS)
MPFTeDA	27 (R)	%	AsureQuality Method (LC-MS/MS)
MPFOSA	99	%	AsureQuality Method (LC-MS/MS)
DNEtFOSA	93	%	AsureQuality Method (LC-MS/MS)
DNMeFOSA	93	%	AsureQuality Method (LC-MS/MS)
DNEtFOSAA	99	%	AsureQuality Method (LC-MS/MS)

Test	Result	Unit	Method Reference
DNMeFOSAA	96	%	AsureQuality Method (LC-MS/MS)
DNEtFOSE	103	%	AsureQuality Method (LC-MS/MS)
DNMeFOSE	95	%	AsureQuality Method (LC-MS/MS)
M4:2FTS	83	%	AsureQuality Method (LC-MS/MS)
M6:2FTS	82	%	AsureQuality Method (LC-MS/MS)
M8:2FTS	70	%	AsureQuality Method (LC-MS/MS)
M3HFPO-DA	89	%	AsureQuality Method (LC-MS/MS)

R = Recovery outside method limits

Customer Sample Name: OHA_ADJ_GW112.2_4_280922

Lab ID: 22-262879-2

Sample Condition: Acceptable

Sampled Date: 28-Sep-2022

Test	Result	Unit	Method Reference
Poly- and Perfluorinated Alkyl Substances (PFAS) in Potable Water			
Perfluoroalkylsulfonic acids			
PFPrS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFBS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PPeS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
di-PFHxS (1)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
mono-PFHxS (1)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
L-PFHxS (1)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Total PFHxS (3)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFhpS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
di-PFOS (5)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
mono-PFOS (5)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
L-PFOS (5)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Total PFOS (7)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Sum PFHxS+PFOS (1)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFNS	NR	µg/L	AsureQuality Method (LC-MS/MS)
PFDS	NR	µg/L	AsureQuality Method (LC-MS/MS)
PFECHS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Perfluoroalkylcarboxylic acids			
PFBA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PPeA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFHxA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFHpA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFOA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFNA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFDA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFUnDA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFDoDA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFTrDA	NR	µg/L	AsureQuality Method (LC-MS/MS)
PFTeDA	NR	µg/L	AsureQuality Method (LC-MS/MS)
P37DMOA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Perfluoroctanesulfonamides			
PFOSA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
NEtFOSA-M	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
NMeFOSA-M	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Perfluoroctanesulfonamidoacetic acids			
NEtFOSAA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
NMeFOSAA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)

Test	Result	Unit	Method Reference
Perfluorooctanesulfonamidoethanols			
NEtFOSE-M	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
NMeFOSE-M	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Telomere Sulfonic acids			
4:2 FTS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
6:2 FTS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
8:2 FTS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
10:2 FTS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Telomere Carboxylic acids			
FPrPA (3:3FTA)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
FPePA (5:3FTA)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
FHpPA (7:3FTA)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Miscellaneous			
F-53B (major)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
F-53B (minor)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Sum F-53B	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
ADONA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
HFPO-DA (GenX)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Internal Standards			
M3PFBS	84	%	AsureQuality Method (LC-MS/MS)
M3PFHxS	85	%	AsureQuality Method (LC-MS/MS)
M8PFOS	90	%	AsureQuality Method (LC-MS/MS)
M4PFBA	84	%	AsureQuality Method (LC-MS/MS)
M5PFPeA	82	%	AsureQuality Method (LC-MS/MS)
M5PFHxA	84	%	AsureQuality Method (LC-MS/MS)
MPFHpA	84	%	AsureQuality Method (LC-MS/MS)
M8PFOA	99	%	AsureQuality Method (LC-MS/MS)
M9PFNA	90	%	AsureQuality Method (LC-MS/MS)
M6PFDA	87	%	AsureQuality Method (LC-MS/MS)
M7PFUnDA	89	%	AsureQuality Method (LC-MS/MS)
MPFDoDA	96	%	AsureQuality Method (LC-MS/MS)
MPFTeDA	101	%	AsureQuality Method (LC-MS/MS)
MPFOSA	87	%	AsureQuality Method (LC-MS/MS)
DNetFOSA	96	%	AsureQuality Method (LC-MS/MS)
DNMeFOSA	107	%	AsureQuality Method (LC-MS/MS)
DNetFOSAA	73	%	AsureQuality Method (LC-MS/MS)
DNMeFOSAA	71	%	AsureQuality Method (LC-MS/MS)
DNetFOSE	69	%	AsureQuality Method (LC-MS/MS)
DNMeFOSE	69	%	AsureQuality Method (LC-MS/MS)
M4:2FTS	100	%	AsureQuality Method (LC-MS/MS)
M6:2FTS	108	%	AsureQuality Method (LC-MS/MS)
M8:2FTS	78	%	AsureQuality Method (LC-MS/MS)
M3HFPO-DA	107	%	AsureQuality Method (LC-MS/MS)

Customer Sample Name: OHA_ADJ_GWKBT_280922

Lab ID: 22-262879-3

Sample Condition: Acceptable

Sampled Date: 28-Sep-2022

Test	Result	Unit	Method Reference
Poly- and Perfluorinated Alkyl Substances (PFAS) in Non Potable Water - High Level			
Perfluoroalkylsulfonic acids			
PFPrS	<0.025	µg/L	AsureQuality Method (LC-MS/MS)

Test	Result	Unit	Method Reference
PFBS	0.028	µg/L	AsureQuality Method (LC-MS/MS)
PPeS	0.030	µg/L	AsureQuality Method (LC-MS/MS)
di-PFHxS (1)	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
mono-PFHxS (1)	0.044	µg/L	AsureQuality Method (LC-MS/MS)
L-PFHxS (1)	0.26	µg/L	AsureQuality Method (LC-MS/MS)
Total PFHxS (3)	0.30	µg/L	AsureQuality Method (LC-MS/MS)
PFHpS	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
di-PFOS (5)	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
mono-PFOS (5)	0.086	µg/L	AsureQuality Method (LC-MS/MS)
L-PFOS (5)	0.12	µg/L	AsureQuality Method (LC-MS/MS)
Total PFOS (7)	0.21	µg/L	AsureQuality Method (LC-MS/MS)
Sum PFHxS+PFOS (1)	0.51	µg/L	AsureQuality Method (LC-MS/MS)
PFNS	<0.050	µg/L	AsureQuality Method (LC-MS/MS)
PFDS	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
PFECHS	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
Perfluoroalkylcarboxylic acids			
PFBA	0.11	µg/L	AsureQuality Method (LC-MS/MS)
PPPeA	0.44	µg/L	AsureQuality Method (LC-MS/MS)
PFHxA	0.37	µg/L	AsureQuality Method (LC-MS/MS)
PFHpA	0.16	µg/L	AsureQuality Method (LC-MS/MS)
PFOA	0.086	µg/L	AsureQuality Method (LC-MS/MS)
PFNA	0.038	µg/L	AsureQuality Method (LC-MS/MS)
PFDA	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
PFUnDA	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
PFDoDA	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
PTrDA	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
PFTeDA	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
P37DMOA	<0.050	µg/L	AsureQuality Method (LC-MS/MS)
Perfluoroctanesulfonamides			
PFOSA	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
NEtFOSA-M	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
NMeFOSA-M	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
Perfluoroctanesulfonamidoacetic acids			
NEtFOSAA	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
NMeFOSAA	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
Perfluoroctanesulfonamidoethanols			
NEtFOSE-M	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
NMeFOSE-M	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
Telomere Sulfonic acids			
4:2 FTS	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
6:2 FTS	0.11	µg/L	AsureQuality Method (LC-MS/MS)
8:2 FTS	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
10:2 FTS	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
Telomere Carboxylic acids			
FPrPA (3:3FTA)	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
FPePA (5:3FTA)	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
FHpPA (7:3FTA)	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
Miscellaneous			
F-53B (major)	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
F-53B (minor)	<0.050	µg/L	AsureQuality Method (LC-MS/MS)

Test	Result	Unit	Method Reference
Sum F-53B	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
ADONA	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
HFPO-DA (GenX)	<0.050	µg/L	AsureQuality Method (LC-MS/MS)
Internal Standards			
M3PFBS	95	%	AsureQuality Method (LC-MS/MS)
M3PFHxS	106	%	AsureQuality Method (LC-MS/MS)
M8PFOS	92	%	AsureQuality Method (LC-MS/MS)
M4PFBA	96	%	AsureQuality Method (LC-MS/MS)
M5PFPeA	106	%	AsureQuality Method (LC-MS/MS)
M5PFHxA	95	%	AsureQuality Method (LC-MS/MS)
MPFHpA	100	%	AsureQuality Method (LC-MS/MS)
M8PFOA	92	%	AsureQuality Method (LC-MS/MS)
M9PFNA	92	%	AsureQuality Method (LC-MS/MS)
M6PFDA	94	%	AsureQuality Method (LC-MS/MS)
M7PFUnDA	74	%	AsureQuality Method (LC-MS/MS)
MPFDoDA	86	%	AsureQuality Method (LC-MS/MS)
MPFTeDA	32	%	AsureQuality Method (LC-MS/MS)
MPFOSA	98	%	AsureQuality Method (LC-MS/MS)
DNEtFOSA	84	%	AsureQuality Method (LC-MS/MS)
DNMeFOSA	86	%	AsureQuality Method (LC-MS/MS)
DNEtFOSAA	94	%	AsureQuality Method (LC-MS/MS)
DNMeFOSAA	91	%	AsureQuality Method (LC-MS/MS)
DNEtFOSE	90	%	AsureQuality Method (LC-MS/MS)
DNMeFOSE	90	%	AsureQuality Method (LC-MS/MS)
M4:2FTS	81	%	AsureQuality Method (LC-MS/MS)
M6:2FTS	82	%	AsureQuality Method (LC-MS/MS)
M8:2FTS	62	%	AsureQuality Method (LC-MS/MS)
M3HFPO-DA	102	%	AsureQuality Method (LC-MS/MS)

Customer Sample Name: OHA_ADJ_GWKBV_280922

Lab ID: 22-262879-4

Sample Condition: Acceptable

Sampled Date: 28-Sep-2022

Test	Result	Unit	Method Reference
Poly- and Perfluorinated Alkyl Substances (PFAS) in Potable Water			
Perfluoroalkylsulfonic acids			
PFPrS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFBS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PPeS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
di-PFHxS (1)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
mono-PFHxS (1)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
L-PFHxS (1)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Total PFHxS (3)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFHpS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
di-PFOS (5)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
mono-PFOS (5)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
L-PFOS (5)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Total PFOS (7)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Sum PFHxS+PFOS (1)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFNS	NR	µg/L	AsureQuality Method (LC-MS/MS)
PFDS	NR	µg/L	AsureQuality Method (LC-MS/MS)
PFECHS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)

Test	Result	Unit	Method Reference
Perfluoroalkylcarboxylic acids			
PFBA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PPeA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFHxA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFHpA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFOA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFNA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFDA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFUnDA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFDoDA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFTrDA	NR	µg/L	AsureQuality Method (LC-MS/MS)
PFTeDA	NR	µg/L	AsureQuality Method (LC-MS/MS)
P37DMOA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Perfluoroctanesulfonamides			
PFOSA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
NEtFOSA-M	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
NMeFOSA-M	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Perfluoroctanesulfonamidoacetic acids			
NEtFOSAA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
NMeFOSAA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Perfluoroctanesulfonamidoethanols			
NEtFOSE-M	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
NMeFOSE-M	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Telomere Sulfonic acids			
4:2 FTS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
6:2 FTS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
8:2 FTS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
10:2 FTS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Telomere Carboxylic acids			
FPrPA (3:3FTA)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
FPePA (5:3FTA)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
FHpPA (7:3FTA)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Miscellaneous			
F-53B (major)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
F-53B (minor)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Sum F-53B	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
ADONA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
HFPO-DA (GenX)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Internal Standards			
M3PFBS	82	%	AsureQuality Method (LC-MS/MS)
M3PFHxS	88	%	AsureQuality Method (LC-MS/MS)
M8PFOS	77	%	AsureQuality Method (LC-MS/MS)
M4PFBA	92	%	AsureQuality Method (LC-MS/MS)
M5PPeA	85	%	AsureQuality Method (LC-MS/MS)
M5PFHxA	93	%	AsureQuality Method (LC-MS/MS)
MPFHxA	79	%	AsureQuality Method (LC-MS/MS)
M8PFOA	113	%	AsureQuality Method (LC-MS/MS)
M9PFNA	87	%	AsureQuality Method (LC-MS/MS)
M6PFDA	81	%	AsureQuality Method (LC-MS/MS)
M7PFUnDA	76	%	AsureQuality Method (LC-MS/MS)

Test	Result	Unit	Method Reference
MPFDoDA	44	%	AsureQuality Method (LC-MS/MS)
MPFTeDA	49	%	AsureQuality Method (LC-MS/MS)
MPFOSA	76	%	AsureQuality Method (LC-MS/MS)
DNEtFOSA	53	%	AsureQuality Method (LC-MS/MS)
DNMeFOSA	59	%	AsureQuality Method (LC-MS/MS)
DNEtFOSAA	64	%	AsureQuality Method (LC-MS/MS)
DNMeFOSAA	67	%	AsureQuality Method (LC-MS/MS)
DNEtFOSE	49	%	AsureQuality Method (LC-MS/MS)
DNMeFOSE	61	%	AsureQuality Method (LC-MS/MS)
M4:2FTS	91	%	AsureQuality Method (LC-MS/MS)
M6:2FTS	106	%	AsureQuality Method (LC-MS/MS)
M8:2FTS	67	%	AsureQuality Method (LC-MS/MS)
M3HFPO-DA	134	%	AsureQuality Method (LC-MS/MS)

Customer Sample Name: OHA_ADJ_GWKBU_280922

Lab ID: 22-262879-5

Sample Condition: Acceptable

Sampled Date: 28-Sep-2022

Test	Result	Unit	Method Reference
Poly- and Perfluorinated Alkyl Substances (PFAS) in Potable Water			
Perfluoroalkylsulfonic acids			
PFPrS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFBS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PPeS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
di-PFHxS (1)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
mono-PFHxS (1)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
L-PFHxS (1)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Total PFHxS (3)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFHpS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
di-PFOS (5)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
mono-PFOS (5)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
L-PFOS (5)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Total PFOS (7)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Sum PFHxS+PFOS (1)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFNS	NR	µg/L	AsureQuality Method (LC-MS/MS)
PFDS	NR	µg/L	AsureQuality Method (LC-MS/MS)
PFECHS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Perfluoroalkylcarboxylic acids			
PFBA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PPeA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFHxA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFHpA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFOA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFNA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFDA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFUnDA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFDoDA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFTrDA	NR	µg/L	AsureQuality Method (LC-MS/MS)
PFTeDA	NR	µg/L	AsureQuality Method (LC-MS/MS)
P37DMOA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Perfluoroctanesulfonamides			
PFOSA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)

Test	Result	Unit	Method Reference
NEtFOSA-M	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
NMeFOSA-M	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Perfluoroctanesulfonamidoacetic acids			
NEtFOSAA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
NMeFOSAA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Perfluoroctanesulfonamidoethanols			
NEtFOSE-M	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
NMeFOSE-M	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Telomere Sulfonic acids			
4:2 FTS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
6:2 FTS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
8:2 FTS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
10:2 FTS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Telomere Carboxylic acids			
FPrPA (3:3FTA)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
FPePA (5:3FTA)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
FHpPA (7:3FTA)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Miscellaneous			
F-53B (major)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
F-53B (minor)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Sum F-53B	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
ADONA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
HFPO-DA (GenX)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Internal Standards			
M3PFBS	81	%	AsureQuality Method (LC-MS/MS)
M3PFHxS	90	%	AsureQuality Method (LC-MS/MS)
M8PFOS	100	%	AsureQuality Method (LC-MS/MS)
M4PFBA	82	%	AsureQuality Method (LC-MS/MS)
M5PFPeA	79	%	AsureQuality Method (LC-MS/MS)
M5PFHxA	91	%	AsureQuality Method (LC-MS/MS)
MPFHpA	76	%	AsureQuality Method (LC-MS/MS)
M8PFOA	111	%	AsureQuality Method (LC-MS/MS)
M9PFNA	95	%	AsureQuality Method (LC-MS/MS)
M6PFDA	107	%	AsureQuality Method (LC-MS/MS)
M7PFUnDA	147	%	AsureQuality Method (LC-MS/MS)
MPFDoDA	147	%	AsureQuality Method (LC-MS/MS)
MPFTeDA	392 (R)	%	AsureQuality Method (LC-MS/MS)
MPFOSA	106	%	AsureQuality Method (LC-MS/MS)
DNEtFOSA	133	%	AsureQuality Method (LC-MS/MS)
DNMeFOSA	130	%	AsureQuality Method (LC-MS/MS)
DNEtFOSAA	122	%	AsureQuality Method (LC-MS/MS)
DNMeFOSAA	110	%	AsureQuality Method (LC-MS/MS)
DNEtFOSE	142	%	AsureQuality Method (LC-MS/MS)
DNMeFOSE	109	%	AsureQuality Method (LC-MS/MS)
M4:2FTS	90	%	AsureQuality Method (LC-MS/MS)
M6:2FTS	106	%	AsureQuality Method (LC-MS/MS)
M8:2FTS	85	%	AsureQuality Method (LC-MS/MS)
M3HFPO-DA	141	%	AsureQuality Method (LC-MS/MS)

R = Recovery outside method limits

QC Results

Blank

Relates to sample(s) 22-262879-1, 22-262879-3

Test	Result	Unit	Method Reference
Poly- and Perfluorinated Alkyl Substances (PFAS) in Non Potable Water - High Level			
Perfluoroalkylsulfonic acids			
PFPrS	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
PFBS	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
PPeS	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
di-PFHxS (1)	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
mono-PFHxS (1)	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
L-PFHxS (1)	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
Total PFHxS (3)	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
PFHpS	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
di-PFOS (5)	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
mono-PFOS (5)	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
L-PFOS (5)	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
Total PFOS (7)	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
Sum PFHxS+PFOS (1)	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
PFNS	<0.050	µg/L	AsureQuality Method (LC-MS/MS)
PFDS	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
PFECHS	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
Perfluoroalkylcarboxylic acids			
PFBA	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
PPeA	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
PFHxA	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
PFHpA	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
PFOA	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
PFNA	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
PFDA	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
PFUnDA	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
PFDoDA	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
PFTrDA	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
PFTeDA	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
P37DMOA	<0.050	µg/L	AsureQuality Method (LC-MS/MS)
Perfluoroctanesulfonamides			
PFOSA	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
NEtFOSA-M	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
NMeFOSA-M	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
Perfluoroctanesulfonamidoacetic acids			
NEtFOSAA	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
NMeFOSAA	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
Perfluoroctanesulfonamidoethanols			
NEtFOSE-M	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
NMeFOSE-M	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
Telomere Sulfonic acids			
4:2 FTS	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
6:2 FTS	<0.050	µg/L	AsureQuality Method (LC-MS/MS)

Test	Result	Unit	Method Reference
8:2 FTS	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
10:2 FTS	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
Telomere Carboxylic acids			
FPrPA (3:3FTA)	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
FPePA (5:3FTA)	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
FHpPA (7:3FTA)	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
Miscellaneous			
F-53B (major)	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
F-53B (minor)	<0.050	µg/L	AsureQuality Method (LC-MS/MS)
Sum F-53B	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
ADONA	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
HFPO-DA (GenX)	<0.050	µg/L	AsureQuality Method (LC-MS/MS)
Internal Standards			
M3PFBS	101	%	AsureQuality Method (LC-MS/MS)
M3PFHxS	110	%	AsureQuality Method (LC-MS/MS)
M8PFOS	102	%	AsureQuality Method (LC-MS/MS)
M4PFBA	104	%	AsureQuality Method (LC-MS/MS)
M5PPeA	114	%	AsureQuality Method (LC-MS/MS)
M5PFHxA	103	%	AsureQuality Method (LC-MS/MS)
MPFHpA	104	%	AsureQuality Method (LC-MS/MS)
M8PFOA	100	%	AsureQuality Method (LC-MS/MS)
M9PFNA	103	%	AsureQuality Method (LC-MS/MS)
M6PFDA	103	%	AsureQuality Method (LC-MS/MS)
M7PFUnDA	102	%	AsureQuality Method (LC-MS/MS)
MPFDoDA	98	%	AsureQuality Method (LC-MS/MS)
MPFTeDA	55	%	AsureQuality Method (LC-MS/MS)
MPFOSA	103	%	AsureQuality Method (LC-MS/MS)
DNEtFOSA	101	%	AsureQuality Method (LC-MS/MS)
DNMeFOSA	99	%	AsureQuality Method (LC-MS/MS)
DNEtFOSAA	102	%	AsureQuality Method (LC-MS/MS)
DNMeFOSAA	100	%	AsureQuality Method (LC-MS/MS)
DNEtFOSE	103	%	AsureQuality Method (LC-MS/MS)
DNMeFOSE	99	%	AsureQuality Method (LC-MS/MS)
M4:2FTS	110	%	AsureQuality Method (LC-MS/MS)
M6:2FTS	94	%	AsureQuality Method (LC-MS/MS)
M8:2FTS	109	%	AsureQuality Method (LC-MS/MS)
M3HFPO-DA	137	%	AsureQuality Method (LC-MS/MS)

Blank

Relates to sample(s) 22-262879-2, 22-262879-4, 22-262879-5

Test	Result	Unit	Method Reference
Poly- and Perfluorinated Alkyl Substances (PFAS) in Potable Water			
Perfluoroalkylsulfonic acids			
PFPrS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFBS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFPeS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
di-PFHxS (1)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
mono-PFHxS (1)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)

Test	Result	Unit	Method Reference
L-PFHxS (1)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Total PFHxS (3)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFHpS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
di-PFOS (5)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
mono-PFOS (5)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
L-PFOS (5)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Total PFOS (7)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Sum PFHxS+PFOS (1)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFNS	NR	µg/L	AsureQuality Method (LC-MS/MS)
PFDS	NR	µg/L	AsureQuality Method (LC-MS/MS)
PFECHS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Perfluoroalkylcarboxylic acids			
PFBA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PPPeA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFHxA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFHpA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFOA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFNA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFDA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFUnDA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFDoDA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFTrDA	NR	µg/L	AsureQuality Method (LC-MS/MS)
PFTeDA	NR	µg/L	AsureQuality Method (LC-MS/MS)
P37DMOA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Perfluoroctanesulfonamides			
PFOSA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
NEtFOSA-M	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
NMeFOSA-M	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Perfluoroctanesulfonamidoacetic acids			
NEtFOSAA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
NMeFOSAA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Perfluoroctanesulfonamidoethanols			
NEtFOSE-M	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
NMeFOSE-M	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Telomere Sulfonic acids			
4:2 FTS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
6:2 FTS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
8:2 FTS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
10:2 FTS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Telomere Carboxylic acids			
FPrPA (3:3FTA)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
FPePA (5:3FTA)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
FHpPA (7:3FTA)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Miscellaneous			
F-53B (major)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
F-53B (minor)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Sum F-53B	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)

Test	Result	Unit	Method Reference
ADONA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
HFPO-DA (GenX)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Internal Standards			
M3PFBS	100	%	AsureQuality Method (LC-MS/MS)
M3PFHxS	96	%	AsureQuality Method (LC-MS/MS)
M8PFOS	116	%	AsureQuality Method (LC-MS/MS)
M4PFBA	106	%	AsureQuality Method (LC-MS/MS)
M5PFPeA	102	%	AsureQuality Method (LC-MS/MS)
M5PFHxA	103	%	AsureQuality Method (LC-MS/MS)
MPFHpA	97	%	AsureQuality Method (LC-MS/MS)
M8PFOA	107	%	AsureQuality Method (LC-MS/MS)
M9PFNA	101	%	AsureQuality Method (LC-MS/MS)
M6PFDA	102	%	AsureQuality Method (LC-MS/MS)
M7PFUnDA	106	%	AsureQuality Method (LC-MS/MS)
MPFDoDA	145	%	AsureQuality Method (LC-MS/MS)
MPFTeDA	61	%	AsureQuality Method (LC-MS/MS)
MPFOSA	105	%	AsureQuality Method (LC-MS/MS)
DNEtFOSA	129	%	AsureQuality Method (LC-MS/MS)
DNMeFOSA	132	%	AsureQuality Method (LC-MS/MS)
DNEtFOSAA	114	%	AsureQuality Method (LC-MS/MS)
DNMeFOSAA	111	%	AsureQuality Method (LC-MS/MS)
DNEtFOSE	108	%	AsureQuality Method (LC-MS/MS)
DNMeFOSE	101	%	AsureQuality Method (LC-MS/MS)
M4:2FTS	102	%	AsureQuality Method (LC-MS/MS)
M6:2FTS	99	%	AsureQuality Method (LC-MS/MS)
M8:2FTS	99	%	AsureQuality Method (LC-MS/MS)
M3HFPO-DA	131	%	AsureQuality Method (LC-MS/MS)

Analysis Summary

Wellington Laboratory

Analysis	Method	Accreditation	Authorised by
Poly- and Perfluorinated Alkyl Substances (PFAS) in Potable Water	AsureQuality Method (LC-MS/MS)	IANZ	Amelie Sellier

di-PFHxS (1) = Concentration determined using a branched di-PFHxS isomer standard (399>80 transition)

mono-PFHxS (1) = Concentration determined using a branched mono-PFHxS isomer standard (399>80 transition)

L-PFHxS (1) = Concentration determined using the linear PFHxS isomer standard (399>80 transition)

Total PFHxS (3) = The numerical sum of di-PFHxS (1), mono-PFHxS (1), and L-PFHxS (1)

di-PFOS (5) = Concentration determined using a branched di-PFOS isomer standard (499>80 transition)

mono-PFOS (5) = Concentration determined using a branched mono-PFOS isomer standard (499>80 transition)

L-PFOS (5) = Concentration determined using the linear PFOS isomer standard (499>230 transition)

Total PFOS (7) = The numerical sum of di-PFOS (5), mono-PFOS (5), and L-PFOS (5)

Sum PFHxS+PFOS (1) = The numerical sum of Total PFHxS (3) and Total PFOS (7)

Sum F-53B = The numerical sum of 9Cl-PF3ONS (F-53B major) and 11Cl-PF3OUDs (F-53B minor)

For all Totals, where a component is detected below the LOR, the value of zero is used in the calculation of the sum. The result represents the lower-bound concentration present in the sample.

Reported results are corrected for internal standard recovery

Analysis	Method	Accreditation	Authorised by
Poly- and Perfluorinated Alkyl Substances (PFAS) in Non Potable Water - High Level			
DX-PFCS01, 05-HIGHLEVEL	AsureQuality Method (LC-MS/MS)	IANZ	Amelie Sellier
di-PFHxS (1) = Concentration determined using a branched di-PFHxS isomer standard (399>80 transition)			
mono-PFHxS (1) = Concentration determined using a branched mono-PFHxS isomer standard (399>80 transition)			
L-PFHxS (1) = Concentration determined using the linear PFHxS isomer standard (399>80 transition)			
Total PFHxS (3) = The numerical sum of di-PFHxS (1), mono-PFHxS (1), and L-PFHxS (1)			
di-PFOS (5) = Concentration determined using a branched di-PFOS isomer standard (499>80 transition)			
mono-PFOS (5) = Concentration determined using a branched mono-PFOS isomer standard (499>80 transition)			
L-PFOS (5) = Concentration determined using the linear PFOS isomer standard (499>230 transition)			
Total PFOS (7) = The numerical sum of di-PFOS (5), mono-PFOS (5), and L-PFOS (5)			
Sum PFHxS+PFOS (1) = The numerical sum of Total PFHxS (3) and Total PFOS (7)			
Sum F-53B = The numerical sum of 9Cl-PF3ONS (F-53B major) and 11Cl-PF3OUdS (F-53B minor)			
For all Totals, where a component is detected below the LOR, the value of zero is used in the calculation of the sum. The result represents the lower-bound concentration present in the sample.			
Reported results are corrected for internal standard recovery			

Results that are prefixed with '<' indicate the lowest level at which the analyte can be reported, and that in this case the analyte was not observed above this limit.

NR = Not Reportable



Amelie Sellier

Scientist

Accreditation



Appendix

Analyte LOR Summary

Poly- and Perfluorinated Alkyl Substances (PFAS) in Potable Water - AsureQuality Method (LC-MS/MS)

Analyte LOR

Listing applies to samples: 22-262879-2, 22-262879-4, 22-262879-5

Perfluoroalkylsulfonic acids

PPrS	0.0010 µg/L
PFBS	0.0010 µg/L
PPeS	0.0010 µg/L
di-PFHxS (1)	0.0010 µg/L
mono-PFHxS (1)	0.0010 µg/L
L-PFHxS (1)	0.0010 µg/L
Total PFHxS (3)	0.0010 µg/L
PFHpS	0.0010 µg/L
di-PFOS (5)	0.0010 µg/L
mono-PFOS (5)	0.0010 µg/L
L-PFOS (5)	0.0010 µg/L
Total PFOS (7)	0.0010 µg/L
Sum PFHxS+PFOS (1)	0.0010 µg/L
PFNS	NR µg/L
PFDS	NR µg/L
PFECHS	0.0010 µg/L

Perfluoroalkylcarboxylic acids

PFBA	0.0010 µg/L
PPeA	0.0010 µg/L
PFHxA	0.0010 µg/L
PFHpA	0.0010 µg/L
PFOA	0.0010 µg/L
PFNA	0.0010 µg/L
PFDA	0.0010 µg/L
PFUnDA	0.0010 µg/L
PFDoDA	0.0010 µg/L
PFTrDA	NR µg/L
PFTeDA	NR µg/L
P37DMOA	0.0010 µg/L

Perfluorooctanesulfonamides

PFOSA	0.0010 µg/L
NEtFOSA-M	0.0010 µg/L
NMeFOSA-M	0.0010 µg/L

Perfluorooctanesulfonamidoacetic acids

NEtFOSAA	0.0010 µg/L
NMeFOSAA	0.0010 µg/L

Perfluorooctanesulfonamidoethanols

NEtFOSE-M	0.0010 µg/L
NMeFOSE-M	0.0010 µg/L

Telomere Sulfonic acids

4:2 FTS	0.0010 µg/L
6:2 FTS	0.0010 µg/L
8:2 FTS	0.0010 µg/L
10:2 FTS	0.0010 µg/L

Telomere Carboxylic acids

FPrPA (3:3FTA)	0.0010 µg/L
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FPePA (5:3FTA)	0.0010 µg/L
FHpPA (7:3FTA)	0.0010 µg/L
Miscellaneous	
F-53B (major)	0.0010 µg/L
F-53B (minor)	0.0010 µg/L
Sum F-53B	0.0010 µg/L
ADONA	0.0010 µg/L
HFPO-DA (GenX)	0.0010 µg/L

Poly- and Perfluorinated Alkyl Substances (PFAS) in Non Potable Water - High Level - AsureQuality Method (LC-MS/MS)**Analyte LOR**

Listing applies to samples: 22-262879-1, 22-262879-3

Perfluoroalkylsulfonic acids

PPPrS	0.025 µg/L
PFBS	0.025 µg/L
PPPeS	0.025 µg/L
di-PFHxS (1)	0.025 µg/L
mono-PFHxS (1)	0.025 µg/L
L-PFHxS (1)	0.025 µg/L
Total PFHxS (3)	0.025 µg/L
PFHpS	0.025 µg/L
di-PFOS (5)	0.025 µg/L
mono-PFOS (5)	0.025 µg/L
L-PFOS (5)	0.025 µg/L
Total PFOS (7)	0.025 µg/L
Sum PFHxS+PFOS (1)	0.025 µg/L
PFNS	0.050 µg/L
PFDS	0.10 µg/L
PFECHS	0.025 µg/L

Perfluoroalkylcarboxylic acids

PFBA	0.10 µg/L
PPPeA	0.10 µg/L
PFHxA	0.025 µg/L
PFHpA	0.025 µg/L
PFOA	0.025 µg/L
PFNA	0.025 µg/L
PFDA	0.025 µg/L
PFUnDA	0.025 µg/L
PFDoDA	0.10 µg/L
PFTrDA	0.10 µg/L
PFTeDA	0.10 µg/L
P37DMOA	0.050 µg/L

Perfluoroctanesulfonamides

PFOSA	0.025 µg/L
NEtFOSA-M	0.10 µg/L
NMeFOSA-M	0.10 µg/L

Perfluoroctanesulfonamidoacetic acids

NEtFOSAA	0.025 µg/L
NMeFOSAA	0.025 µg/L

Perfluoroctanesulfonamidoethanols

NEtFOSE-M	0.10 µg/L
NMeFOSE-M	0.10 µg/L

Telomere Sulfonic acids

4:2 FTS	0.025 µg/L
6:2 FTS	0.050 µg/L
8:2 FTS	0.10 µg/L
10:2 FTS	0.025 µg/L

Telomere Carboxylic acids

FPrPA (3:3FTA)	0.10 µg/L
FPePA (5:3FTA)	0.025 µg/L
FHpPA (7:3FTA)	0.025 µg/L
Miscellaneous	
F-53B (major)	0.10 µg/L
F-53B (minor)	0.050 µg/L
Sum F-53B	0.1 µg/L
ADONA	0.025 µg/L
HFPO-DA (GenX)	0.050 µg/L

Analyte Definitions**Poly- and Perfluorinated Alkyl Substances (PFAS) in Potable Water - AsureQuality Method (LC-MS/MS)**

Analyte	Full Name
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Listing applies to samples: 22-262879-2, 22-262879-4, 22-262879-5

Perfluoroalkylsulfonic acids

PPrS	Perfluoro-1-propanesulfonic acid
PFBS	Perfluoro-1-butanesulfonic acid
PPeS	Perfluoro-1-pentanesulfonic acid
di-PFHxS (1)	Total Perfluorodimethylbutane sulfonic acids
mono-PFHxS (1)	Total Perfluoromethylpentane sulfonic acids
L-PFHxS (1)	Linear Perfluorohexanesulfonic acid
PFHpS	Perfluoro-1-heptanesulfonic acid
di-PFOS (5)	Total Perfluorodimethylhexane sulfonic acids
mono-PFOS (5)	Total Perfluoromethylheptane sulfonic acids
L-PFOS (5)	Linear Perfluooctanesulfonic acid
PFNS	Perfluoro-1-nonanesulfonic acid
PFDS	Perfluoro-1-decanesulfonic acid
PFECHS	Perfluoro-4-ethylcyclohexanesulfonic acid

Perfluoroalkylcarboxylic acids

PFBA	Perfluoro-n-butanoic acid
PPeA	Perfluoro-n-pentanoic acid
PFhxA	Perfluoro-n-hexanoic acid
PFHpA	Perfluoro-n-heptanoic acid
PFOA	Perfluoro-n-octanoic acid
PFNA	Perfluoro-n-nonanoic acid
PFDA	Perfluoro-n-decanoic acid
PFUnDA	Perfluoro-n-undecanoic acid
PFDoDA	Perfluoro-n-dodecanoic acid
PFTrDA	Perfluoro-n-tridecanoic acid
PFTeDA	Perfluoro-n-tetradecanoic acid
P37DMOA	Perfluoro-3,7-dimethyloctanoic acid

Perfluoroctanesulfonamides

PFOSA	Perfluoro-1-octanesulfonamide
NEtFOSA-M	N-ethylperfluoro-1-octanesulfonamide
NMeFOSA-M	N-methylperfluoro-1-octanesulfonamide

Perfluoroctanesulfonamidoacetic acids

NEtFOSAA	N-ethylperfluoro-1-octanesulfonamidoacetic acid
NMeFOSAA	N-methylperfluoro-1-octanesulfonamidoacetic acid

Perfluoroctanesulfonamidoethanols

Analyte	Full Name
NEtFOSE-M	2-(N-ethylperfluoro-1-octanesulfonamido)-ethanol
NMeFOSE-M	2-(N-methylperfluoro-1-octanesulfonamido)-ethanol
Telomere Sulfonic acids	
4:2 FTS	1H,1H,2H,2H-perfluoro-1-hexanesulfonic acid
6:2 FTS	1H,1H,2H,2H-perfluoro-1-octanesulfonic acid
8:2 FTS	1H,1H,2H,2H-perfluoro-1-decanesulfonic acid
10:2 FTS	1H,1H,2H,2H-perfluorododecanesulfonic acid
Telomere Carboxylic acids	
FPrPA (3:3FTA)	3-Perfluoropropyl propanoic acid
FPePA (5:3FTA)	3-Perfluoropentyl propanoic acid
FHpPA (7:3FTA)	3-Perfluoroheptyl propanoic acid
Miscellaneous	
F-53B (major)	9-chlorohexadecafluoro-3-oxanonane-1-sulfonic acid
F-53B (minor)	11-chloroeicosfluoro-3-oxaundecane-1-sulfonic acid
Sum F-53B	Sum of F-53B components (major + minor)
ADONA	Dodecafluoro-3H-4,8-dioxanonanoic acid
HFPO-DA (GenX)	Tetrafluoro-2-(heptafluoropropoxy)propanoic acid
Internal Standards	
M3PFBS	Perfluoro-1-[2,3,4-13C3]butanesulfonic acid
M3PFHxS	Perfluoro-1-[1,2,3-13C3]hexanesulfonic acid
M8PFOS	Perfluoro-1-[13C8]octanesulfonic acid
M4PFBA	Perfluoro-n-[1,2,3,4-13C4]butanoic acid
M5PFPeA	Perfluoro-n-[1,2,3,4,5-13C5]pentanoic acid
M5PFHxA	Perfluoro-n-[1,2,3,4,6-13C5]hexanoic acid
MPFhpA	Perfluoro-n-[1,2,3,4-13C4]heptanoic acid
M8PFOA	Perfluoro-n-[13C8]octanoic acid
M9PFNA	Perfluoro-n-[13C9]nonanoic acid
M6PFDA	Perfluoro-n-[1,2,3,4,5,6-13C6]decanoic acid
M7PFUnDA	Perfluoro-n-[1,2,3,4,5,6,7-13C7]undecanoic acid
MPFDoDA	Perfluoro-n-[1,2-13C2]dodecanoic acid
MPFTeDA	Perfluoro-n-[1,2-13C2]tetradecanoic acid
MPFOSA	Perfluoro-1-[13C8]octanesulfonamide
DNEtFOSA	N-ethyl-D5-perfluoro-1-octanesulfonamide
DNMeFOSA	N-methyl-D3-perfluoro-1-octanesulfonamide
DNEtFOSAA	N-ethyl-D5-perfluoro-1-octanesulfonamidoacetic acid
DNMeFOSAA	N-methyl-D3-perfluoro-1-octanesulfonamidoacetic acid
DNEtFOSE	2-(N-ethyl-D5-perfluoro-1-octanesulfonamido)ethan-D4-ol
DNMeFOSE	2-(N-methyl-D3-perfluoro-1-octanesulfonamido)ethan-D4-ol
M4:2FTS	1H,1H,2H,2H-perfluoro-1-[1,2-13C2]-hexane sulfonic acid
M6:2FTS	1H,1H,2H,2H-perfluoro-1-[1,2-13C2]-octane sulfonic acid
M8:2FTS	1H,1H,2H,2H-perfluoro-1-[1,2-13C2]-decane sulfonic acid
M3HFPO-DA	Tetrafluoro-2-(heptafluoropropoxy)-13C3-propanoic acid

Poly- and Perfluorinated Alkyl Substances (PFAS) in Non Potable Water - High Level - AsureQuality Method (LC-MS/MS)

Analyte	Full Name
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Listing applies to samples: 22-262879-1, 22-262879-3

Perfluoroalkylsulfonic acids	
PPPrS	Perfluoro-1-propanesulfonic acid
PFBS	Perfluoro-1-butanesulfonic acid
PPPeS	Perfluoro-1-pentanesulfonic acid
di-PFHxS (1)	Total Perfluorodimethylbutane sulfonic acids
mono-PFHxS (1)	Total Perfluoromethylpentane sulfonic acids
L-PFHxS (1)	Linear Perfluorohexanesulfonic acid
PFHpS	Perfluoro-1-heptanesulfonic acid
di-PFOS (5)	Total Perfluorodimethylhexane sulfonic acids

Analyte	Full Name
mono-PFOS (5)	Total Perfluoromethylheptane sulfonic acids
L-PFOS (5)	Linear Perfluorooctanesulfonic acid
PFNS	Perfluoro-1-nonanesulfonic acid
PFDS	Perfluoro-1-decanesulfonic acid
PFECHS	Perfluoro-4-ethylcyclohexanesulfonic acid
Perfluoroalkylcarboxylic acids	
PFBA	Perfluoro-n-butanoic acid
PPPeA	Perfluoro-n-pentanoic acid
PFHxA	Perfluoro-n-hexanoic acid
PFHpA	Perfluoro-n-heptanoic acid
PFOA	Perfluoro-n-octanoic acid
PFNA	Perfluoro-n-nonanoic acid
PFDA	Perfluoro-n-decanoic acid
PFUnDA	Perfluoro-n-undecanoic acid
PFDoDA	Perfluoro-n-dodecanoic acid
PFTrDA	Perfluoro-n-tridecanoic acid
PFTeDA	Perfluoro-n-tetradecanoic acid
P37DMOA	Perfluoro-3,7-dimethyloctanoic acid
Perfluoroctanesulfonamides	
PFOSA	Perfluoro-1-octanesulfonamide
NEtFOSA-M	N-ethylperfluoro-1-octanesulfonamide
NMeFOSA-M	N-methylperfluoro-1-octanesulfonamide
Perfluoroctanesulfonamidoacetic acids	
NEtFOSAA	N-ethylperfluoro-1-octanesulfonamidoacetic acid
NMeFOSAA	N-methylperfluoro-1-octanesulfonamidoacetic acid
Perfluoroctanesulfonamidoethanols	
NEtFOSE-M	2-(N-ethylperfluoro-1-octanesulfonamido)-ethanol
NMeFOSE-M	2-(N-methylperfluoro-1-octanesulfonamido)-ethanol
Telomere Sulfonic acids	
4:2 FTS	1H,1H,2H,2H-perfluoro-1-hexamersulfonic acid
6:2 FTS	1H,1H,2H,2H-perfluoro-1-octanesulfonic acid
8:2 FTS	1H,1H,2H,2H-perfluoro-1-decanesulfonic acid
10:2 FTS	1H,1H,2H,2H-perfluorododecanesulfonic acid
Telomere Carboxylic acids	
FPrPA (3:3FTA)	3-Perfluoropropyl propanoic acid
FPePA (5:3FTA)	3-Perfluoropentyl propanoic acid
FHpPA (7:3FTA)	3-Perfluoroheptyl propanoic acid
Miscellaneous	
F-53B (major)	9-chlorohexadecafluoro-3-oxanonane-1-sulfonic acid
F-53B (minor)	11-chloroeicosfluoro-3-oxaundecane-1-sulfonic acid
Sum F-53B	Sum of F-53B components (major + minor)
ADONA	Dodecafluoro-3H-4,8-dioxanonanoic acid
HFPO-DA (GenX)	Tetrafluoro-2-(heptafluoropropoxy)propanoic acid
Internal Standards	
M3PFBS	Perfluoro-1-[2,3,4-13C3]butanesulfonic acid
M3PFHxS	Perfluoro-1-[1,2,3-13C3]hexanesulfonic acid
M8PFOS	Perfluoro-1-[13C8]octanesulfonic acid
M4PFBA	Perfluoro-n-[1,2,3,4-13C4]butanoic acid
M5PPeA	Perfluoro-n-[1,2,3,4,5-13C5]pentanoic acid
M5PFHxA	Perfluoro-n-[1,2,3,4,6-13C5]hexanoic acid
MPFHxA	Perfluoro-n-[1,2,3,4-13C4]heptanoic acid
M8PFOA	Perfluoro-n-[13C8]octanoic acid
M9PFNA	Perfluoro-n-[13C9]nonanoic acid
M6PFDA	Perfluoro-n-[1,2,3,4,5,6-13C6]decanoic acid
M7PFUnDA	Perfluoro-n-[1,2,3,4,5,6,7-13C7]undecanoic acid

Analyte	Full Name
MPFDoDA	Perfluoro-n-[1,2-13C2]dodecanoic acid
MPFTeDA	Perfluoro-n-[1,2-13C2]tetradecanoic acid
MPFOSA	Perfluoro-1-[13C8]octanesulfonamide
DNEtFOSA	N-ethyl-D5-perfluoro-1-octanesulfonamide
DNMeFOSA	N-methyl-D3-perfluoro-1-octanesulfonamide
DNEtFOSAA	N-ethyl-D5-perfluoro-1-octanesulfonamidoacetic acid
DNMeFOSAA	N-methyl-D3-perfluoro-1-octanesulfonamidoacetic acid
DNEtFOSE	2-(N-ethyl-D5-perfluoro-1-octanesulfonamido)ethan-D4-ol
DNMeFOSE	2-(N-methyl-D3-perfluoro-1-octanesulfonamido)ethan-D4-ol
M4:2FTS	1H,1H,2H,2H-perfluoro-1-[1,2-13C2]-hexane sulfonic acid
M6:2FTS	1H,1H,2H,2H-perfluoro-1-[1,2-13C2]-octane sulfonic acid
M8:2FTS	1H,1H,2H,2H-perfluoro-1-[1,2-13C2]-decane sulfonic acid
M3HFPO-DA	Tetrafluoro-2-(heptafluoropropoxy)-13C3-propanoic acid

LOR = Limit of Reporting

LOD = Limit of Detection

NR = Not Reportable

Certificate of Analysis

Submission Reference: A02744122
Final Report

Bryn Taiapa
Pattle Delamore Partners Limited
P O Box 9528
Auckland 1149
New Zealand

PO Number: OHA_PFAS

Report Issued: 13-Oct-2022

AsureQuality Reference: 22-262759

Sample(s) Received: 29-Sep-2022 08:30

Testing Period: 30-Sep-2022 to 12-Oct-2022

Date of analysis is available on request.

Results

The tests were performed on the samples as received.

Customer Sample Name:	OHA_SHW_SW4_6_280922	Lab ID:	22-262759-1
Sample Condition:	Acceptable	Sampled Date:	28-Sep-2022
Test	Result	Unit	Method Reference
Poly- and Perfluorinated Alkyl Substances (PFAS) in Potable Water			
Perfluoroalkylsulfonic acids			
PFPrS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFBS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PPeS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
di-PFHxS (1)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
mono-PFHxS (1)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
L-PFHxS (1)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Total PFHxS (3)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFHpS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
di-PFOS (5)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
mono-PFOS (5)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
L-PFOS (5)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Total PFOS (7)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Sum PFHxS+PFOS (1)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFNS	NR	µg/L	AsureQuality Method (LC-MS/MS)
PFDS	NR	µg/L	AsureQuality Method (LC-MS/MS)
PFECHS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Perfluoroalkylcarboxylic acids			
PFBA	0.0080	µg/L	AsureQuality Method (LC-MS/MS)
PPeA	0.0018	µg/L	AsureQuality Method (LC-MS/MS)
PFHxA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFHpA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFOA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFNA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFDA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFUnDA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)

AsureQuality Ltd has used reasonable skill, care, and effort to provide an accurate analysis of the sample(s) which form(s) the subject of this report. However, the accuracy of this analysis is reliant on, and subject to, the sample(s) provided by you and your responsibility as to transportation of the sample(s). AsureQuality Ltd's standard terms of business apply to the analysis set out in this report.

Test	Result	Unit	Method Reference
PFDoDA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFTrDA	NR	µg/L	AsureQuality Method (LC-MS/MS)
PFTeDA	NR	µg/L	AsureQuality Method (LC-MS/MS)
P37DMOA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Perfluoroctanesulfonamides			
PFOSA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
NEtFOSA-M	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
NMeFOSA-M	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Perfluoroctanesulfonamidoacetic acids			
NEtFOSAA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
NMeFOSAA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Perfluoroctanesulfonamidoethanols			
NEtFOSE-M	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
NMeFOSE-M	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Telomere Sulfonic acids			
4:2 FTS	NR	µg/L	AsureQuality Method (LC-MS/MS)
6:2 FTS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
8:2 FTS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
10:2 FTS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Telomere Carboxylic acids			
FPrPA (3:3FTA)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
FPePA (5:3FTA)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
FHpPA (7:3FTA)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Miscellaneous			
F-53B (major)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
F-53B (minor)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Sum F-53B	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
ADONA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
HFPO-DA (GenX)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Internal Standards			
M3PFBS	107	%	AsureQuality Method (LC-MS/MS)
M3PFHxS	108	%	AsureQuality Method (LC-MS/MS)
M8PFOS	123	%	AsureQuality Method (LC-MS/MS)
M4PFBA	59	%	AsureQuality Method (LC-MS/MS)
M5PFPeA	87	%	AsureQuality Method (LC-MS/MS)
M5PFHxA	98	%	AsureQuality Method (LC-MS/MS)
MPFHpA	109	%	AsureQuality Method (LC-MS/MS)
M8PFOA	99	%	AsureQuality Method (LC-MS/MS)
M9PFNA	105	%	AsureQuality Method (LC-MS/MS)
M6PFDA	101	%	AsureQuality Method (LC-MS/MS)
M7PFUnDA	92	%	AsureQuality Method (LC-MS/MS)
MPFDoDA	108	%	AsureQuality Method (LC-MS/MS)
MPFTeDA	89	%	AsureQuality Method (LC-MS/MS)
MPFOSA	70	%	AsureQuality Method (LC-MS/MS)
DNEtFOSA	48	%	AsureQuality Method (LC-MS/MS)
DNMeFOSA	50	%	AsureQuality Method (LC-MS/MS)
DNEtFOSAA	89	%	AsureQuality Method (LC-MS/MS)
DNMeFOSAA	88	%	AsureQuality Method (LC-MS/MS)
DNEtFOSE	45	%	AsureQuality Method (LC-MS/MS)
DNMeFOSE	47	%	AsureQuality Method (LC-MS/MS)

Test	Result	Unit	Method Reference
M4:2FTS	429 (R)	%	AsureQuality Method (LC-MS/MS)
M6:2FTS	147	%	AsureQuality Method (LC-MS/MS)
M8:2FTS	86	%	AsureQuality Method (LC-MS/MS)
M3HFPO-DA	103	%	AsureQuality Method (LC-MS/MS)

R = Recovery outside method limits

QC Results

Blank

Relates to sample(s) 22-262759-1

Test	Result	Unit	Method Reference
Poly- and Perfluorinated Alkyl Substances (PFAS) in Potable Water			
Perfluoroalkylsulfonic acids			
PFPrS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFBS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFPeS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
di-PFHxS (1)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
mono-PFHxS (1)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
L-PFHxS (1)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Total PFHxS (3)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFHpS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
di-PFOS (5)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
mono-PFOS (5)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
L-PFOS (5)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Total PFOS (7)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Sum PFHxS+PFOS (1)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFNS	NR	µg/L	AsureQuality Method (LC-MS/MS)
PFDS	NR	µg/L	AsureQuality Method (LC-MS/MS)
PFECHS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Perfluoroalkylcarboxylic acids			
PFBA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFPeA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFHxA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFHpA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFOA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFNA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFDA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFUnDA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFDoDA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFTrDA	NR	µg/L	AsureQuality Method (LC-MS/MS)
PFTeDA	NR	µg/L	AsureQuality Method (LC-MS/MS)
P37DMOA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Perfluorooctanesulfonamides			
PFOSA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
NEtFOSA-M	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
NMeFOSA-M	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Perfluorooctanesulfonamidoacetic acids			
NEtFOSAA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)

Test	Result	Unit	Method Reference
NMeFOSAA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Perfluoroctanesulfonamidoethanols			
NEtFOSE-M	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
NMeFOSE-M	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Telomere Sulfonic acids			
4:2 FTS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
6:2 FTS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
8:2 FTS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
10:2 FTS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Telomere Carboxylic acids			
FPrPA (3:3FTA)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
FPePA (5:3FTA)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
FHpPA (7:3FTA)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Miscellaneous			
F-53B (major)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
F-53B (minor)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Sum F-53B	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
ADONA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
HFPO-DA (GenX)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Internal Standards			
M3PFBS	100	%	AsureQuality Method (LC-MS/MS)
M3PFHxS	96	%	AsureQuality Method (LC-MS/MS)
M8PFOS	116	%	AsureQuality Method (LC-MS/MS)
M4PFBA	106	%	AsureQuality Method (LC-MS/MS)
M5PFPeA	102	%	AsureQuality Method (LC-MS/MS)
M5PFHxA	103	%	AsureQuality Method (LC-MS/MS)
MPFHpA	97	%	AsureQuality Method (LC-MS/MS)
M8PFOA	107	%	AsureQuality Method (LC-MS/MS)
M9PFNA	101	%	AsureQuality Method (LC-MS/MS)
M6PFDA	102	%	AsureQuality Method (LC-MS/MS)
M7PFUnDA	106	%	AsureQuality Method (LC-MS/MS)
MPFDoDA	145	%	AsureQuality Method (LC-MS/MS)
MPFTeDA	61	%	AsureQuality Method (LC-MS/MS)
MPFOSA	105	%	AsureQuality Method (LC-MS/MS)
DNEtFOSA	129	%	AsureQuality Method (LC-MS/MS)
DNMeFOSA	132	%	AsureQuality Method (LC-MS/MS)
DNEtFOSAA	114	%	AsureQuality Method (LC-MS/MS)
DNMeFOSAA	111	%	AsureQuality Method (LC-MS/MS)
DNEtFOSE	108	%	AsureQuality Method (LC-MS/MS)
DNMeFOSE	101	%	AsureQuality Method (LC-MS/MS)
M4:2FTS	102	%	AsureQuality Method (LC-MS/MS)
M6:2FTS	99	%	AsureQuality Method (LC-MS/MS)
M8:2FTS	99	%	AsureQuality Method (LC-MS/MS)
M3HFPO-DA	131	%	AsureQuality Method (LC-MS/MS)

Analysis Summary

Wellington Laboratory

Analysis	Method	Accreditation	Authorised by
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Poly- and Perfluorinated Alkyl Substances (PFAS) in Potable Water

DX-PFCS01, 03-SUITE_B AsureQuality Method (LC-MS/MS)

IANZ

Amelie Sellier

di-PFHxS (1) = Concentration determined using a branched di-PFHxS isomer standard (399>80 transition)

mono-PFHxS (1) = Concentration determined using a branched mono-PFHxS isomer standard (399>80 transition)

L-PFHxS (1) = Concentration determined using the linear PFHxS isomer standard (399>80 transition)

Total PFHxS (3) = The numerical sum of di-PFHxS (1), mono-PFHxS (1), and L-PFHxS (1)

di-PFOS (5) = Concentration determined using a branched di-PFOS isomer standard (499>80 transition)

mono-PFOS (5) = Concentration determined using a branched mono-PFOS isomer standard (499>80 transition)

L-PFOS (5) = Concentration determined using the linear PFOS isomer standard (499>230 transition)

Total PFOS (7) = The numerical sum of di-PFOS (5), mono-PFOS (5), and L-PFOS (5)

Sum PFHxS+PFOS (1) = The numerical sum of Total PFHxS (3) and Total PFOS (7)

Sum F-53B = The numerical sum of 9Cl-PF3ONS (F-53B major) and 11Cl-PF3OUdS (F-53B minor)

For all Totals, where a component is detected below the LOR, the value of zero is used in the calculation of the sum. The result represents the lower-bound concentration present in the sample.

Reported results are corrected for internal standard recovery

Results that are prefixed with '<' indicate the lowest level at which the analyte can be reported, and that in this case the analyte was not observed above this limit.

NR = Not Reportable

Amelie Sellier

Scientist

Accreditation



Appendix

Analyte LOR Summary

Poly- and Perfluorinated Alkyl Substances (PFAS) in Potable Water - AsureQuality Method (LC-MS/MS)

Analyte	LOR
Perfluoroalkylsulfonic acids	
PFPrS	0.0010 µg/L
PFBS	0.0010 µg/L
PPeS	0.0010 µg/L
di-PFHxS (1)	0.0010 µg/L
mono-PFHxS (1)	0.0010 µg/L
L-PFHxS (1)	0.0010 µg/L
Total PFHxS (3)	0.0010 µg/L
PFHpS	0.0010 µg/L
di-PFOS (5)	0.0010 µg/L
mono-PFOS (5)	0.0010 µg/L
L-PFOS (5)	0.0010 µg/L
Total PFOS (7)	0.0010 µg/L
Sum PFHxS+PFOS (1)	0.0010 µg/L
PFNS	NR µg/L
PFDS	NR µg/L
PFECHS	0.0010 µg/L
Perfluoroalkylcarboxylic acids	
PFBA	0.0010 µg/L
PPeA	0.0010 µg/L
PFHxA	0.0010 µg/L
PFHpA	0.0010 µg/L
PFOA	0.0010 µg/L
PFNA	0.0010 µg/L
PFDA	0.0010 µg/L
PFUnDA	0.0010 µg/L
PFDoDA	0.0010 µg/L
PFTrDA	NR µg/L
PFTeDA	NR µg/L
P37DMOA	0.0010 µg/L
Perfluoroctanesulfonamides	
PFOSA	0.0010 µg/L
NEtFOSA-M	0.0010 µg/L
NMeFOSA-M	0.0010 µg/L
Perfluoroctanesulfonamidoacetic acids	
NEtFOSAA	0.0010 µg/L
NMeFOSAA	0.0010 µg/L
Perfluoroctanesulfonamidoethanols	
NEtFOSE-M	0.0010 µg/L
NMeFOSE-M	0.0010 µg/L
Telomere Sulfonic acids	
4:2 FTS	NR µg/L
6:2 FTS	0.0010 µg/L
8:2 FTS	0.0010 µg/L
10:2 FTS	0.0010 µg/L
Telomere Carboxylic acids	
FPrPA (3:3FTA)	0.0010 µg/L
FPePA (5:3FTA)	0.0010 µg/L

FHpPA (7:3FTA)	0.0010 µg/L
Miscellaneous	
F-53B (major)	0.0010 µg/L
F-53B (minor)	0.0010 µg/L
Sum F-53B	0.0010 µg/L
ADONA	0.0010 µg/L
HFPO-DA (GenX)	0.0010 µg/L

Analyte Definitions

Poly- and Perfluorinated Alkyl Substances (PFAS) in Potable Water - AsureQuality Method (LC-MS/MS)

Analyte	Full Name
Perfluoroalkylsulfonic acids	
PPrS	Perfluoro-1-propanesulfonic acid
PFBS	Perfluoro-1-butanesulfonic acid
PPeS	Perfluoro-1-pentanesulfonic acid
di-PFHxS (1)	Total Perfluorodimethylbutane sulfonic acids
mono-PFHxS (1)	Total Perfluoromethylpentane sulfonic acids
L-PFHxS (1)	Linear Perfluorohexanesulfonic acid
PFHpS	Perfluoro-1-heptanesulfonic acid
di-PFOS (5)	Total Perfluorodimethylhexane sulfonic acids
mono-PFOS (5)	Total Perfluoromethylheptane sulfonic acids
L-PFOS (5)	Linear Perfluoroctanesulfonic acid
PFNS	Perfluoro-1-nonanesulfonic acid
PFDS	Perfluoro-1-decanesulfonic acid
PFECHS	Perfluoro-4-ethylcyclohexanesulfonic acid
Perfluoroalkylcarboxylic acids	
PFBA	Perfluoro-n-butanoic acid
PPeA	Perfluoro-n-pentanoic acid
PFHxA	Perfluoro-n-hexanoic acid
PFHpA	Perfluoro-n-heptanoic acid
PFOA	Perfluoro-n-octanoic acid
PFNA	Perfluoro-n-nonanoic acid
PFDA	Perfluoro-n-decanoic acid
PFUnDA	Perfluoro-n-undecanoic acid
PFDoDA	Perfluoro-n-dodecanoic acid
PFTrDA	Perfluoro-n-tridecanoic acid
PFTeDA	Perfluoro-n-tetradecanoic acid
P37DMOA	Perfluoro-3,7-dimethyloctanoic acid
Perfluoroctanesulfonamides	
PFOSA	Perfluoro-1-octanesulfonamide
NEtFOSA-M	N-ethylperfluoro-1-octanesulfonamide
NMeFOSA-M	N-methylperfluoro-1-octanesulfonamide
Perfluoroctanesulfonamidoacetic acids	
NETFOSAA	N-ethylperfluoro-1-octanesulfonamidoacetic acid
NMeFOSAA	N-methylperfluoro-1-octanesulfonamidoacetic acid
Perfluoroctanesulfonamidoethanols	
NETFOSE-M	2-(N-ethylperfluoro-1-octanesulfonamido)-ethanol
NMeFOSE-M	2-(N-methylperfluoro-1-octanesulfonamido)-ethanol
Telomere Sulfonic acids	
4:2 FTS	1H,1H,2H,2H-perfluoro-1-hexanesulfonic acid
6:2 FTS	1H,1H,2H,2H-perfluoro-1-octanesulfonic acid
8:2 FTS	1H,1H,2H,2H-perfluoro-1-decanesulfonic acid
10:2 FTS	1H,1H,2H,2H-perfluorododecanesulfonic acid
Telomere Carboxylic acids	
FPrPA (3:3FTA)	3-Perfluoropropyl propanoic acid

Analyte	Full Name
FPePA (5:3FTA)	3-Perfluoropentyl propanoic acid
FHpPA (7:3FTA)	3-Perfluoroheptyl propanoic acid
Miscellaneous	
F-53B (major)	9-chlorohexadecafluoro-3-oxanonane-1-sulfonic acid
F-53B (minor)	11-chloroeicosfluoro-3-oxaundecane-1-sulfonic acid
Sum F-53B	Sum of F-53B components (major + minor)
ADONA	Dodecafluoro-3H-4,8-dioxanonanoic acid
HFPO-DA (GenX)	Tetrafluoro-2-(heptafluoropropoxy)propanoic acid
Internal Standards	
M3PFBS	Perfluoro-1-[2,3,4-13C3]butanesulfonic acid
M3PFHxS	Perfluoro-1-[1,2,3-13C3]hexanesulfonic acid
M8PFOS	Perfluoro-1-[13C8]octanesulfonic acid
M4PFBA	Perfluoro-n-[1,2,3,4-13C4]butanoic acid
M5PFPeA	Perfluoro-n-[1,2,3,4,5-13C5]pentanoic acid
M5PFHxA	Perfluoro-n-[1,2,3,4,6-13C5]hexanoic acid
MPFHxA	Perfluoro-n-[1,2,3,4-13C4]heptanoic acid
M8PFOA	Perfluoro-n-[13C8]octanoic acid
M9PFNA	Perfluoro-n-[13C9]nonanoic acid
M6PFDA	Perfluoro-n-[1,2,3,4,5,6-13C6]decanoic acid
M7PFUnDA	Perfluoro-n-[1,2,3,4,5,6,7-13C7]undecanoic acid
MPFDoDA	Perfluoro-n-[1,2-13C2]dodecanoic acid
MPFTeDA	Perfluoro-n-[1,2-13C2]tetradecanoic acid
MPFOSA	Perfluoro-1-[13C8]octanesulfonamide
DNEtFOSA	N-ethyl-D5-perfluoro-1-octanesulfonamide
DNMeFOSA	N-methyl-D3-perfluoro-1-octanesulfonamide
DNEtFOSAA	N-ethyl-D5-perfluoro-1-octanesulfonamidoacetic acid
DNMeFOSAA	N-methyl-D3-perfluoro-1-octanesulfonamidoacetic acid
DNEtFOSE	2-(N-ethyl-D5-perfluoro-1-octanesulfonamido)ethan-D4-ol
DNMeFOSE	2-(N-methyl-D3-perfluoro-1-octanesulfonamido)ethan-D4-ol
M4:2FTS	1H,1H,2H,2H-perfluoro-1-[1,2-13C2]-hexane sulfonic acid
M6:2FTS	1H,1H,2H,2H-perfluoro-1-[1,2-13C2]-octane sulfonic acid
M8:2FTS	1H,1H,2H,2H-perfluoro-1-[1,2-13C2]-decane sulfonic acid
M3HFPO-DA	Tetrafluoro-2-(heptafluoropropoxy)-13C3-propanoic acid

LOR = Limit of Reporting

LOD = Limit of Detection

NR = Not Reportable

Certificate of Analysis

Submission Reference: A02744123
Final Report

Bryn Taiapa
Pattle Delamore Partners Limited
P O Box 9528
Auckland 1149
New Zealand

PO Number: OHA_PFAS

Report Issued: 12-Oct-2022

AsureQuality Reference: 22-262835

Sample(s) Received: 29-Sep-2022 08:30

Testing Period: 30-Sep-2022 to 12-Oct-2022

Date of analysis is available on request.

Results

The tests were performed on the samples as received.

Customer Sample Name: OHA_DPB_SW6_8_280922		Lab ID: 22-262835-1	
Sample Condition: Acceptable	Sampled Date: 28-Sep-2022		
Test	Result	Unit	Method Reference
Poly- and Perfluorinated Alkyl Substances (PFAS) in Non Potable Water - High Level			
Perfluoroalkylsulfonic acids			
PFPrS	0.026	µg/L	AsureQuality Method (LC-MS/MS)
PFBS	0.089	µg/L	AsureQuality Method (LC-MS/MS)
PPeS	0.12	µg/L	AsureQuality Method (LC-MS/MS)
di-PFHxS (1)	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
mono-PFHxS (1)	0.23	µg/L	AsureQuality Method (LC-MS/MS)
L-PFHxS (1)	1.4	µg/L	AsureQuality Method (LC-MS/MS)
Total PFHxS (3)	1.6	µg/L	AsureQuality Method (LC-MS/MS)
PFHpS	0.061	µg/L	AsureQuality Method (LC-MS/MS)
di-PFOS (5)	0.059	µg/L	AsureQuality Method (LC-MS/MS)
mono-PFOS (5)	0.89	µg/L	AsureQuality Method (LC-MS/MS)
L-PFOS (5)	0.82	µg/L	AsureQuality Method (LC-MS/MS)
Total PFOS (7)	1.8	µg/L	AsureQuality Method (LC-MS/MS)
Sum PFHxS+PFOS (1)	3.4	µg/L	AsureQuality Method (LC-MS/MS)
PFNS	<0.050	µg/L	AsureQuality Method (LC-MS/MS)
PFDS	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
PFECHS	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
Perfluoroalkylcarboxylic acids			
PFBA	0.24	µg/L	AsureQuality Method (LC-MS/MS)
PPeA	0.90	µg/L	AsureQuality Method (LC-MS/MS)
PFHxA	0.68	µg/L	AsureQuality Method (LC-MS/MS)
PFHpA	0.38	µg/L	AsureQuality Method (LC-MS/MS)
PFOA	0.51	µg/L	AsureQuality Method (LC-MS/MS)
PFNA	0.22	µg/L	AsureQuality Method (LC-MS/MS)
PFDA	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
PFUnDA	<0.025	µg/L	AsureQuality Method (LC-MS/MS)

AsureQuality Ltd has used reasonable skill, care, and effort to provide an accurate analysis of the sample(s) which form(s) the subject of this report. However, the accuracy of this analysis is reliant on, and subject to, the sample(s) provided by you and your responsibility as to transportation of the sample(s). AsureQuality Ltd's standard terms of business apply to the analysis set out in this report.

Test	Result	Unit	Method Reference
PFDoDA	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
PFTrDA	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
PFTeDA	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
P37DMOA	<0.050	µg/L	AsureQuality Method (LC-MS/MS)
Perfluoroctanesulfonamides			
PFOSA	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
NEtFOSA-M	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
NMeFOSA-M	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
Perfluoroctanesulfonamidoacetic acids			
NEtFOSAA	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
NMeFOSAA	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
Perfluoroctanesulfonamidoethanols			
NEtFOSE-M	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
NMeFOSE-M	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
Telomere Sulfonic acids			
4:2 FTS	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
6:2 FTS	0.70	µg/L	AsureQuality Method (LC-MS/MS)
8:2 FTS	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
10:2 FTS	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
Telomere Carboxylic acids			
FPrPA (3:3FTA)	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
FPePA (5:3FTA)	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
FHpPA (7:3FTA)	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
Miscellaneous			
F-53B (major)	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
F-53B (minor)	<0.050	µg/L	AsureQuality Method (LC-MS/MS)
Sum F-53B	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
ADONA	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
HFPO-DA (GenX)	<0.050	µg/L	AsureQuality Method (LC-MS/MS)
Internal Standards			
M3PFBS	106	%	AsureQuality Method (LC-MS/MS)
M3PFHxS	116	%	AsureQuality Method (LC-MS/MS)
M8PFOS	108	%	AsureQuality Method (LC-MS/MS)
M4PFBA	105	%	AsureQuality Method (LC-MS/MS)
M5PFPeA	111	%	AsureQuality Method (LC-MS/MS)
M5PFHxA	106	%	AsureQuality Method (LC-MS/MS)
MPFHpA	108	%	AsureQuality Method (LC-MS/MS)
M8PFOA	103	%	AsureQuality Method (LC-MS/MS)
M9PFNA	113	%	AsureQuality Method (LC-MS/MS)
M6PFDA	99	%	AsureQuality Method (LC-MS/MS)
M7PFUnDA	108	%	AsureQuality Method (LC-MS/MS)
MPFDoDA	107	%	AsureQuality Method (LC-MS/MS)
MPFTeDA	84	%	AsureQuality Method (LC-MS/MS)
MPFOSA	107	%	AsureQuality Method (LC-MS/MS)
DNEtFOSA	106	%	AsureQuality Method (LC-MS/MS)
DNMeFOSA	109	%	AsureQuality Method (LC-MS/MS)
DNEtFOSAA	106	%	AsureQuality Method (LC-MS/MS)
DNMeFOSAA	107	%	AsureQuality Method (LC-MS/MS)
DNEtFOSE	110	%	AsureQuality Method (LC-MS/MS)
DNMeFOSE	107	%	AsureQuality Method (LC-MS/MS)

Test	Result	Unit	Method Reference
M4:2FTS	106	%	AsureQuality Method (LC-MS/MS)
M6:2FTS	96	%	AsureQuality Method (LC-MS/MS)
M8:2FTS	107	%	AsureQuality Method (LC-MS/MS)
M3HFPO-DA	118	%	AsureQuality Method (LC-MS/MS)

QC Results

Blank

Relates to sample(s) 22-262835-1

Test	Result	Unit	Method Reference
Poly- and Perfluorinated Alkyl Substances (PFAS) in Non Potable Water - High Level			
Perfluoroalkylsulfonic acids			
PFPrS	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
PFBS	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
PPeS	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
di-PFHxS (1)	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
mono-PFHxS (1)	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
L-PFHxS (1)	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
Total PFHxS (3)	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
PFHpS	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
di-PFOS (5)	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
mono-PFOS (5)	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
L-PFOS (5)	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
Total PFOS (7)	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
Sum PFHxS+PFOS (1)	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
PFNS	<0.050	µg/L	AsureQuality Method (LC-MS/MS)
PFDS	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
PFECHS	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
Perfluoroalkylcarboxylic acids			
PFBA	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
PPeA	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
PFHxA	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
PFHpA	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
PFOA	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
PFNA	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
PFDA	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
PFUnDA	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
PFDoDA	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
PFTrDA	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
PFTeDA	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
P37DMOA	<0.050	µg/L	AsureQuality Method (LC-MS/MS)
Perfluoroctanesulfonamides			
PFOSA	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
NEtFOSA-M	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
NMeFOSA-M	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
Perfluoroctanesulfonamidoacetic acids			
NEtFOSAA	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
NMeFOSAA	<0.025	µg/L	AsureQuality Method (LC-MS/MS)

Perfluoroctanesulfonamidoethanols			
NEtFOSE-M	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
NMeFOSE-M	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
Telomere Sulfonic acids			
4:2 FTS	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
6:2 FTS	<0.050	µg/L	AsureQuality Method (LC-MS/MS)
8:2 FTS	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
10:2 FTS	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
Telomere Carboxylic acids			
FPrPA (3:3FTA)	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
FPePA (5:3FTA)	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
FHpPA (7:3FTA)	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
Miscellaneous			
F-53B (major)	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
F-53B (minor)	<0.050	µg/L	AsureQuality Method (LC-MS/MS)
Sum F-53B	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
ADONA	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
HFPO-DA (GenX)	<0.050	µg/L	AsureQuality Method (LC-MS/MS)
Internal Standards			
M3PFBS	109	%	AsureQuality Method (LC-MS/MS)
M3PFHxS	104	%	AsureQuality Method (LC-MS/MS)
M8PFOS	107	%	AsureQuality Method (LC-MS/MS)
M4PFBA	101	%	AsureQuality Method (LC-MS/MS)
M5PFPeA	113	%	AsureQuality Method (LC-MS/MS)
M5PFHxA	108	%	AsureQuality Method (LC-MS/MS)
MPFHpA	107	%	AsureQuality Method (LC-MS/MS)
M8PFOA	100	%	AsureQuality Method (LC-MS/MS)
M9PFNA	102	%	AsureQuality Method (LC-MS/MS)
M6PFDA	100	%	AsureQuality Method (LC-MS/MS)
M7PFUnDA	110	%	AsureQuality Method (LC-MS/MS)
MPFDoDA	97	%	AsureQuality Method (LC-MS/MS)
MPFTeDA	107	%	AsureQuality Method (LC-MS/MS)
MPFOSA	108	%	AsureQuality Method (LC-MS/MS)
DNEtFOSA	105	%	AsureQuality Method (LC-MS/MS)
DNMeFOSA	107	%	AsureQuality Method (LC-MS/MS)
DNEtFOSAA	108	%	AsureQuality Method (LC-MS/MS)
DNMeFOSAA	109	%	AsureQuality Method (LC-MS/MS)
DNEtFOSE	112	%	AsureQuality Method (LC-MS/MS)
DNMeFOSE	111	%	AsureQuality Method (LC-MS/MS)
M4:2FTS	107	%	AsureQuality Method (LC-MS/MS)
M6:2FTS	87	%	AsureQuality Method (LC-MS/MS)
M8:2FTS	97	%	AsureQuality Method (LC-MS/MS)
M3HFPO-DA	104	%	AsureQuality Method (LC-MS/MS)

Analysis Summary

Wellington Laboratory

Analysis	Method	Accreditation	Authorised by
Poly- and Perfluorinated Alkyl Substances (PFAS) in Non Potable Water - High Level DX-PFCS01, 05-HIGHLEVEL	AsureQuality Method (LC-MS/MS)	IANZ	Amelie Sellier

di-PFHxS (1) = Concentration determined using a branched di-PFHxS isomer standard (399>80 transition)

mono-PFHxS (1) = Concentration determined using a branched mono-PFHxS isomer standard (399>80 transition)

L-PFHxS (1) = Concentration determined using the linear PFHxS isomer standard (399>80 transition)

Total PFHxS (3) = The numerical sum of di-PFHxS (1), mono-PFHxS (1), and L-PFHxS (1)

di-PFOS (5) = Concentration determined using a branched di-PFOS isomer standard (499>80 transition)

mono-PFOS (5) = Concentration determined using a branched mono-PFOS isomer standard (499>80 transition)

L-PFOS (5) = Concentration determined using the linear PFOS isomer standard (499>230 transition)

Total PFOS (7) = The numerical sum of di-PFOS (5), mono-PFOS (5), and L-PFOS (5)

Sum PFHxS+PFOS (1) = The numerical sum of Total PFHxS (3) and Total PFOS (7)

Sum F-53B = The numerical sum of 9Cl-PF3ONS (F-53B major) and 11Cl-PF3OUdS (F-53B minor)

For all Totals, where a component is detected below the LOR, the value of zero is used in the calculation of the sum. The result represents the lower-bound concentration present in the sample.

Reported results are corrected for internal standard recovery

Results that are prefixed with '<' indicate the lowest level at which the analyte can be reported, and that in this case the analyte was not observed above this limit.



Amelie Sellier

Scientist

Accreditation



Appendix

Analyte LOR Summary

Poly- and Perfluorinated Alkyl Substances (PFAS) in Non Potable Water - High Level - AsureQuality Method (LC-MS/MS)

Analyte LOR

Perfluoroalkylsulfonic acids

PPrS	0.025 µg/L
PFBS	0.025 µg/L
PPeS	0.025 µg/L
di-PFHxS (1)	0.025 µg/L
mono-PFHxS (1)	0.025 µg/L
L-PFHxS (1)	0.025 µg/L
Total PFHxS (3)	0.025 µg/L
PFHpS	0.025 µg/L
di-PFOS (5)	0.025 µg/L
mono-PFOS (5)	0.025 µg/L
L-PFOS (5)	0.025 µg/L
Total PFOS (7)	0.025 µg/L
Sum PFHxS+PFOS (1)	0.025 µg/L
PFNS	0.050 µg/L
PFDS	0.10 µg/L
PFECHS	0.025 µg/L

Perfluoroalkylcarboxylic acids

PFBA	0.10 µg/L
PPeA	0.10 µg/L
PFHxA	0.025 µg/L
PFHpA	0.025 µg/L
PFOA	0.025 µg/L
PFNA	0.025 µg/L
PFDA	0.025 µg/L
PFUnDA	0.025 µg/L
PFDoDA	0.10 µg/L
PFTrDA	0.10 µg/L
PFTeDA	0.10 µg/L
P37DMOA	0.050 µg/L

Perfluoroctanesulfonamides

PFOSA	0.025 µg/L
NEtFOSA-M	0.10 µg/L
NMeFOSA-M	0.10 µg/L

Perfluoroctanesulfonamidoacetic acids

NEtFOSAA	0.025 µg/L
NMeFOSAA	0.025 µg/L

Perfluoroctanesulfonamidoethanols

NETFOSE-M	0.10 µg/L
NMeFOSE-M	0.10 µg/L

Telomere Sulfonic acids

4:2 FTS	0.025 µg/L
6:2 FTS	0.050 µg/L
8:2 FTS	0.10 µg/L
10:2 FTS	0.025 µg/L

Telomere Carboxylic acids

FPrPA (3:3FTA)	0.10 µg/L
FPePA (5:3FTA)	0.025 µg/L

FHpPA (7:3FTA)	0.025 µg/L
Miscellaneous	
F-53B (major)	0.10 µg/L
F-53B (minor)	0.050 µg/L
Sum F-53B	0.1 µg/L
ADONA	0.025 µg/L
HFPO-DA (GenX)	0.050 µg/L

Analyte Definitions

Poly- and Perfluorinated Alkyl Substances (PFAS) in Non Potable Water - High Level - AsureQuality Method (LC-MS/MS)

Analyte	Full Name
Perfluoroalkylsulfonic acids	
PPrS	Perfluoro-1-propanesulfonic acid
PFBS	Perfluoro-1-butanesulfonic acid
PPeS	Perfluoro-1-pentanesulfonic acid
di-PFHxS (1)	Total Perfluorodimethylbutane sulfonic acids
mono-PFHxS (1)	Total Perfluoromethylpentane sulfonic acids
L-PFHxS (1)	Linear Perfluorohexanesulfonic acid
PFHpS	Perfluoro-1-heptanesulfonic acid
di-PFOS (5)	Total Perfluorodimethylhexane sulfonic acids
mono-PFOS (5)	Total Perfluoromethylheptane sulfonic acids
L-PFOS (5)	Linear Perfluoroctanesulfonic acid
PFNS	Perfluoro-1-nonanesulfonic acid
PFDS	Perfluoro-1-decanesulfonic acid
PFECHS	Perfluoro-4-ethylcyclohexanesulfonic acid
Perfluoroalkylcarboxylic acids	
PFBA	Perfluoro-n-butanoic acid
PPeA	Perfluoro-n-pentanoic acid
PFHxA	Perfluoro-n-hexanoic acid
PFHpA	Perfluoro-n-heptanoic acid
PFOA	Perfluoro-n-octanoic acid
PFNA	Perfluoro-n-nonanoic acid
PFDA	Perfluoro-n-decanoic acid
PFUnDA	Perfluoro-n-undecanoic acid
PFDoDA	Perfluoro-n-dodecanoic acid
PFTrDA	Perfluoro-n-tridecanoic acid
PFTeDA	Perfluoro-n-tetradecanoic acid
P37DMOA	Perfluoro-3,7-dimethyloctanoic acid
Perfluoroctanesulfonamides	
PFOSA	Perfluoro-1-octanesulfonamide
NEtFOSA-M	N-ethylperfluoro-1-octanesulfonamide
NMeFOSA-M	N-methylperfluoro-1-octanesulfonamide
Perfluoroctanesulfonamidoacetic acids	
NETFOSAA	N-ethylperfluoro-1-octanesulfonamidoacetic acid
NMeFOSAA	N-methylperfluoro-1-octanesulfonamidoacetic acid
Perfluoroctanesulfonamidoethanols	
NETFOSE-M	2-(N-ethylperfluoro-1-octanesulfonamido)-ethanol
NMeFOSE-M	2-(N-methylperfluoro-1-octanesulfonamido)-ethanol
Telomere Sulfonic acids	
4:2 FTS	1H,1H,2H,2H-perfluoro-1-hexamersulfonic acid
6:2 FTS	1H,1H,2H,2H-perfluoro-1-octanesulfonic acid
8:2 FTS	1H,1H,2H,2H-perfluoro-1-decanesulfonic acid
10:2 FTS	1H,1H,2H,2H-perfluorododecanesulfonic acid
Telomere Carboxylic acids	
FPrPA (3:3FTA)	3-Perfluoropropyl propanoic acid

Analyte	Full Name
FPePA (5:3FTA)	3-Perfluoropentyl propanoic acid
FHpPA (7:3FTA)	3-Perfluoroheptyl propanoic acid
Miscellaneous	
F-53B (major)	9-chlorohexadecafluoro-3-oxanonane-1-sulfonic acid
F-53B (minor)	11-chloroeicosfluoro-3-oxaundecane-1-sulfonic acid
Sum F-53B	Sum of F-53B components (major + minor)
ADONA	Dodecafluoro-3H-4,8-dioxanonanoic acid
HFPO-DA (GenX)	Tetrafluoro-2-(heptafluoropropoxy)propanoic acid
Internal Standards	
M3PFBS	Perfluoro-1-[2,3,4-13C3]butanesulfonic acid
M3PFHxS	Perfluoro-1-[1,2,3-13C3]hexanesulfonic acid
M8PFOS	Perfluoro-1-[13C8]octanesulfonic acid
M4PFBA	Perfluoro-n-[1,2,3,4-13C4]butanoic acid
M5PFPeA	Perfluoro-n-[1,2,3,4,5-13C5]pentanoic acid
M5PFHxA	Perfluoro-n-[1,2,3,4,6-13C5]hexanoic acid
MPFHxA	Perfluoro-n-[1,2,3,4-13C4]heptanoic acid
M8PFOA	Perfluoro-n-[13C8]octanoic acid
M9PFNA	Perfluoro-n-[13C9]nonanoic acid
M6PFDA	Perfluoro-n-[1,2,3,4,5,6-13C6]decanoic acid
M7PFUnDA	Perfluoro-n-[1,2,3,4,5,6,7-13C7]undecanoic acid
MPFDoDA	Perfluoro-n-[1,2-13C2]dodecanoic acid
MPFTeDA	Perfluoro-n-[1,2-13C2]tetradecanoic acid
MPFOSA	Perfluoro-1-[13C8]octanesulfonamide
DNEtFOSA	N-ethyl-D5-perfluoro-1-octanesulfonamide
DNMeFOSA	N-methyl-D3-perfluoro-1-octanesulfonamide
DNEtFOSAA	N-ethyl-D5-perfluoro-1-octanesulfonamidoacetic acid
DNMeFOSAA	N-methyl-D3-perfluoro-1-octanesulfonamidoacetic acid
DNEtFOSE	2-(N-ethyl-D5-perfluoro-1-octanesulfonamido)ethan-D4-ol
DNMeFOSE	2-(N-methyl-D3-perfluoro-1-octanesulfonamido)ethan-D4-ol
M4:2FTS	1H,1H,2H,2H-perfluoro-1-[1,2-13C2]-hexane sulfonic acid
M6:2FTS	1H,1H,2H,2H-perfluoro-1-[1,2-13C2]-octane sulfonic acid
M8:2FTS	1H,1H,2H,2H-perfluoro-1-[1,2-13C2]-decane sulfonic acid
M3HFPO-DA	Tetrafluoro-2-(heptafluoropropoxy)-13C3-propanoic acid

LOR = Limit of Reporting

LOD = Limit of Detection

NR = Not Reportable

Certificate of Analysis

Submission Reference: A02744123
Amended Report

Bryn Taiapa
Pattle Delamore Partners Limited
P O Box 9528
Auckland 1149
New Zealand

PO Number: OHA_PFAS

Report Issued: 20-Oct-2022

AsureQuality Reference: 22-262691

Sample(s) Received: 29-Sep-2022 08:30

Testing Period: 30-Sep-2022 to 11-Oct-2022

Date of analysis is available on request.

Comments

Amended Report: Customer Sample Name amended.

Results

The tests were performed on the samples as received.

Customer Sample Name: OHA_ADJ_SW33_8_280922 Lab ID: 22-262691-1			
Sample Condition: Acceptable	Sampled Date: 28-Sep-2022		
Test	Result	Unit	Method Reference
Poly- and Perfluorinated Alkyl Substances (PFAS) in Potable Water			
Perfluoroalkylsulfonic acids			
PFPrS	0.0022	µg/L	AsureQuality Method (LC-MS/MS)
PFBS	0.0051	µg/L	AsureQuality Method (LC-MS/MS)
PPPeS	0.0052	µg/L	AsureQuality Method (LC-MS/MS)
di-PFHxS (1)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
mono-PFHxS (1)	0.0080	µg/L	AsureQuality Method (LC-MS/MS)
L-PFHxS (1)	0.044	µg/L	AsureQuality Method (LC-MS/MS)
Total PFHxS (3)	0.052	µg/L	AsureQuality Method (LC-MS/MS)
PFHpS	0.0012	µg/L	AsureQuality Method (LC-MS/MS)
di-PFOS (5)	0.0016	µg/L	AsureQuality Method (LC-MS/MS)
mono-PFOS (5)	0.029	µg/L	AsureQuality Method (LC-MS/MS)
L-PFOS (5)	0.017	µg/L	AsureQuality Method (LC-MS/MS)
Total PFOS (7)	0.048	µg/L	AsureQuality Method (LC-MS/MS)
Sum PFHxS+PFOS (1)	0.10	µg/L	AsureQuality Method (LC-MS/MS)
PFNS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFDS	NR	µg/L	AsureQuality Method (LC-MS/MS)
PFECHS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Perfluoroalkylcarboxylic acids			
PFBA	0.034	µg/L	AsureQuality Method (LC-MS/MS)
PPPeA	0.13	µg/L	AsureQuality Method (LC-MS/MS)
PFHxA	0.091	µg/L	AsureQuality Method (LC-MS/MS)
PFHpA	0.037	µg/L	AsureQuality Method (LC-MS/MS)
PFOA	0.015	µg/L	AsureQuality Method (LC-MS/MS)

AsureQuality Ltd has used reasonable skill, care, and effort to provide an accurate analysis of the sample(s) which form(s) the subject of this report. However, the accuracy of this analysis is reliant on, and subject to, the sample(s) provided by you and your responsibility as to transportation of the sample(s). AsureQuality Ltd's standard terms of business apply to the analysis set out in this report.

Test	Result	Unit	Method Reference
PFNA	0.0044	µg/L	AsureQuality Method (LC-MS/MS)
PFDA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFUnDA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFDaDA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFTrDA	NR	µg/L	AsureQuality Method (LC-MS/MS)
PFTeDA	NR	µg/L	AsureQuality Method (LC-MS/MS)
P37DMOA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Perfluoroctanesulfonamides			
PFOSA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
NEtFOSA-M	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
NMeFOSA-M	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Perfluoroctanesulfonamidoacetic acids			
NEtFOSAA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
NMeFOSAA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Perfluoroctanesulfonamidoethanols			
NEtFOSE-M	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
NMeFOSE-M	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Telomere Sulfonic acids			
4:2 FTS	NR	µg/L	AsureQuality Method (LC-MS/MS)
6:2 FTS	0.0034	µg/L	AsureQuality Method (LC-MS/MS)
8:2 FTS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
10:2 FTS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Telomere Carboxylic acids			
FPrPA (3:3FTA)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
FPePA (5:3FTA)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
FHpPA (7:3FTA)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Miscellaneous			
F-53B (major)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
F-53B (minor)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Sum F-53B	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
ADONA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
HFPO-DA (GenX)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Internal Standards			
M3PFBs	112	%	AsureQuality Method (LC-MS/MS)
M3PFHxS	127	%	AsureQuality Method (LC-MS/MS)
M8PFOS	131	%	AsureQuality Method (LC-MS/MS)
M4PFBA	70	%	AsureQuality Method (LC-MS/MS)
M5PFPeA	95	%	AsureQuality Method (LC-MS/MS)
M5PFHxA	102	%	AsureQuality Method (LC-MS/MS)
MPFHpA	122	%	AsureQuality Method (LC-MS/MS)
M8PFOA	114	%	AsureQuality Method (LC-MS/MS)
M9PFNA	124	%	AsureQuality Method (LC-MS/MS)
M6PFDA	121	%	AsureQuality Method (LC-MS/MS)
M7PFUnDA	155 (R)	%	AsureQuality Method (LC-MS/MS)
MPFDoDA	198 (R)	%	AsureQuality Method (LC-MS/MS)
MPFTeDA	533 (R)	%	AsureQuality Method (LC-MS/MS)
MPFOSA	116	%	AsureQuality Method (LC-MS/MS)
DNEtFOSA	98	%	AsureQuality Method (LC-MS/MS)
DNMeFOSA	87	%	AsureQuality Method (LC-MS/MS)
DNEtFOSAA	148	%	AsureQuality Method (LC-MS/MS)

Test	Result	Unit	Method Reference
DNMeFOSAA	130	%	AsureQuality Method (LC-MS/MS)
DNEtFOSE	114	%	AsureQuality Method (LC-MS/MS)
DNMeFOSE	92	%	AsureQuality Method (LC-MS/MS)
M4:2FTS	294 (R)	%	AsureQuality Method (LC-MS/MS)
M6:2FTS	150	%	AsureQuality Method (LC-MS/MS)
M8:2FTS	121	%	AsureQuality Method (LC-MS/MS)
M3HFPO-DA	94	%	AsureQuality Method (LC-MS/MS)

R = Recovery outside method limits

QC Results

Blank

Relates to sample(s) 22-262691-1

Test	Result	Unit	Method Reference
Poly- and Perfluorinated Alkyl Substances (PFAS) in Potable Water			
Perfluoroalkylsulfonic acids			
PFPrS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFBS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFPeS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
di-PFHxS (1)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
mono-PFHxS (1)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
L-PFHxS (1)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Total PFHxS (3)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFHpS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
di-PFOS (5)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
mono-PFOS (5)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
L-PFOS (5)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Total PFOS (7)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Sum PFHxS+PFOS (1)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFNS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFDS	NR	µg/L	AsureQuality Method (LC-MS/MS)
PFECHS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Perfluoroalkylcarboxylic acids			
PFBA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFPeA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFHxA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFHpA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFOA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFNA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFDA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFUnDA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFDoDA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFTrDA	NR	µg/L	AsureQuality Method (LC-MS/MS)
PFTeDA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
P37DMOA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Perfluorooctanesulfonamides			
PFOSA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
NEtFOSA-M	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)

Test	Result	Unit	Method Reference
NMeFOSA-M	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Perfluoroctanesulfonamidoacetic acids			
NEtFOSAA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
NMeFOSAA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Perfluoroctanesulfonamidoethanols			
NEtFOSE-M	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
NMeFOSE-M	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Telomere Sulfonic acids			
4:2 FTS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
6:2 FTS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
8:2 FTS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
10:2 FTS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Telomere Carboxylic acids			
FPrPA (3:3FTA)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
FPePA (5:3FTA)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
FHpPA (7:3FTA)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Miscellaneous			
F-53B (major)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
F-53B (minor)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Sum F-53B	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
ADONA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
HFPO-DA (GenX)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Internal Standards			
M3PFBS	105	%	AsureQuality Method (LC-MS/MS)
M3PFHxS	106	%	AsureQuality Method (LC-MS/MS)
M8PFOS	111	%	AsureQuality Method (LC-MS/MS)
M4PFBA	109	%	AsureQuality Method (LC-MS/MS)
M5PFPeA	107	%	AsureQuality Method (LC-MS/MS)
M5PFHxA	102	%	AsureQuality Method (LC-MS/MS)
MPFHxA	106	%	AsureQuality Method (LC-MS/MS)
M8PFOA	112	%	AsureQuality Method (LC-MS/MS)
M9PFNA	110	%	AsureQuality Method (LC-MS/MS)
M6PFDA	117	%	AsureQuality Method (LC-MS/MS)
M7PFUnDA	113	%	AsureQuality Method (LC-MS/MS)
MPFDsDA	86	%	AsureQuality Method (LC-MS/MS)
MPFTeDA	83	%	AsureQuality Method (LC-MS/MS)
MPFOSA	80	%	AsureQuality Method (LC-MS/MS)
DNEtFOSA	40	%	AsureQuality Method (LC-MS/MS)
DNMeFOSA	37	%	AsureQuality Method (LC-MS/MS)
DNEtFOSAA	104	%	AsureQuality Method (LC-MS/MS)
DNMeFOSAA	116	%	AsureQuality Method (LC-MS/MS)
DNEtFOSE	41	%	AsureQuality Method (LC-MS/MS)
DNMeFOSE	44	%	AsureQuality Method (LC-MS/MS)
M4:2FTS	100	%	AsureQuality Method (LC-MS/MS)
M6:2FTS	111	%	AsureQuality Method (LC-MS/MS)
M8:2FTS	120	%	AsureQuality Method (LC-MS/MS)
M3HFPO-DA	117	%	AsureQuality Method (LC-MS/MS)

Analysis Summary

Wellington Laboratory

Analysis	Method	Accreditation	Authorised by
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Poly- and Perfluorinated Alkyl Substances (PFAS) in Potable Water

DX-PFCS01, 03-SUITE_B AsureQuality Method (LC-MS/MS)

IANZ

Amelie Sellier

di-PFHxS (1) = Concentration determined using a branched di-PFHxS isomer standard (399>80 transition)

mono-PFHxS (1) = Concentration determined using a branched mono-PFHxS isomer standard (399>80 transition)

L-PFHxS (1) = Concentration determined using the linear PFHxS isomer standard (399>80 transition)

Total PFHxS (3) = The numerical sum of di-PFHxS (1), mono-PFHxS (1), and L-PFHxS (1)

di-PFOS (5) = Concentration determined using a branched di-PFOS isomer standard (499>80 transition)

mono-PFOS (5) = Concentration determined using a branched mono-PFOS isomer standard (499>80 transition)

L-PFOS (5) = Concentration determined using the linear PFOS isomer standard (499>230 transition)

Total PFOS (7) = The numerical sum of di-PFOS (5), mono-PFOS (5), and L-PFOS (5)

Sum PFHxS+PFOS (1) = The numerical sum of Total PFHxS (3) and Total PFOS (7)

Sum F-53B = The numerical sum of 9CI-PF3ONS (F-53B major) and 11CI-PF3OUdS (F-53B minor)

For all Totals, where a component is detected below the LOR, the value of zero is used in the calculation of the sum. The result represents the lower-bound concentration present in the sample.

Reported results are corrected for internal standard recovery

Results that are prefixed with '<' indicate the lowest level at which the analyte can be reported, and that in this case the analyte was not observed above this limit.

NR = Not Reportable

Amelie Sellier

Scientist

Accreditation



Appendix

Analyte LOR Summary

Poly- and Perfluorinated Alkyl Substances (PFAS) in Potable Water - AsureQuality Method (LC-MS/MS)

Analyte LOR

Perfluoroalkylsulfonic acids

PFPrS	0.0010 µg/L
PFBS	0.0010 µg/L
PPeS	0.0010 µg/L
di-PFHxS (1)	0.0010 µg/L
mono-PFHxS (1)	0.0010 µg/L
L-PFHxS (1)	0.0010 µg/L
Total PFHxS (3)	0.0010 µg/L
PFHpS	0.0010 µg/L
di-PFOS (5)	0.0010 µg/L
mono-PFOS (5)	0.0010 µg/L
L-PFOS (5)	0.0010 µg/L
Total PFOS (7)	0.0010 µg/L
Sum PFHxS+PFOS (1)	0.0010 µg/L
PFNS	0.0010 µg/L
PFDS	NR µg/L
PFECHS	0.0010 µg/L

Perfluoroalkylcarboxylic acids

PFBA	0.0010 µg/L
PPeA	0.0010 µg/L
PFHxA	0.0010 µg/L
PFHpA	0.0010 µg/L
PFOA	0.0010 µg/L
PFNA	0.0010 µg/L
PFDA	0.0010 µg/L
PFUnDA	0.0010 µg/L
PFDoDA	0.0010 µg/L
PFTrDA	NR µg/L
PFTeDA	NR µg/L
P37DMOA	0.0010 µg/L

Perfluoroctanesulfonamides

PFOSA	0.0010 µg/L
NEtFOSA-M	0.0010 µg/L
NMeFOSA-M	0.0010 µg/L

Perfluoroctanesulfonamidoacetic acids

NEtFOSAA	0.0010 µg/L
NMeFOSAA	0.0010 µg/L

Perfluoroctanesulfonamidoethanols

NEtFOSE-M	0.0010 µg/L
NMeFOSE-M	0.0010 µg/L

Telomere Sulfonic acids

4:2 FTS	NR µg/L
6:2 FTS	0.0010 µg/L
8:2 FTS	0.0010 µg/L
10:2 FTS	0.0010 µg/L

Telomere Carboxylic acids

FPrPA (3:3FTA)	0.0010 µg/L
FPePA (5:3FTA)	0.0010 µg/L

FHpPA (7:3FTA)	0.0010 µg/L
Miscellaneous	
F-53B (major)	0.0010 µg/L
F-53B (minor)	0.0010 µg/L
Sum F-53B	0.0010 µg/L
ADONA	0.0010 µg/L
HFPO-DA (GenX)	0.0010 µg/L

Analyte Definitions

Poly- and Perfluorinated Alkyl Substances (PFAS) in Potable Water - AsureQuality Method (LC-MS/MS)

Analyte	Full Name
Perfluoroalkylsulfonic acids	
PPrS	Perfluoro-1-propanesulfonic acid
PFBS	Perfluoro-1-butanesulfonic acid
PPeS	Perfluoro-1-pentanesulfonic acid
di-PFHxS (1)	Total Perfluorodimethylbutane sulfonic acids
mono-PFHxS (1)	Total Perfluoromethylpentane sulfonic acids
L-PFHxS (1)	Linear Perfluorohexanesulfonic acid
PFHpS	Perfluoro-1-heptanesulfonic acid
di-PFOS (5)	Total Perfluorodimethylhexane sulfonic acids
mono-PFOS (5)	Total Perfluoromethylheptane sulfonic acids
L-PFOS (5)	Linear Perfluoroctanesulfonic acid
PFNS	Perfluoro-1-nonanesulfonic acid
PFDS	Perfluoro-1-decanesulfonic acid
PFECHS	Perfluoro-4-ethylcyclohexanesulfonic acid
Perfluoroalkylcarboxylic acids	
PFBA	Perfluoro-n-butanoic acid
PPeA	Perfluoro-n-pentanoic acid
PFHxA	Perfluoro-n-hexanoic acid
PFHpA	Perfluoro-n-heptanoic acid
PFOA	Perfluoro-n-octanoic acid
PFNA	Perfluoro-n-nonanoic acid
PFDA	Perfluoro-n-decanoic acid
PFUnDA	Perfluoro-n-undecanoic acid
PFDoDA	Perfluoro-n-dodecanoic acid
PFTrDA	Perfluoro-n-tridecanoic acid
PFTeDA	Perfluoro-n-tetradecanoic acid
P37DMOA	Perfluoro-3,7-dimethyloctanoic acid
Perfluoroctanesulfonamides	
PFOSA	Perfluoro-1-octanesulfonamide
NEtFOSA-M	N-ethylperfluoro-1-octanesulfonamide
NMeFOSA-M	N-methylperfluoro-1-octanesulfonamide
Perfluoroctanesulfonamidoacetic acids	
NETFOSAA	N-ethylperfluoro-1-octanesulfonamidoacetic acid
NMeFOSAA	N-methylperfluoro-1-octanesulfonamidoacetic acid
Perfluoroctanesulfonamidoethanols	
NETFOSE-M	2-(N-ethylperfluoro-1-octanesulfonamido)-ethanol
NMeFOSE-M	2-(N-methylperfluoro-1-octanesulfonamido)-ethanol
Telomere Sulfonic acids	
4:2 FTS	1H,1H,2H,2H-perfluoro-1-hexanesulfonic acid
6:2 FTS	1H,1H,2H,2H-perfluoro-1-octanesulfonic acid
8:2 FTS	1H,1H,2H,2H-perfluoro-1-decanesulfonic acid
10:2 FTS	1H,1H,2H,2H-perfluorododecanesulfonic acid
Telomere Carboxylic acids	
FPrPA (3:3FTA)	3-Perfluoropropyl propanoic acid

Analyte	Full Name
FPePA (5:3FTA)	3-Perfluoropentyl propanoic acid
FHpPA (7:3FTA)	3-Perfluoroheptyl propanoic acid
Miscellaneous	
F-53B (major)	9-chlorohexadecafluoro-3-oxanonane-1-sulfonic acid
F-53B (minor)	11-chloroeicosfluoro-3-oxaundecane-1-sulfonic acid
Sum F-53B	Sum of F-53B components (major + minor)
ADONA	Dodecafluoro-3H-4,8-dioxanonanoic acid
HFPO-DA (GenX)	Tetrafluoro-2-(heptafluoropropoxy)propanoic acid
Internal Standards	
M3PFBS	Perfluoro-1-[2,3,4-13C3]butanesulfonic acid
M3PFHxS	Perfluoro-1-[1,2,3-13C3]hexanesulfonic acid
M8PFOS	Perfluoro-1-[13C8]octanesulfonic acid
M4PFBA	Perfluoro-n-[1,2,3,4-13C4]butanoic acid
M5PFPeA	Perfluoro-n-[1,2,3,4,5-13C5]pentanoic acid
M5PFHxA	Perfluoro-n-[1,2,3,4,6-13C5]hexanoic acid
MPFhpA	Perfluoro-n-[1,2,3,4-13C4]heptanoic acid
M8PFOA	Perfluoro-n-[13C8]octanoic acid
M9PFNA	Perfluoro-n-[13C9]nonanoic acid
M6PFDA	Perfluoro-n-[1,2,3,4,5,6-13C6]decanoic acid
M7PFUnDA	Perfluoro-n-[1,2,3,4,5,6,7-13C7]undecanoic acid
MPFDoDA	Perfluoro-n-[1,2-13C2]dodecanoic acid
MPFTeDA	Perfluoro-n-[1,2-13C2]tetradecanoic acid
MPFOSA	Perfluoro-1-[13C8]octanesulfonamide
DNEtFOSA	N-ethyl-D5-perfluoro-1-octanesulfonamide
DNMeFOSA	N-methyl-D3-perfluoro-1-octanesulfonamide
DNEtFOSAA	N-ethyl-D5-perfluoro-1-octanesulfonamidoacetic acid
DNMeFOSAA	N-methyl-D3-perfluoro-1-octanesulfonamidoacetic acid
DNEtFOSE	2-(N-ethyl-D5-perfluoro-1-octanesulfonamido)ethan-D4-ol
DNMeFOSE	2-(N-methyl-D3-perfluoro-1-octanesulfonamido)ethan-D4-ol
M4:2FTS	1H,1H,2H,2H-perfluoro-1-[1,2-13C2]-hexane sulfonic acid
M6:2FTS	1H,1H,2H,2H-perfluoro-1-[1,2-13C2]-octane sulfonic acid
M8:2FTS	1H,1H,2H,2H-perfluoro-1-[1,2-13C2]-decane sulfonic acid
M3HFPO-DA	Tetrafluoro-2-(heptafluoropropoxy)-13C3-propanoic acid

LOR = Limit of Reporting

LOD = Limit of Detection

NR = Not Reportable

Certificate of Analysis

Submission Reference: A02744123
Amended Report

James Conway
Pattle Delamore Partners Limited
P O Box 9528
Auckland 1149
New Zealand

PO Number: OHA_PFAS

Report Issued: 04-Nov-2022

AsureQuality Reference: 22-262599

Sample(s) Received: 30-Sep-2022 08:20

Testing Period: 30-Sep-2022 to 11-Oct-2022

Date of analysis is available on request.

Comments

Amended Report: Customer Sample Name amended for 22-262599-2.

Results

The tests were performed on the samples as received.

Customer Sample Name: OHA_ADJ_SW36_9_290922 Lab ID: 22-262599-1			
Sample Condition: Acceptable	Sampled Date: 29-Sep-2022		
Test	Result	Unit	Method Reference
Poly- and Perfluorinated Alkyl Substances (PFAS) in Potable Water			
Perfluoroalkylsulfonic acids			
PFPrS	0.0013	µg/L	AsureQuality Method (LC-MS/MS)
PFBS	0.0029	µg/L	AsureQuality Method (LC-MS/MS)
PPPeS	0.0030	µg/L	AsureQuality Method (LC-MS/MS)
di-PFHxS (1)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
mono-PFHxS (1)	0.0047	µg/L	AsureQuality Method (LC-MS/MS)
L-PFHxS (1)	0.027	µg/L	AsureQuality Method (LC-MS/MS)
Total PFHxS (3)	0.032	µg/L	AsureQuality Method (LC-MS/MS)
PFHpS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
di-PFOS (5)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
mono-PFOS (5)	0.015	µg/L	AsureQuality Method (LC-MS/MS)
L-PFOS (5)	0.0086	µg/L	AsureQuality Method (LC-MS/MS)
Total PFOS (7)	0.024	µg/L	AsureQuality Method (LC-MS/MS)
Sum PFHxS+PFOS (1)	0.056	µg/L	AsureQuality Method (LC-MS/MS)
PFNS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFDS	NR	µg/L	AsureQuality Method (LC-MS/MS)
PFECHS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Perfluoroalkylcarboxylic acids			
PFBA	0.017	µg/L	AsureQuality Method (LC-MS/MS)
PPPeA	0.051	µg/L	AsureQuality Method (LC-MS/MS)
PFHxA	0.038	µg/L	AsureQuality Method (LC-MS/MS)
PFHpA	0.018	µg/L	AsureQuality Method (LC-MS/MS)
PFOA	0.0079	µg/L	AsureQuality Method (LC-MS/MS)

AsureQuality Ltd has used reasonable skill, care, and effort to provide an accurate analysis of the sample(s) which form(s) the subject of this report. However, the accuracy of this analysis is reliant on, and subject to, the sample(s) provided by you and your responsibility as to transportation of the sample(s). AsureQuality Ltd's standard terms of business apply to the analysis set out in this report.

Test	Result	Unit	Method Reference
PFNA	0.0022	µg/L	AsureQuality Method (LC-MS/MS)
PFDA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFUnDA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFDaDA	NR	µg/L	AsureQuality Method (LC-MS/MS)
PFTrDA	NR	µg/L	AsureQuality Method (LC-MS/MS)
PFTeDA	NR	µg/L	AsureQuality Method (LC-MS/MS)
P37DMOA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Perfluoroctanesulfonamides			
PFOSA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
NEtFOSA-M	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
NMeFOSA-M	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Perfluoroctanesulfonamidoacetic acids			
NEtFOSAA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
NMeFOSAA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Perfluoroctanesulfonamidoethanols			
NEtFOSE-M	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
NMeFOSE-M	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Telomere Sulfonic acids			
4:2 FTS	NR	µg/L	AsureQuality Method (LC-MS/MS)
6:2 FTS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
8:2 FTS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
10:2 FTS	NR	µg/L	AsureQuality Method (LC-MS/MS)
Telomere Carboxylic acids			
FPrPA (3:FTA)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
FPePA (5:FTA)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
FHpPA (7:FTA)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Miscellaneous			
F-53B (major)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
F-53B (minor)	NR	µg/L	AsureQuality Method (LC-MS/MS)
Sum F-53B	<0.0010 (P)	µg/L	AsureQuality Method (LC-MS/MS)
ADONA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
HFPO-DA (GenX)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Internal Standards			
M3PFBS	109	%	AsureQuality Method (LC-MS/MS)
M3PFHxS	120	%	AsureQuality Method (LC-MS/MS)
M8PFOS	122	%	AsureQuality Method (LC-MS/MS)
M4PFBA	69	%	AsureQuality Method (LC-MS/MS)
M5PFPeA	99	%	AsureQuality Method (LC-MS/MS)
M5PFHxA	103	%	AsureQuality Method (LC-MS/MS)
MPFHpA	113	%	AsureQuality Method (LC-MS/MS)
M8PFOA	114	%	AsureQuality Method (LC-MS/MS)
M9PFNA	120	%	AsureQuality Method (LC-MS/MS)
M6PFDA	105	%	AsureQuality Method (LC-MS/MS)
M7PFUnDA	157 (R)	%	AsureQuality Method (LC-MS/MS)
MPFDoDA	201 (R)	%	AsureQuality Method (LC-MS/MS)
MPFTeDA	408 (R)	%	AsureQuality Method (LC-MS/MS)
MPFOSA	105	%	AsureQuality Method (LC-MS/MS)
DNEtFOSA	108	%	AsureQuality Method (LC-MS/MS)
DNMeFOSA	100	%	AsureQuality Method (LC-MS/MS)
DNEtFOSAA	141	%	AsureQuality Method (LC-MS/MS)

Test	Result	Unit	Method Reference
DNMeFOSAA	131	%	AsureQuality Method (LC-MS/MS)
DNEtFOSE	116	%	AsureQuality Method (LC-MS/MS)
DNMeFOSE	97	%	AsureQuality Method (LC-MS/MS)
M4:2FTS	266 (R)	%	AsureQuality Method (LC-MS/MS)
M6:2FTS	148	%	AsureQuality Method (LC-MS/MS)
M8:2FTS	123	%	AsureQuality Method (LC-MS/MS)
M3HFPO-DA	106	%	AsureQuality Method (LC-MS/MS)

P = Partial result - one or more individual components could not be reported

R = Recovery outside method limits

Customer Sample Name: OHA_ADJ_SWKBW_290922

Lab ID: 22-262599-2

Sample Condition: Acceptable

Sampled Date: 29-Sep-2022

Test	Result	Unit	Method Reference
Poly- and Perfluorinated Alkyl Substances (PFAS) in Potable Water			
Perfluoroalkylsulfonic acids			
PFPrS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFBS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PPeS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
di-PFHxS (1)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
mono-PFHxS (1)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
L-PFHxS (1)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Total PFHxS (3)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFHpS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
di-PFOS (5)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
mono-PFOS (5)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
L-PFOS (5)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Total PFOS (7)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Sum PFHxS+PFOS (1)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFNS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFDS	NR	µg/L	AsureQuality Method (LC-MS/MS)
PFECHS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Perfluoroalkylcarboxylic acids			
PFBA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PPeA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFHxA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFHpA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFOA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFNA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFDA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFUnDA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFDoDA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFTrDA	NR	µg/L	AsureQuality Method (LC-MS/MS)
PFTeDA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
P37DMOA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Perfluoroctanesulfonamides			
PFOSA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
NEtFOSA-M	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
NMeFOSA-M	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Perfluoroctanesulfonamidoacetic acids			
NEtFOSAA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)

Test	Result	Unit	Method Reference
NMeFOSAA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Perfluorooctanesulfonamidoethanols			
NEtFOSE-M	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
NMeFOSE-M	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Telomere Sulfonic acids			
4:2 FTS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
6:2 FTS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
8:2 FTS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
10:2 FTS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Telomere Carboxylic acids			
FPrPA (3:3FTA)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
FPePA (5:3FTA)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
FHpPA (7:3FTA)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Miscellaneous			
F-53B (major)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
F-53B (minor)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Sum F-53B	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
ADONA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
HFPO-DA (GenX)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Internal Standards			
M3PFBS	105	%	AsureQuality Method (LC-MS/MS)
M3PFHxS	105	%	AsureQuality Method (LC-MS/MS)
M8PFOS	104	%	AsureQuality Method (LC-MS/MS)
M4PFBA	99	%	AsureQuality Method (LC-MS/MS)
M5PFPeA	102	%	AsureQuality Method (LC-MS/MS)
M5PFHxA	100	%	AsureQuality Method (LC-MS/MS)
MPFHpA	103	%	AsureQuality Method (LC-MS/MS)
M8PFOA	97	%	AsureQuality Method (LC-MS/MS)
M9PFNA	97	%	AsureQuality Method (LC-MS/MS)
M6PFDA	109	%	AsureQuality Method (LC-MS/MS)
M7PFUnDA	91	%	AsureQuality Method (LC-MS/MS)
MPFDoDA	85	%	AsureQuality Method (LC-MS/MS)
MPFTeDA	112	%	AsureQuality Method (LC-MS/MS)
MPFOSA	90	%	AsureQuality Method (LC-MS/MS)
DNEtFOSA	59	%	AsureQuality Method (LC-MS/MS)
DNMeFOSA	61	%	AsureQuality Method (LC-MS/MS)
DNEtFOSAA	103	%	AsureQuality Method (LC-MS/MS)
DNMeFOSAA	112	%	AsureQuality Method (LC-MS/MS)
DNEtFOSE	57	%	AsureQuality Method (LC-MS/MS)
DNMeFOSE	61	%	AsureQuality Method (LC-MS/MS)
M4:2FTS	99	%	AsureQuality Method (LC-MS/MS)
M6:2FTS	99	%	AsureQuality Method (LC-MS/MS)
M8:2FTS	100	%	AsureQuality Method (LC-MS/MS)
M3HFPO-DA	100	%	AsureQuality Method (LC-MS/MS)

Customer Sample Name: Dupl.of 22-262599-2A

Lab ID: 22-262599-3

Sample Description: 20148317_Duplicate

Sample Condition: Acceptable

Sampled Date: 29-Sep-2022

Test	Result	Unit	Method Reference
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Poly- and Perfluorinated Alkyl Substances (PFAS) in Potable Water**Perfluoroalkylsulfonic acids**

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Report Number 3041553 cancels Report Number 3019557.

PFPrS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFBS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFPeS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
di-PFHxS (1)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
mono-PFHxS (1)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
L-PFHxS (1)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Total PFHxS (3)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFHpS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
di-PFOS (5)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
mono-PFOS (5)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
L-PFOS (5)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Total PFOS (7)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Sum PFHxS+PFOS (1)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFNS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFDS	NR	µg/L	AsureQuality Method (LC-MS/MS)
PFECHS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Perfluoroalkylcarboxylic acids			
PFBA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFPeA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFHxA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFHpA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFOA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFNA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFDA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFUnDA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFDoDA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFTrDA	NR	µg/L	AsureQuality Method (LC-MS/MS)
PFTeDA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
P37DMOA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Perfluoroctanesulfonamides			
PFOSA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
NEtFOSA-M	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
NMeFOSA-M	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Perfluoroctanesulfonamidoacetic acids			
NEtFOSAA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
NMeFOSAA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Perfluoroctanesulfonamidoethanols			
NEtFOSE-M	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
NMeFOSE-M	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Telomere Sulfonic acids			
4:2 FTS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
6:2 FTS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
8:2 FTS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
10:2 FTS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Telomere Carboxylic acids			
FPrPA (3:3FTA)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
FPePA (5:3FTA)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
FHpPA (7:3FTA)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Miscellaneous			
F-53B (major)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
F-53B (minor)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)

Test	Result	Unit	Method Reference
Sum F-53B	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
ADONA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
HFPO-DA (GenX)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Internal Standards			
M3PFBS	108	%	AsureQuality Method (LC-MS/MS)
M3PFHxS	113	%	AsureQuality Method (LC-MS/MS)
M8PFOS	108	%	AsureQuality Method (LC-MS/MS)
M4PFBA	108	%	AsureQuality Method (LC-MS/MS)
M5PFPeA	108	%	AsureQuality Method (LC-MS/MS)
M5PFHxA	106	%	AsureQuality Method (LC-MS/MS)
MPFHpA	103	%	AsureQuality Method (LC-MS/MS)
M8PFOA	106	%	AsureQuality Method (LC-MS/MS)
M9PFNA	109	%	AsureQuality Method (LC-MS/MS)
M6PFDA	114	%	AsureQuality Method (LC-MS/MS)
M7PFUnDA	102	%	AsureQuality Method (LC-MS/MS)
MPFDoDA	88	%	AsureQuality Method (LC-MS/MS)
MPFTeDA	33	%	AsureQuality Method (LC-MS/MS)
MPFOSA	97	%	AsureQuality Method (LC-MS/MS)
DNEtFOSA	80	%	AsureQuality Method (LC-MS/MS)
DNMeFOSA	77	%	AsureQuality Method (LC-MS/MS)
DNEtFOSAA	106	%	AsureQuality Method (LC-MS/MS)
DNMeFOSAA	112	%	AsureQuality Method (LC-MS/MS)
DNEtFOSE	74	%	AsureQuality Method (LC-MS/MS)
DNMeFOSE	72	%	AsureQuality Method (LC-MS/MS)
M4:2FTS	96	%	AsureQuality Method (LC-MS/MS)
M6:2FTS	104	%	AsureQuality Method (LC-MS/MS)
M8:2FTS	101	%	AsureQuality Method (LC-MS/MS)
M3HFPO-DA	103	%	AsureQuality Method (LC-MS/MS)

QC Results

Blank

Relates to sample(s) 22-262599-1, 22-262599-2, 22-262599-3

Test	Result	Unit	Method Reference
Poly- and Perfluorinated Alkyl Substances (PFAS) in Potable Water			
Perfluoroalkylsulfonic acids			
PFPrS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFBS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PPPeS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
di-PFHxS (1)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
mono-PFHxS (1)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
L-PFHxS (1)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Total PFHxS (3)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFHpS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
di-PFOS (5)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
mono-PFOS (5)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
L-PFOS (5)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Total PFOS (7)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Sum PFHxS+PFOS (1)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)

Test	Result	Unit	Method Reference
PFNS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFDS	NR	µg/L	AsureQuality Method (LC-MS/MS)
PFECHS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Perfluoroalkylcarboxylic acids			
PFBA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PPPeA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFHxA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFHpA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFOA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFNA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFDA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFUnDA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFDoDA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFTrDA	NR	µg/L	AsureQuality Method (LC-MS/MS)
PFTeDA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
P37DMOA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Perfluoroctanesulfonamides			
PFOSA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
NEtFOSA-M	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
NMeFOSA-M	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Perfluoroctanesulfonamidoacetic acids			
NEtFOSAA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
NMeFOSAA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Perfluoroctanesulfonamidoethanols			
NEtFOSE-M	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
NMeFOSE-M	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Telomere Sulfonic acids			
4:2 FTS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
6:2 FTS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
8:2 FTS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
10:2 FTS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Telomere Carboxylic acids			
FPrPA (3:3FTA)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
FPePA (5:3FTA)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
FHpPA (7:3FTA)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Miscellaneous			
F-53B (major)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
F-53B (minor)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Sum F-53B	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
ADONA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
HFPO-DA (GenX)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Internal Standards			
M3PFBS	105	%	AsureQuality Method (LC-MS/MS)
M3PFHxS	106	%	AsureQuality Method (LC-MS/MS)
M8PFOS	111	%	AsureQuality Method (LC-MS/MS)
M4PFBA	109	%	AsureQuality Method (LC-MS/MS)
M5PFPeA	107	%	AsureQuality Method (LC-MS/MS)

Test	Result	Unit	Method Reference
M5PFHxA	102	%	AsureQuality Method (LC-MS/MS)
MPFHxA	106	%	AsureQuality Method (LC-MS/MS)
M8PFOA	112	%	AsureQuality Method (LC-MS/MS)
M9PFNA	110	%	AsureQuality Method (LC-MS/MS)
M6PFDA	117	%	AsureQuality Method (LC-MS/MS)
M7PFUnDA	113	%	AsureQuality Method (LC-MS/MS)
MPFDoDA	86	%	AsureQuality Method (LC-MS/MS)
MPFTeDA	83	%	AsureQuality Method (LC-MS/MS)
MPFOSA	80	%	AsureQuality Method (LC-MS/MS)
DNEtFOSA	40	%	AsureQuality Method (LC-MS/MS)
DNMeFOSA	37	%	AsureQuality Method (LC-MS/MS)
DNEtFOSAA	104	%	AsureQuality Method (LC-MS/MS)
DNMeFOSAA	116	%	AsureQuality Method (LC-MS/MS)
DNEtFOSE	41	%	AsureQuality Method (LC-MS/MS)
DNMeFOSE	44	%	AsureQuality Method (LC-MS/MS)
M4:2FTS	100	%	AsureQuality Method (LC-MS/MS)
M6:2FTS	111	%	AsureQuality Method (LC-MS/MS)
M8:2FTS	120	%	AsureQuality Method (LC-MS/MS)
M3HFPO-DA	117	%	AsureQuality Method (LC-MS/MS)

Analysis Summary

Wellington Laboratory

Analysis	Method	Accreditation	Authorised by
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Poly- and Perfluorinated Alkyl Substances (PFAS) in Potable Water

DX-PFCS01, 03-SUITE_B AsureQuality Method (LC-MS/MS)

IANZ

Amelie Sellier

di-PFhXS (1) = Concentration determined using a branched di-PFhXS isomer standard (399>80 transition)

mono-PFhXS (1) = Concentration determined using a branched mono-PFhXS isomer standard (399>80 transition)

L-PFhXS (1) = Concentration determined using the linear PFhXS isomer standard (399>80 transition)

Total PFhXS (3) = The numerical sum of di-PFhXS (1), mono-PFhXS (1), and L-PFhXS (1)

di-PFOS (5) = Concentration determined using a branched di-PFOS isomer standard (499>80 transition)

mono-PFOS (5) = Concentration determined using a branched mono-PFOS isomer standard (499>80 transition)

L-PFOS (5) = Concentration determined using the linear PFOS isomer standard (499>230 transition)

Total PFOS (7) = The numerical sum of di-PFOS (5), mono-PFOS (5), and L-PFOS (5)

Sum PFhXS+PFOS (1) = The numerical sum of Total PFhXS (3) and Total PFOS (7)

Sum F-53B = The numerical sum of 9Cl-PF3ONS (F-53B major) and 11Cl-PF3OUDS (F-53B minor)

For all Totals, where a component is detected below the LOR, the value of zero is used in the calculation of the sum. The result represents the lower-bound concentration present in the sample.

Reported results are corrected for internal standard recovery

Results that are prefixed with '<' indicate the lowest level at which the analyte can be reported, and that in this case the analyte was not observed above this limit.

NR = Not Reportable

Amelie Sellier

Scientist

Accreditation



Appendix

Analyte LOR Summary

Poly- and Perfluorinated Alkyl Substances (PFAS) in Potable Water - AsureQuality Method (LC-MS/MS)

Analyte	LOR
Perfluoroalkylsulfonic acids	
PFPrS	0.0010 µg/L
PFBS	0.0010 µg/L
PPeS	0.0010 µg/L
di-PFHxS (1)	0.0010 µg/L
mono-PFHxS (1)	0.0010 µg/L
L-PFHxS (1)	0.0010 µg/L
Total PFHxS (3)	0.0010 µg/L
PFHpS	0.0010 µg/L
di-PFOS (5)	0.0010 µg/L
mono-PFOS (5)	0.0010 µg/L
L-PFOS (5)	0.0010 µg/L
Total PFOS (7)	0.0010 µg/L
Sum PFHxS+PFOS (1)	0.0010 µg/L
PFNS	0.0010 µg/L
PFDS	NR µg/L
PFECHS	0.0010 µg/L
Perfluoroalkylcarboxylic acids	
PFBA	0.0010 µg/L
PPeA	0.0010 µg/L
PFHxA	0.0010 µg/L
PFHpA	0.0010 µg/L
PFOA	0.0010 µg/L
PFNA	0.0010 µg/L
PFDA	0.0010 µg/L
PFUnDA	0.0010 µg/L
PFDoDA	NR µg/L
PFTrDA	NR µg/L
PFTeDA	NR µg/L
P37DMOA	0.0010 µg/L
Perfluoroctanesulfonamides	
PFOSA	0.0010 µg/L
NEtFOSA-M	0.0010 µg/L
NMeFOSA-M	0.0010 µg/L
Perfluoroctanesulfonamidoacetic acids	
NEtFOSAA	0.0010 µg/L
NMeFOSAA	0.0010 µg/L
Perfluoroctanesulfonamidoethanols	
NEtFOSE-M	0.0010 µg/L
NMeFOSE-M	0.0010 µg/L
Telomere Sulfonic acids	
4:2 FTS	NR µg/L
6:2 FTS	0.0010 µg/L
8:2 FTS	0.0010 µg/L
10:2 FTS	NR µg/L
Telomere Carboxylic acids	
FPrPA (3:3FTA)	0.0010 µg/L
FPePA (5:3FTA)	0.0010 µg/L

FHpPA (7:3FTA)	0.0010 µg/L
Miscellaneous	
F-53B (major)	0.0010 µg/L
F-53B (minor)	NR µg/L
Sum F-53B	0.0010 µg/L
ADONA	0.0010 µg/L
HFPO-DA (GenX)	0.0010 µg/L

Analyte Definitions

Poly- and Perfluorinated Alkyl Substances (PFAS) in Potable Water - AsureQuality Method (LC-MS/MS)

Analyte	Full Name
Perfluoroalkylsulfonic acids	
PPrS	Perfluoro-1-propanesulfonic acid
PFBS	Perfluoro-1-butanesulfonic acid
PPeS	Perfluoro-1-pentanesulfonic acid
di-PFHxS (1)	Total Perfluorodimethylbutane sulfonic acids
mono-PFHxS (1)	Total Perfluoromethylpentane sulfonic acids
L-PFHxS (1)	Linear Perfluorohexanesulfonic acid
PFHpS	Perfluoro-1-heptanesulfonic acid
di-PFOS (5)	Total Perfluorodimethylhexane sulfonic acids
mono-PFOS (5)	Total Perfluoromethylheptane sulfonic acids
L-PFOS (5)	Linear Perfluoroctanesulfonic acid
PFNS	Perfluoro-1-nonanesulfonic acid
PFDS	Perfluoro-1-decanesulfonic acid
PFECHS	Perfluoro-4-ethylcyclohexanesulfonic acid
Perfluoroalkylcarboxylic acids	
PFBA	Perfluoro-n-butanoic acid
PPeA	Perfluoro-n-pentanoic acid
PFHxA	Perfluoro-n-hexanoic acid
PFHpA	Perfluoro-n-heptanoic acid
PFOA	Perfluoro-n-octanoic acid
PFNA	Perfluoro-n-nonanoic acid
PFDA	Perfluoro-n-decanoic acid
PFUnDA	Perfluoro-n-undecanoic acid
PFDoDA	Perfluoro-n-dodecanoic acid
PFTrDA	Perfluoro-n-tridecanoic acid
PFTeDA	Perfluoro-n-tetradecanoic acid
P37DMOA	Perfluoro-3,7-dimethyloctanoic acid
Perfluoroctanesulfonamides	
PFOSA	Perfluoro-1-octanesulfonamide
NEtFOSA-M	N-ethylperfluoro-1-octanesulfonamide
NMeFOSA-M	N-methylperfluoro-1-octanesulfonamide
Perfluoroctanesulfonamidoacetic acids	
NETFOSAA	N-ethylperfluoro-1-octanesulfonamidoacetic acid
NMeFOSAA	N-methylperfluoro-1-octanesulfonamidoacetic acid
Perfluoroctanesulfonamidoethanols	
NETFOSE-M	2-(N-ethylperfluoro-1-octanesulfonamido)-ethanol
NMeFOSE-M	2-(N-methylperfluoro-1-octanesulfonamido)-ethanol
Telomere Sulfonic acids	
4:2 FTS	1H,1H,2H,2H-perfluoro-1-hexanesulfonic acid
6:2 FTS	1H,1H,2H,2H-perfluoro-1-octanesulfonic acid
8:2 FTS	1H,1H,2H,2H-perfluoro-1-decanesulfonic acid
10:2 FTS	1H,1H,2H,2H-perfluorododecanesulfonic acid
Telomere Carboxylic acids	
FPrPA (3:3FTA)	3-Perfluoropropyl propanoic acid

Analyte	Full Name
FPePA (5:3FTA)	3-Perfluoropentyl propanoic acid
FHpPA (7:3FTA)	3-Perfluoroheptyl propanoic acid
Miscellaneous	
F-53B (major)	9-chlorohexadecafluoro-3-oxanonane-1-sulfonic acid
F-53B (minor)	11-chloroeicosfluoro-3-oxaundecane-1-sulfonic acid
Sum F-53B	Sum of F-53B components (major + minor)
ADONA	Dodecafluoro-3H-4,8-dioxanonanoic acid
HFPO-DA (GenX)	Tetrafluoro-2-(heptafluoropropoxy)propanoic acid
Internal Standards	
M3PFBS	Perfluoro-1-[2,3,4-13C3]butanesulfonic acid
M3PFHxS	Perfluoro-1-[1,2,3-13C3]hexanesulfonic acid
M8PFOS	Perfluoro-1-[13C8]octanesulfonic acid
M4PFBA	Perfluoro-n-[1,2,3,4-13C4]butanoic acid
M5PFPeA	Perfluoro-n-[1,2,3,4,5-13C5]pentanoic acid
M5PFHxA	Perfluoro-n-[1,2,3,4,6-13C5]hexanoic acid
MPFHxA	Perfluoro-n-[1,2,3,4-13C4]heptanoic acid
M8PFOA	Perfluoro-n-[13C8]octanoic acid
M9PFNA	Perfluoro-n-[13C9]nonanoic acid
M6PFDA	Perfluoro-n-[1,2,3,4,5,6-13C6]decanoic acid
M7PFUnDA	Perfluoro-n-[1,2,3,4,5,6,7-13C7]undecanoic acid
MPFDoDA	Perfluoro-n-[1,2-13C2]dodecanoic acid
MPFTeDA	Perfluoro-n-[1,2-13C2]tetradecanoic acid
MPFOSA	Perfluoro-1-[13C8]octanesulfonamide
DNEtFOSA	N-ethyl-D5-perfluoro-1-octanesulfonamide
DNMeFOSA	N-methyl-D3-perfluoro-1-octanesulfonamide
DNEtFOSAA	N-ethyl-D5-perfluoro-1-octanesulfonamidoacetic acid
DNMeFOSAA	N-methyl-D3-perfluoro-1-octanesulfonamidoacetic acid
DNEtFOSE	2-(N-ethyl-D5-perfluoro-1-octanesulfonamido)ethan-D4-ol
DNMeFOSE	2-(N-methyl-D3-perfluoro-1-octanesulfonamido)ethan-D4-ol
M4:2FTS	1H,1H,2H,2H-perfluoro-1-[1,2-13C2]-hexane sulfonic acid
M6:2FTS	1H,1H,2H,2H-perfluoro-1-[1,2-13C2]-octane sulfonic acid
M8:2FTS	1H,1H,2H,2H-perfluoro-1-[1,2-13C2]-decane sulfonic acid
M3HFPO-DA	Tetrafluoro-2-(heptafluoropropoxy)-13C3-propanoic acid

LOR = Limit of Reporting

LOD = Limit of Detection

NR = Not Reportable

Food and Environmental Submission Form/Chain of Custody

Customer Details

Company Name: * PDP

Contact Person: * Bryn Taiapa

Email: * bryn.taiapa@pdp.co.nz

Contact Phone No.: * 0277671400

Address:

235 Broadway, Newmarket, Auckland, 101010

Submission Ref.: A02744122

Purchase Order No.: OHA_PFAS

Contract/Quote No.:

Reporting Details

Report Results To: * nzdf@esdat.net

Extra Copies To: james.conway@pdp.co.nz

Report each sample separately? *

If multiple samples are listed below, tick yes
to receive an individual CoA for each sample. Yes No

Sample Sent By (Name): * Bryn Taiapa Signed By: *

Date/Time Dispatched:

Condition sample(s) dispatched in: Ambient Chilled Frozen Quarantine (include a copy of the MPI Import Permit/Transfer Form stating country of origin) Return sample(s) after analysis (Courier fees apply)

NOTE: Samples will be discarded/returned 8 weeks after reporting unless otherwise instructed.

AQ to composite samples? YesAre samples hazardous to health? * Yes NoWater samples submitted? * Potable Non-PotableSubmission Label
22-262920
29-Sep-2022 08:30

AsureQuality Limited

Wellington Laboratory

1C Quadrant Drive, Waiwhetu

Lower Hutt 5010

New Zealand

Tel: +64 4 570 8359

Email: GracefieldSR@asurequality.com

Urgency Details*

- Normal Turn-around-time (TAT)
 Urgent Service (please select from options below)
 Half quoted TAT (50% surcharge)
 Quarter quoted TAT (100% surcharge)

NOTE: For urgent testing, please contact AQ prior to submitting samples to confirm availability.

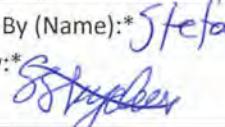
Sample Name* (unique sample identifier)	Sample Type* (Type of product/substance/material E.g., Potable Water, Soil, Biota Product, Apple, Cow Liver, Apple, Honey, Spinach)	Sample Description (additional sample information, to appear on report)	Sampled Date (used to determine holding time, if applicable)	Testing Requirements* (test or compounds to be tested for)	AQ Ref. only
OHA_BAI_GW111.1_4	Non Potable			PFAS Suite (Low level)	1A
OHA_BAI_GW111.2_5_270922			27/09/2022	PFAS Suit (Low level)	2A 1A
OHA_BAI_GW111.3_4_270922				PFAS Suite (Low level)	3A 2A
OHA_BAI_KBQ_1_270922					4A 3A
OHA_BAI_KBP_1_270922					5A 4A
OHA_BAI_KBR_1_270922					5A
OHA_BAI_GW111.1_4_280922			28/09/2022		6A
OHA_BAI_GKBS_1_270922			27/09/2022		7A

*Required information

Comments/Additional Information:

Please use submission references as ESDAT Project ID (SDG field)
Please CC submitter into email to nzdf@esdat.net

Received By (Name): * Stefan

Signed By: * 8:30
29/9/22
13 c

NZ Couriers



1LB1091269427

Submission Receipt Acknowledgement

Submission Reference: A02744123

Pattle Delamore Partners Limited
Auckland 1149NZ

Date Issued: 30-Sep-2022**Lab Project Reference:****22-262761****Submission Received at:****Wellington, New Zealand**

Submission Summary

Sample Reference	Description	Lab ID	Sample Type	Date Received
OHA_ADJ_GW53_8_290922		22-262761-1	Potable Water	30-Sep-2022

Sample and Test Details

Analysis	Description	Test Location
OHA_ADJ_GW53_8_290922, Lab ID: 22-262761-1 DX-PFCS01 (03-SUITE_B)	Poly- and Perfluorinated Alkyl Substances (PFAS) in Potable Water	Wellington, New Zealand

Submission Receipt Acknowledgement

Submission Reference: A02744123

Pattle Delamore Partners Limited
Auckland 1149NZ

Date Issued: 30-Sep-2022**Lab Project Reference:****22-262754****Submission Received at:****Wellington, New Zealand**

Submission Summary

Sample Reference	Description	Lab ID	Sample Type	Date Received
OHA_ADJ_GW65_8_290922		22-262754-1	Potable Water	30-Sep-2022

Sample and Test Details

Analysis	Description	Test Location
OHA_ADJ_GW65_8_290922, Lab ID: 22-262754-1 DX-PFCS01 (03-SUITE_B)	Poly- and Perfluorinated Alkyl Substances (PFAS) in Potable Water	Wellington, New Zealand

Submission Receipt Acknowledgement

Submission Reference: A02744123

Pattle Delamore Partners Limited
Auckland 1149NZ

Date Issued: 30-Sep-2022**Lab Project Reference:****22-262745****Submission Received at:****Wellington, New Zealand**

Submission Summary

Sample Reference	Description	Lab ID	Sample Type	Date Received
OHA_ADJ_GW108_5_290922		22-262745-1	Non-Potable Water	30-Sep-2022

Sample and Test Details

Analysis	Description	Test Location
OHA_ADJ_GW108_5_290922, Lab ID: 22-262745-1 DX-PFCS01 (03-SUITE_B)	Poly- and Perfluorinated Alkyl Substances (PFAS) in Potable Water	Wellington, New Zealand

Submission Receipt Acknowledgement

Submission Reference: A02744123

Pattle Delamore Partners Limited
Auckland 1149NZ

Date Issued: 30-Sep-2022**Lab Project Reference:****22-262685****Submission Received at:****Wellington, New Zealand**

Submission Summary

Sample Reference	Description	Lab ID	Sample Type	Date Received
OHA_ADJ_GW106_4_290922		22-262685-1	Non-Potable Water	30-Sep-2022

Sample and Test Details

Analysis	Description	Test Location
OHA_ADJ_GW106_4_290922, Lab ID: 22-262685-1 DX-PFCS01 (03-SUITE_B)	Poly- and Perfluorinated Alkyl Substances (PFAS) in Potable Water	Wellington, New Zealand

Submission Receipt Acknowledgement

Submission Reference: A02744123

Pattle Delamore Partners Limited
Auckland 1149NZ

Date Issued: 30-Sep-2022**Lab Project Reference:****22-262678****Submission Received at:****Wellington, New Zealand**

Submission Summary

Sample Reference	Description	Lab ID	Sample Type	Date Received
OHA_ADJ_GW31_8_290922		22-262678-1	Potable Water	30-Sep-2022

Sample and Test Details

Analysis	Description	Test Location
OHA_ADJ_GW31_8_290922, Lab ID: 22-262678-1 DX-PFCS01 (03-SUITE_B)	Poly- and Perfluorinated Alkyl Substances (PFAS) in Potable Water	Wellington, New Zealand

Submission Receipt Acknowledgement

Submission Reference: A02744123

Pattle Delamore Partners Limited
 Auckland 1149NZ

Date Issued: 30-Sep-2022

Lab Project Reference:
22-262599
Submission Received at:
Wellington, New Zealand

Submission Summary

Sample Reference	Description	Lab ID	Sample Type	Date Received
OHA_ADJ_SW36_9_290922		22-262599-1	Non-Potable Water	30-Sep-2022
OHA_ADJ_KBW_1_290922		22-262599-2	Non-Potable Water	30-Sep-2022
Dupl.of 22-262599-2A	20148317_Duplicate	22-262599-3	Non-Potable Water	30-Sep-2022

Sample and Test Details

Analysis	Description	Test Location
OHA_ADJ_SW36_9_290922, Lab ID: 22-262599-1		
DX-PFCS01 (03-SUITE_B)	Poly- and Perfluorinated Alkyl Substances (PFAS) in Potable Water	Wellington, New Zealand
OHA_ADJ_KBW_1_290922, Lab ID: 22-262599-2		
DX-PFCS01 (03-SUITE_B)	Poly- and Perfluorinated Alkyl Substances (PFAS) in Potable Water	Wellington, New Zealand
Dupl.of 22-262599-2A, 20148317_Duplicate, Lab ID: 22-262599-3		
DX-PFCS01 (03-SUITE_B)	Poly- and Perfluorinated Alkyl Substances (PFAS) in Potable Water	Wellington, New Zealand

Appendix B: GW Level Measurements

Appendix B: September 2022 Well Details and Water Level

Monitoring Well Ref	GW106	GW107	GW108	GW109	GW6	MW4	MW6	MW9
Total Depth of Well (m below TOC ¹)	6.79	11.8	3.87	7.8	9.5	9.9	4.5	4.4
Diameter (mm)	50	50	50	50	1070	50	40	40
TOC (m bgl)	0.05	0.08	0.04	0.04	0.67 m agl ²	0.00	0.09	0.06
Date	29/09/2022	30/09/2022	29/09/2022	28/09/2022		27/09/2022		
Depth to Water (m below ground level)	2.08	3.01	1.18	3.81	2.52	4.73	3.28	0.99
Water depth (m below TOC)	2.03	2.93	1.14	3.77	3.19	4.73	3.19	0.93

Monitoring Well Ref	GW111.1	GW111.2	GW111.3	GW112.1	GW112.2
Total Depth of Well (m below TOC ¹)	11.49	38.0	81.0	10.3	50.0
Diameter (mm)	50	50	50	50	50
TOC (m bgl)	0.48 m agl ²	0.49 m agl ²	0.50 m agl ²	0.55 m agl ²	1.08 m agl ²
Date	28/09/2022	27/09/2022		28/09/2022	
Depth to Water (m below ground level)	4.77	7.37	4.78	0.28	0.37
Water depth (m below TOC)	5.25	7.86	5.27	0.83	0.23

Notes:

1. TOC = top of casing.
2. agl = above ground level.

Appendix C: Field Sheets

NZDF PFAS SAMPLING FORM (separate form for each primary sample)

Location: Ohakea / Woodbourne (circle as appropriate)

Land owner: NZDF

Address: On base

Weather: Sunny, clear

Sample point: tap / well surface water

Description of sample point: -

Distance of sample point from bore: - (m)

Sampling equipment: low flow

QA/QA Sample Codes: -

Duplicate -

Trip Blank -

Field Blank -

Rinsate Blank (include description of equipment cleaned e.g. dipper) -

NOTE: purge until well has stabilised using field parameters below (3 consecutive readings)

Job Number: A0274412

Sample Code

(Name): MW2 MW4

Date and time: 27/09/22

Coordinates: E

(NZTM): N

Sampled By: Myra (Clean hands)

Brynn (Dirty hands)

Site Photos taken? Yes No

Water use: Drinking water / Stock watering / Fodder irrigation / Non-potable

Animals observed on site: Chickens / cows / sheep / pigs / goats No

Minimum volume between readings: 1 sample train volume (see formula below)

Key Stabilisation Criteria:

pH ± 0.1, EC ± 3%, T ± 3%, turbidity ± 10% of prior reading and ± 10 for values greater than 10 NTU

TRANSFER FINAL READINGS TO STABILISATION FIELD SHEET

	Time Elapsed	Time	Volume Removed (L)	Water Temp. (°C)	pH	EC ((µS/cm))	ORP (mV)	Dissolved Oxygen (mg/L)	Water Level (m)*	Turbidity (NTU) / Water Appearance†
Before	-	12:47	0	15.7	6.67	401.3	-	1.66	4.74	85.20
During	4	12:51	0.6	15.3	6.34	394.7	-	0.68	4.74	41.01
During	8	12:55	1.2	15.4	6.31	393.4	-	0.62	4.74	37.8
During	13	13:00	1.8	15.3	6.31	394.4	-	0.44	4.74	50.63
During	15	13:02	2.4	15.3	6.31	393.9	-	0.42	4.74	60.80
During	18	13:05	3.0	15.3	6.32	393.7	-	0.37	4.74	73.50
During										
During										
During										
During										
During										

† CL=clear, CO=cloudy, TU=turbid, SI=silty, SA=sandy

Sample Train Volume Calculation (L)

(length of sample tube x $3.141 \times d^2 / 4000$) + flow through cell volume.
Where d = internal diameter of sample tube in mm

Comments

Water sample internal $\phi = 6\text{mm} \approx 30\text{mL per meter}$

DTW: 4.73
DTB: 9.91

$$9.91 \times 30 = 297.3 \approx 0.6 \text{ L}$$

- First flush lots of iron precipitate

Analyses Required: PFAS suite

Serial number of water quality sensor unit: -

Shake test – foam produced? Yes No

COC form completed and checked? Yes Letter given to landowner? Yes N/A

Location field sheet completed? Yes N/A

Well field sheet completed? Yes N/A

Stabilisation criteria field sheet completed? Yes

* = needs to be recorded each time you take a set of parameters

NZDF PFAS SAMPLING FORM (separate form for each primary sample)

Location:	Ohakea / Woodbourne (circle as appropriate)	Job Number:	A0274412								
Land owner:	NZDF	Sample Code (Name):	MW9 Pump Station next to it								
Address:	\$ - On base	Date and time:	27/09/17 2								
Weather:	Sunny clear skies	Coordinates: (NZTM)	E _____ N _____								
Sample point:	tap / well surface water	Sampled By:	Bruce Mura. (Clean hands) (Dirty hands)								
Description of sample point:	Well by pump house	Site Photos taken?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No								
Distance of sample point from bore:	- (m)	Water use:	Drinking water / Stock watering / Fodder irrigation / Non-potable								
Sampling equipment:	low flow	Animals observed on site:	Chickens / cows / sheep / pigs / goats No								
QA/QA Sample Codes:	-	Minimum volume between readings: 1 sample train volume (see formula below)									
Duplicate	-	$4.41 \times 30 \text{ mL} + \text{flow cell (250mL)} = 382.30$ $= 0.4 \text{ L}$									
Trip Blank	-	Key Stabilisation Criteria: pH ± 0.1 , EC $\pm 3\%$, T $\pm 3\%$, turbidity $\pm 10\%$ of prior reading and ± 10 for values greater than 10 NTU									
Field Blank	-										
Rinsate Blank (include description of equipment cleaned e.g. dipper)	-										
NOTE: purge until well has stabilised using field parameters below (3 consecutive readings)											
TRANSFER FINAL READINGS TO STABILISATION FIELD SHEET											
	Time Elapsed	Time	Volume Removed (L)	Water Temp. (°C)	pH	EC ((µS/cm))	ORP (mV)	Dissolved Oxygen (mg/L)	Water Level (m)*	Turbidity (NTU) / Water Appearance†	
Before	-	-	-	-	-	-	-	-	0.93	-	
During	9:31	-	0.4	14.9	6.07	245.0	-	4.38	1.06	-	
During	9:36	-	0.4	14.9	5.89	238.0	-	0.92	1.12	-	
During	9:37	-	0.8	14.8	5.89	237.4	-	0.67	1.15	26.69	
During	9:43	-	1.2	14.7	5.89	238.4	-	0.55	1.18	25.08	
During	9:46	-	1.6	14.7	5.88	241.2	-	0.49	1.22	21.82	
During	9:50	-	2.0	14.7	5.88	244.6	-	0.41	1.26	18.13	
Comments					Sample Train Volume Calculation (L) (length of sample tube x $3.141 \times d^2 / 4000$) + flow through cell volume. Where d = internal diameter of sample tube in mm						
					Water sample internal $\phi = 6\text{mm} \approx 30\text{mL per meter}$						
DTB 4.41											
Non staining in flow cell first flush.											
$4.41 \times 0.4 \times 30 \text{ mL} + \text{flow cell} = 382.3$ $= 0.4$											
Analyses Required: PFAS suite											
Serial number of water quality sensor unit: -											
Shake test – foam produced?		<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No								
COC form completed and checked?		<input checked="" type="checkbox"/> Yes			Letter given to landowner?		<input type="checkbox"/> Yes	NA			
Location field sheet completed?		<input type="checkbox"/> Yes	<input type="checkbox"/> N/A	Well field sheet completed?		<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> N/A				
Stabilisation criteria field sheet completed?		<input checked="" type="checkbox"/> Yes									

* = needs to be recorded each time you take a set of parameters

NZDF PFAS SAMPLING FORM (separate form for each primary sample)

Location:	Ohakea / Woodbourne (circle as appropriate)	Job Number:	A0274412 22
Land owner:	NZF	Sample Code (Name):	MW6
Address:	On base	Date and time:	27/09/22
Weather:	Sunny, clear	Coordinates: (NZTM)	E
Sample point:	tap / well / surface water	Sampled By:	Brynn Myra
Description of sample point:	—		(Clean hands) (Dirty hands)
Distance of sample point from bore:	— (m)	Site Photos taken?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Sampling equipment:	low flow	Water use:	Drinking water / Stock watering / Fodder irrigation / Non-potable
QA/QA Sample Codes:	—	Animals observed on site:	Chickens / cows / sheep / pigs / goats No
Duplicate	—	Minimum volume between readings: 1 sample train volume (see formula below)	
Trip Blank	—		
Field Blank	—		
Rinsate Blank (include description of equipment cleaned e.g. dipper)	—		
NOTE: purge until well has stabilised using field parameters below (3 consecutive readings)			

Key Stabilisation Criteria:

pH ± 0.1 , EC $\pm 3\%$, T $\pm 3\%$, turbidity $\pm 10\%$ of prior reading and ± 10 for values greater than 10 NTU

TRANSFER FINAL READINGS TO STABILISATION FIELD SHEET

	Time Elapsed	Time	Volume Removed (L)	Water Temp. (°C)	pH	EC ((µS/cm))	ORP (mV)	Dissolved Oxygen (mg/L)	Water Level (m)*	Turbidity (NTU) / Water Appearance†
Before	00:00	10:44	0	15.4	6.58	244.9	—	9.72	3.21	10.58
During	4	11:48	0.4	15.1	6.47	251.6	—	9.91	3.22	9.40
During	6	11:50	0.8	14.9	6.45	252.6	—	9.96	3.23	8.33
During	10	11:54	1.2	14.8	6.45	252.7	—	10.00	3.25	8.04
During	13	11:57	1.8	15.0	6.43	251.7	—	9.97	3.26	7.77
During	16	12:00	2.2	14.9	6.43	250.9	—	10.00	3.27	7.77
During										
During										
During										
During										
During										

† CL=clear, CO=cloudy, TU=turbid, SI=silty, SA=sandy

Sample Train Volume Calculation (L)

(length of sample tube x $3.141 \times d^2 / 4000$) + flow through cell volume.
Where d = internal diameter of sample tube in mm

Comments

DIW: 3.19
DTB: 4.46

Water sample internal ϕ = 6mm \approx 30mL per meter

$$4.46 \times 30 + \text{flow cell} = 383.3 \approx 0.4 \text{ L}$$

Analyses Required: PFAS suite

Serial number of water quality sensor unit: —

Shake test – foam produced? Yes No

COC form completed and checked? Yes

Letter given to landowner? Yes

Location field sheet completed? Yes

N/A

Well field sheet completed? Yes

N/A

Stabilisation criteria field sheet completed? Yes

* = needs to be recorded each time you take a set of parameters

NZDF PFAS SAMPLING FORM (separate form for each primary sample)

Location:	Ohakea / Woodbourne (circle as appropriate)
Land owner:	NZDF
Address:	Bayley Rd
Weather:	Sunny, clear
Sample point:	tap well / surface water
Description of sample point:	—
Distance of sample point from bore:	— (m)
Sampling equipment:	Tap
QA/QA Sample Codes:	—
Duplicate:	—
Trip Blank:	—
Field Blank:	—
Rinsate Blank (include description of equipment cleaned e.g. dipper)	—
NOTE: purge until well has stabilised using field parameters below (3 consecutive readings)	
Job Number:	A0274412 2
Sample Code (Name):	WSI
Date and time:	27/09/22
Coordinates: (NZTM)	E N
Sampled By:	Myra Bryn
	(Clean hands) (Dirty hands)
Site Photos taken?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Water use:	Drinking water / Stock watering / Fodder irrigation / Non-potable
Animals observed on site:	Chickens / cows / sheep / pigs / goats <u>No</u>
Minimum volume between readings: 1 sample train volume (see formula below)	
Key Stabilisation Criteria: pH ± 0.1, EC ± 3%, T ± 3%, turbidity ± 10% of prior reading and ± 10 for values greater than 10 NTU	

TRANSFER FINAL READINGS TO STABILISATION FIELD SHEET

† CL=clear, CO=cloudy, TU=turbid, SI=silty, SA=sandy

Sample Train Volume Calculation (L)

(length of sample tube x $3.141 \times d^2 / 4000$) + flow through cell volume.

Where d = internal diameter of sample tube in mm

Water sample internal ø = 6mm ≈ 30ml per meter

Analyses Required: PFAS suite

Serial number of water quality sensor unit:

Shake test – foam produced? Yes No

Letter given to landowner? Yes No

COC form completed and checked? Yes No Letter given to landowner? Yes No

Location field sheet completed? Yes N/A Well field sheet completed? Yes N/A

Stabilisation criteria field sheet completed? Yes

* = needs to be recorded each time you take a set of parameters

NZDF PFAS SAMPLING FORM (separate form for each primary sample)

Location:	Ohakea / Woodbourne (circle as appropriate)		Job Number:	A0274412	
Land owner:	—		Sample Code (Name):	WS 2	
Address:	Quarry pump		Date and time:	28/09/12	
Weather:	Overcast		Coordinates: (NZTM)	E N	
Sample point:	tap well / surface water		Sampled By:	(Clean hands) (Dirty hands)	
Description of sample point:	—		Site Photos taken?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
Distance of sample point from bore:	— (m)		Water use:	Drinking water / Stock watering / Fodder irrigation / Non-potable	
Sampling equipment:	tap		Animals observed on site:	Chickens / cows / sheep / pigs / goats <u>No</u>	
QA/QA Sample Codes:	—		Minimum volume between readings: 1 sample train volume (see formula below)		
Duplicate	—				
Trip Blank	—				
Field Blank	—				
Rinsate Blank (include description of equipment cleaned e.g. dipper)	—				
NOTE: purge until well has stabilised using field parameters below (3 consecutive readings)					

TRANSFER FINAL READINGS TO STABILISATION FIELD SHEET

	Time Elapsed	Time	Volume Removed (L)	Water Temp. (°C)	pH	EC ((µS/cm))	ORP (mV)	Dissolved Oxygen (mg/L)	Water Level (m)*	Turbidity (NTU) / Water Appearance†
Before	—	9:36	—	14.6	7.06	454.1	—	4.96	—	6.10
During										
During										
During										
During										
During										
During										
During										
During										
During										
Comments	Sample Train Volume Calculation (L) (length of sample tube x $3.141 \times d^2 / 4000$) + flow through cell volume. Where d = internal diameter of sample tube in mm									
	Water sample internal ø = 6mm ≈ 30mL per meter									

Analyses Required: PFAS suite

Serial number of water quality sensor unit: —

Shake test – foam produced? Yes No

COC form completed and checked? Yes N/A Letter given to landowner? Yes N/A

Location field sheet completed? Yes N/A Well field sheet completed? Yes N/A

Stabilisation criteria field sheet completed? Yes

* = needs to be recorded each time you take a set of parameters

NZDF PFAS SAMPLING FORM (separate form for each primary sample)

Location:	Oakea / Woodbourne (circle as appropriate)		Job Number:	A0274412						
Land owner:	—		Sample Code (Name):	SW4						
Address:	—		Date and time:	28/09/22						
Weather:	Sunny		Coordinates: (NZTM)	E						
Sample point:	tap / well / surface water		Sampled By:	Mura Bryn						
Description of sample point:	—			(Clean hands) (Dirty hands)						
Distance of sample point from bore:	— (m)		Site Photos taken?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No						
Sampling equipment:	Mighty gripper		Water use:	Drinking water / Stock watering / Fodder irrigation / Non-potable						
QA/QA Sample Codes:	—		Animals observed on site:	Chickens / cows / sheep / pigs / goats <u>No</u>						
Duplicate	—		Minimum volume between readings: 1 sample train volume (see formula below)							
Trip Blank	—									
Field Blank	—									
Rinsate Blank (include description of equipment cleaned e.g. dipper)	KBW									
NOTE: purge until well has stabilised using field parameters below (3 consecutive readings)										
TRANSFER FINAL READINGS TO STABILISATION FIELD SHEET										
	Time Elapsed	Time	Volume Removed (L)	Water Temp. (°C)	pH	EC ((µS/cm))	ORP (mV)	Dissolved Oxygen (mg/L)	Water Level (m)*	Turbidity (NTU) / Water Appearance†
Before	—	11:24	—	12.9	7.88	326.6	—	6.14	—	19.36
During										
During										
During										
During										
During										
During										
During										
During										
During										
During										
† CL=clear, CO=cloudy, TU=turbid, SI=silty, SA=sandy					Sample Train Volume Calculation (L) (length of sample tube x $3.141 \times d^2 / 4000$) + flow through cell volume. Where d = internal diameter of sample tube in mm					
Comments					Water sample internal $\phi = 6\text{mm} \approx 30\text{mL per meter}$					
<u>Sample upstream - free flowing</u>										
Analyses Required: PFAS suite										
Serial number of water quality sensor unit: —										
Shake test – foam produced?		<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No							
COC form completed and checked?		<input checked="" type="checkbox"/> Yes			Letter given to landowner?		<input type="checkbox"/> Yes	NA		
Location field sheet completed?		<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> N/A	Well field sheet completed?		<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> N/A			
Stabilisation criteria field sheet completed?		<input type="checkbox"/> Yes	NA							

* = needs to be recorded each time you take a set of parameters

NZDF PFAS SAMPLING FORM (separate form for each primary sample)

Location:	Ohakea / Woodbourne (circle as appropriate)	Job Number:	A02744123
Land owner:	—	Sample Code (Name):	SW6
Address:	Tangimoana Road	Date and time:	28/09/22
Weather:	Cloudy	Coordinates: (NZTM)	E N
Sample point:	tap / well / surface water	Sampled By:	Myra Bryan (Clean hands) Bryan (Dirty hands)
Description of sample point:	—	Site Photos taken?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Distance of sample point from bore:	— (m)	Water use:	Drinking water / Stock watering / Fodder irrigation / Non-potable
Sampling equipment:	Mighty gripper	Animals observed on site:	Chickens / cows / sheep / pigs / goats
QA/QA Sample Codes:	—	Minimum volume between readings: 1 sample train volume (see formula below)	
Duplicate	—		
Trip Blank	—		
Field Blank	—		
Rinsate Blank (include description of equipment cleaned e.g. dipper)	—		
NOTE: purge until well has stabilised using field parameters below (3 consecutive readings)			

Key Stabilisation Criteria:

pH ± 0.1, EC ± 3%, T ± 3%, turbidity ± 10% of prior reading and ± 10 for values greater than 10 NTU

TRANSFER FINAL READINGS TO STABILISATION FIELD SHEET

	Time Elapsed	Time	Volume Removed (L)	Water Temp. (°C)	pH	EC (µS/cm)	ORP (mV)	Dissolved Oxygen (mg/L)	Water Level (m)*	Turbidity (NTU) / Water Appearance†
Before	—	08:11	—	17.7	6.87	377.5	—	2.49		23.06
During										
During										
During										
During										
During										
During										
During										
During										
During										
During										
During										

† CL=clear, CO=cloudy, TU=turbid, SI=silty, SA=sandy

Sample Train Volume Calculation (L)
(length of sample tube x $3.141 \times d^2 / 4000$) + flow through cell volume.
Where d = internal diameter of sample tube in mm

Comments

Pro DSS upstream of sample
Fill & empty transfer bottle 3x

Water sample internal ø = 6mm ≈ 30mL per meter

Analyses Required: PFAS suite

Serial number of water quality sensor unit: —

Shake test – foam produced? Yes No

COC form completed and checked? Yes Letter given to landowner? Yes N/A

Location field sheet completed? Yes Well field sheet completed? Yes N/A

Stabilisation criteria field sheet completed? Yes

* = needs to be recorded each time you take a set of parameters

NZDF PFAS SAMPLING FORM (separate form for each primary sample)

Location:	Ohakea / Woodbourne (circle as appropriate)		Job Number:	A0274412 <u>3</u>							
Land owner:	—		Sample Code (Name):	SW33							
Address:	Taylor Road		Date and time:	28/09/22							
Weather:	Cloudy		Coordinates: (NZTM)	E							
Sample point:	tap / well <u>surface water</u>		Sampled By:	N Myra Bryn (Clean hands) Brynn (Dirty hands)							
Description of sample point:	—		Site Photos taken?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No							
Distance of sample point from bore:	— (m)		Water use:	Drinking water / Stock watering / Fodder irrigation / Non-potable							
Sampling equipment:	Mighty gripper		Animals observed on site:	Chickens / cows / sheep / pigs / goats <u>No</u>							
QA/QA Sample Codes:	—		Minimum volume between readings: 1 sample train volume (see formula below)								
Duplicate	—										
Trip Blank	—										
Field Blank	—										
Rinsate Blank (include description of equipment cleaned e.g. dipper)	—										
NOTE: purge until well has stabilised using field parameters below (3 consecutive readings)											
TRANSFER FINAL READINGS TO STABILISATION FIELD SHEET											
	Time Elapsed	Time	Volume Removed (L)	Water Temp. (°C)	pH	EC ((µS/cm))	ORP (mV)	Dissolved Oxygen (mg/L)	Water Level (m)*	Turbidity (NTU) / Water Appearance†	
Before	—	<u>8:34</u>	—	<u>12.6</u>	<u>7.61</u>	<u>407.5</u>	—	<u>8.20</u>	—	<u>11.69</u>	
During											
During											
During											
During											
During											
During											
During											
During											
During											
During											
Comments	Sample Train Volume Calculation (L) (length of sample tube x $3.141 \times d^2 / 4000$) + flow through cell volume. Where d = internal diameter of sample tube in mm										
Water sample internal ø = 6mm ≈ 30mL per meter											
Analyses Required: PFAS suite											
Serial number of water quality sensor unit: —											
Shake test – foam produced?		<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No								
COC form completed and checked?		<input checked="" type="checkbox"/> Yes			Letter given to landowner?		<input type="checkbox"/> Yes	NA			
Location field sheet completed?		<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> N/A		Well field sheet completed?		<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> N/A			
Stabilisation criteria field sheet completed?		<input checked="" type="checkbox"/> Yes									

* = needs to be recorded each time you take a set of parameters

NZDF PFAS SAMPLING FORM (separate form for each primary sample)

Location:	Ohakea / Woodbourne (circle as appropriate)		Job Number:	A0274412 3						
Land owner:	—		Sample Code (Name):	SW56						
Address:	—		Date and time:	29/09/22						
Weather:	—		Coordinates: (NZTM)	E N						
Sample point:	tap / well / surface water		Sampled By:	Brynn Myra (Clean hands) Myra (Dirty hands)						
Description of sample point:	—		Site Photos taken?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No						
Distance of sample point from bore:	— (m)		Water use:	Drinking water / Stock watering / Fodder irrigation / Non-potable						
Sampling equipment:	Mighty gripper		Animals observed on site:	Chickens / cows / sheep / pigs / goats No						
QA/QA Sample Codes:	—		Minimum volume between readings: 1 sample train volume (see formula below)							
Duplicate	—									
Trip Blank	—									
Field Blank	—									
Rinsate Blank (include description of equipment cleaned e.g. dipper)	KBW									
NOTE: purge until well has stabilised using field parameters below (3 consecutive readings)										
TRANSFER FINAL READINGS TO STABILISATION FIELD SHEET										
	Time Elapsed	Time	Volume Removed (L)	Water Temp. (°C)	pH	EC ($\mu\text{S}/\text{cm}$)	ORP (mV)	Dissolved Oxygen (mg/L)	Water Level (m)*	Turbidity (NTU) / Water Appearance†
Before	—	11:33	—	15.1	6.97	578	—	6.81	—	11.71
During										
During										
During										
During										
During										
During										
During										
During										
During										
† CL=clear, CO=cloudy, TU=turbid, SI=silty, SA=sandy						Sample Train Volume Calculation (L) (length of sample tube x $3.141 \times d^2 / 4000$) + flow through cell volume. Where d = internal diameter of sample tube in mm				
Comments						Water sample internal ϕ = 6mm \approx 30mL per meter				
Analyses Required: PFAS suite <u>Serial number of water quality sensor unit:</u> Shake test – foam produced? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No COC form completed and checked? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> Letter given to landowner? <input type="checkbox"/> Yes Location field sheet completed? <input type="checkbox"/> Yes <input type="checkbox"/> N/A Well field sheet completed? <input type="checkbox"/> Yes <input type="checkbox"/> N/A Stabilisation criteria field sheet completed? <input type="checkbox"/> Yes										

* = needs to be recorded each time you take a set of parameters

NZDF PFAS SAMPLING FORM (separate form for each primary sample)

Location:	Ohakea / Woodbourne (circle as appropriate)	Job Number:	A0274412
Land owner:	NZDF	Sample Code (Name):	GWN
Address:	-	Date and time:	28/09/22
Weather:	Sunny	Coordinates: (NZTM)	E N
Sample point:	tap / well / surface water	Sampled By:	Brynn Myra (Clean hands) Myra (Dirty hands)
Description of sample point:	-	Site Photos taken?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Distance of sample point from bore:	- (m)	Water use:	Drinking water / Stock watering / Fodder irrigation / Non-potable
Sampling equipment:	low flow	Animals observed on site:	Chickens / cows / sheep / pigs / goats
QA/QA Sample Codes:	-	Minimum volume between readings: 1 sample train volume (see formula below)	
Duplicate	-	~1000s 1 L	
Trip Blank	-	Key Stabilisation Criteria: pH ± 0.1, EC ± 3%, T ± 3%, turbidity ± 10% of prior reading and ± 10 for values greater than 10 NTU	
Field Blank	-		
Rinsate Blank (include description of equipment cleaned e.g. dipper)	-		
NOTE: purge until well has stabilised using field parameters below (3 consecutive readings)			

TRANSFER FINAL READINGS TO STABILISATION FIELD SHEET

	Time Elapsed	Time	Volume Removed (L)	Water Temp. (°C)	pH	EC ($\mu\text{S}/\text{cm}$)	ORP (mV)	Dissolved Oxygen (mg/L)	Water Level (m)*	Turbidity (NTU) / Water Appearance†
Before	-	13:28	-	13.7	6.49	597	-	3.52	3.19	6.42
During	3	13:31	1	13.4	6.46	616	-	1.72	3.19	6.16
During	5	13:33	2	13.4	6.46	616	-	1.58	3.19	6.12
During	8	13:36	3	13.4	6.47	616	-	1.47	3.19	6.12
During	11	13:39	4	13.4	6.47	616	-	1.41	3.19	6.15
During	14	13:42	5	13.4	6.48	616	-	1.38	3.19	6.18
During										
During										
During										
During										
During										

† CL=clear, CO=cloudy, TU=turbid, SI=silty, SA=sandy

Sample Train Volume Calculation (L)

(length of sample tube x $3.141 \times d^2 / 4000$) + flow through cell volume.
Where d = internal diameter of sample tube in mm

Comments

Water sample internal $d = 6\text{mm} \approx 30\text{mL per meter}$

DIW : 3.19
DTB : 9.45

Analyses Required: PFAS suite

Serial number of water quality sensor unit: -

Shake test – foam produced? Yes No

COC form completed and checked? Yes Letter given to landowner? Yes NA

Location field sheet completed? Yes N/A Well field sheet completed? Yes N/A

Stabilisation criteria field sheet completed? Yes

* = needs to be recorded each time you take a set of parameters

NZDF PFAS SAMPLING FORM (separate form for each primary sample)

Location:	Ohakea / Woodbourne (circle as appropriate)	Job Number:	A0274412 <u>3</u>	
Land owner:	—	Sample Code (Name):	G.W.31	
Address:	—	Date and time:	29/09/22	
Weather:	<u>Overcast</u>	Coordinates: (NZTM)	E	
Sample point:	<u>tap</u> / well / surface water	Sampled By:	Brynn Myra (Clean hands) (Dirty hands)	
Description of sample point:	—	Site Photos taken?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
Distance of sample point from bore:	— (m)	Water use:	Drinking water / Stock watering / Fodder irrigation / Non-potable	
Sampling equipment:	<u>tap</u>	Animals observed on site:	Chickens / cows / sheep / pigs / goats	
QA/QA Sample Codes:	Minimum volume between readings: 1 sample train volume (see formula below)			
Duplicate	—	Key Stabilisation Criteria: $pH \pm 0.1$, $EC \pm 3\%$, $T \pm 3\%$, turbidity $\pm 10\%$ of prior reading and ± 10 for values greater than 10 NTU		
Trip Blank	—			
Field Blank	—			
Rinsate Blank (include description of equipment cleaned e.g. dipper)	—			
NOTE: purge until well has stabilised using field parameters below (3 consecutive readings)				

TRANSFER FINAL READINGS TO STABILISATION FIELD SHEET

	Time Elapsed	Time	Volume Removed (L)	Water Temp. (°C)	pH	EC (μ S/cm)	ORP (mV)	Dissolved Oxygen (mg/L)	Water Level (m)*	Turbidity (NTU) / Water Appearance†
Before	—	11:14	—	14.2	6.79	295.4	—	8.18	—	17975*
During										
During										
During										
During										
During										
During										
During										
During										
During										
During										
Comments	Sample Train Volume Calculation (L) (length of sample tube x $3.141 \times d^2 / 4000$) + flow through cell volume. Where d = internal diameter of sample tube in mm									
	Water sample internal $\phi = 6\text{mm} \approx 30\text{mL per meter}$									

- Water tank has not been used for about 1 month.
* Water looks clear

Analyses Required: PFAS suite

Serial number of water quality sensor unit:

Shake test – foam produced?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No			
COC form completed and checked?	<input checked="" type="checkbox"/> Yes		Letter given to landowner? <input type="checkbox"/> Yes		
Location field sheet completed?	<input type="checkbox"/> Yes	<input type="checkbox"/> N/A	Well field sheet completed?	<input type="checkbox"/> Yes	<input type="checkbox"/> N/A
Stabilisation criteria field sheet completed?	<input type="checkbox"/> Yes				

* = needs to be recorded each time you take a set of parameters

NZDF PFAS SAMPLING FORM (separate form for each primary sample)

Location:	Ohakea / Woodbourne (circle as appropriate)	Job Number:	A02744123
Land owner:	—	Sample Code (Name):	GWS3
Address:	—	Date and time:	29/09/22
Weather:	Overcast	Coordinates: (NZTM)	E
Sample point:	tap / well / surface water	Sampled By:	N Myra Bryn (Clean hands) (Dirty hands)
Description of sample point:	—	Site Photos taken?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Distance of sample point from bore:	— (m)	Water use:	Drinking water / Stock watering / Fodder irrigation / Non-potable
Sampling equipment:	artesian well-no equip needed	Animals observed on site:	Chickens / cows / sheep / pigs / goats No
QA/QA Sample Codes:	—	Minimum volume between readings: 1 sample train volume (see formula below)	
Duplicate	—		
Trip Blank	—		
Field Blank	—		
Rinsate Blank (include description of equipment cleaned e.g. dipper)	—		
<p>NOTE: purge until well has stabilised using field parameters below (3 consecutive readings)</p>			
<p>Key Stabilisation Criteria: $pH \pm 0.1$, $EC \pm 3\%$, $T \pm 3\%$, turbidity $\pm 10\%$ of prior reading and ± 10 for values greater than 10 NTU</p>			

TRANSFER FINAL READINGS TO STABILISATION FIELD SHEET

	Time Elapsed	Time	Volume Removed (L)	Water Temp. (°C)	pH	EC (μ S/cm)	ORP (mV)	Dissolved Oxygen (mg/L)	Water Level (m)*	Turbidity (NTU) / Water Appearance†
Before	—	12:40	—	14.3	6.81	637		6.06		5.10
During										
During										
During										
During										
During										
During										
During										
During										
During										
During										
Comments					Sample Train Volume Calculation (L) $(\text{length of sample tube} \times 3.141 \times d^2 / 4000) + \text{flow through cell volume}$. Where d = internal diameter of sample tube in mm					

† CL=clear, CO=cloudy, TU=turbid, SI=silty, SA=sandy

Water sample internal $\phi = 6\text{mm} \approx 30\text{mL per meter}$

- Could not properly close the lid of the well due to rusty parts becoming loose. Lid partly closed but still leaked some water.

Analyses Required: PFAS suite

Serial number of water quality sensor unit: —

Shake test – foam produced? Yes No

COC form completed and checked? Yes Letter given to landowner? Yes

Location field sheet completed? Yes Well field sheet completed? Yes N/A

Stabilisation criteria field sheet completed? Yes

* = needs to be recorded each time you take a set of parameters

NZDF PFAS SAMPLING FORM (separate form for each primary sample)

Location:	Ohakea / Woodbourne (circle as appropriate)		Job Number:	A0274412 3							
Land owner:	—		Sample Code (Name):	GW65							
Address:	— S&F Dairies		Date and time:	29/09/22							
Weather:	Overcast		Coordinates: (NZTM)	E _____ N _____							
Sample point:	tap / well / surface water		Sampled By:	Angela Bryan (Clean hands) Sally Myra (Dirty hands)							
Description of sample point:	—		Site Photos taken?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No							
Distance of sample point from bore:	— (m)		Water use:	Drinking water / Stock watering / Fodder irrigation / Non-potable							
Sampling equipment:	top		Animals observed on site:	Chickens / cows / sheep / pigs / goats							
QA/QA Sample Codes:	—		Minimum volume between readings: 1 sample train volume (see formula below)								
Duplicate	—		Key Stabilisation Criteria: pH ± 0.1, EC ± 3%, T ± 3%, turbidity ± 10% of prior reading and ± 10 for values greater than 10 NTU								
Trip Blank	—										
Field Blank	—										
Rinsate Blank (include description of equipment cleaned e.g. dipper)	—										
NOTE: purge until well has stabilised using field parameters below (3 consecutive readings)											
<u>TRANSFER FINAL READINGS TO STABILISATION FIELD SHEET</u>											
	Time Elapsed	Time	Volume Removed (L)	Water Temp. (°C)	pH	EC ($\mu\text{S}/\text{cm}$)	ORP (mV)	Dissolved Oxygen (mg/L)	Water Level (m)*	Turbidity (NTU) / Water Appearance†	
Before	—	11:58	—	14.2	7.06	872	—	4.21	—	20861.20	
During											
During											
During											
During											
During											
During											
During											
During											
During											
During											
Comments	Sample Train Volume Calculation (L) (length of sample tube x $3.141 \times d^2 / 4000$) + flow through cell volume. Where d = internal diameter of sample tube in mm										
Water sample internal ϕ = 6mm ≈ 30mL per meter											
Water looks turbid											
Analyses Required: PFAS suite											
Serial number of water quality sensor unit: —											
Shake test – foam produced?		<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No								
COC form completed and checked?		<input checked="" type="checkbox"/> Yes	Letter given to landowner? <input type="checkbox"/> Yes								
Location field sheet completed?		<input type="checkbox"/> Yes	<input type="checkbox"/> N/A	Well field sheet completed? <input type="checkbox"/> Yes <input type="checkbox"/> N/A							
Stabilisation criteria field sheet completed?		<input type="checkbox"/> Yes									

* = needs to be recorded each time you take a set of parameters

NZDF PFAS SAMPLING FORM (separate form for each primary sample)

Location:	Ohakea / Woodbourne (circle as appropriate)	Job Number:	A0274412 <u>3</u>
Land owner:	—	Sample Code (Name):	<u>GW67</u>
Address:	<u>3330 SH1</u>	Date and time:	<u>28/09/22</u>
Weather:	<u>Sunny</u>	Coordinates: (NZTM)	E _____ N _____
Sample point:	<u>tap</u> well / surface water	Sampled By:	<u>Myra</u> (Clean hands) <u>Bryan</u> (Dirty hands)
Description of sample point:	—	Site Photos taken?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Distance of sample point from bore:	— (m)	Water use:	<u>Drinking water</u> / Stock watering / Fodder irrigation / Non-potable
Sampling equipment:	<u>tap</u>	Animals observed on site:	<u>Chickens</u> cows / sheep / pigs / goats _____
QA/QA Sample Codes:	—	Minimum volume between readings: 1 sample train volume (see formula below)	
Duplicate	—	Key Stabilisation Criteria: pH ± 0.1, EC ± 3%, T ± 3%, turbidity ± 10% of prior reading and ± 10 for values greater than 10 NTU	
Trip Blank	—		
Field Blank	—		
Rinsate Blank (include description of equipment cleaned e.g. dipper)	—		
NOTE: purge until well has stabilised using field parameters below (3 consecutive readings)			

TRANSFER FINAL READINGS TO STABILISATION FIELD SHEET

	Time Elapsed	Time	Volume Removed (L)	Water Temp. (°C)	pH	EC ((µS/cm))	ORP (mV)	Dissolved Oxygen (mg/L)	Water Level (m)*	Turbidity (NTU) / Water Appearance†
Before	—	<u>10:03</u>	—	<u>12.6</u>	<u>7.01</u>	<u>1217</u>	—	<u>6.43</u>	—	<u>357.03</u>
During										
During										
During										
During										
During										
During										
During										
During										
During										
During										
Comments	Sample Train Volume Calculation (L) (length of sample tube x $3.141 \times d^2 / 4000$) + flow through cell volume. Where d = internal diameter of sample tube in mm									
	Water sample internal ø = 6mm ≈ 30mL per meter									

Foam on surface of bucket

Analyses Required: PFAS suite

Serial number of water quality sensor unit:

Shake test – foam produced? Yes No

COC form completed and checked? Yes N/A

Location field sheet completed? Yes N/A

Stabilisation criteria field sheet completed? Yes N/A

Letter given to landowner? Yes

N/A

Well field sheet completed? Yes

N/A

* = needs to be recorded each time you take a set of parameters

NZDF PFAS SAMPLING FORM (separate form for each primary sample)

Location:	Ohakea / Woodbourne (circle as appropriate)		Job Number:	A0274412 3						
Land owner:	—		Sample Code (Name):	GW106						
Address:	—		Date and time:	29/09/2022						
Weather:	Overcast		Coordinates: (NZTM)	E N						
Sample point:	tap / well / surface water		Sampled By:	Myra (Clean hands) Brynn (Dirty hands)						
Description of sample point:	—		Site Photos taken?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No						
Distance of sample point from bore:	— (m)		Water use:	Drinking water / Stock watering / Fodder irrigation / Non-potable						
Sampling equipment:	low flow		Animals observed on site:	Chickens / cows / sheep / pigs / goats No						
QA/QA Sample Codes:	—		Minimum volume between readings: 1 sample train volume (see formula below)							
Duplicate	—		$7 \times 30 + 250 = 460$ 0.5L							
Trip Blank	—									
Field Blank	—									
Rinsate Blank (include description of equipment cleaned e.g. dipper)	—									
NOTE: purge until well has stabilised using field parameters below (3 consecutive readings)										
TRANSFER FINAL READINGS TO STABILISATION FIELD SHEET										
	Time Elapsed	Time	Volume Removed (L)	Water Temp. (°C)	pH	EC ((µS/cm))	ORP (mV)	Dissolved Oxygen (mg/L)	Water Level (m)*	Turbidity (NTU) / Water Appearance†
Before	—	8.29	—	14.2	6.58	465.1		4.85	2.03	40.01
During	1	8.31	0.5	14.1	6.39	494.6		3.09	2.03	52.88
During	3	8.32	1.0	14.1	6.32	525		2.17	2.03	50.00
During	5	8.34	1.5	14.1	6.30	538		1.84	2.03	57.88
During	7	8.36	2.0	14.2	6.28	548		1.59	2.035	47.36
During	8	8.37	2.5	14.1	6.26	570		1.35	2.035	54.63
During	10	8.39	3.0	14.1	6.25	578		1.16	2.035	38.9
During	11	8.40	3.5	14.1	6.24	587		1.06	2.035	50.89
During	13	8.42	4.0	14.1	6.23	586		1.00	2.035	35.73
During	14	8.43	4.5	14.1	6.22	593		0.89	2.035	54.27
During	16	8.45	5.0	14.1	6.22	601		0.82	2.035	48.22
Comments			Sample Train Volume Calculation (L) (length of sample tube x 3.141 x d ² / 4000) + flow through cell volume. Where d = internal diameter of sample tube in mm							
			Water sample internal Ø = 6mm ≈ 30mL per meter							
Analyses Required: PFAS suite										
Serial number of water quality sensor unit: —										
Shake test – foam produced? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No										
COC form completed and checked? <input checked="" type="checkbox"/> Yes			Letter given to landowner? <input type="checkbox"/> Yes N/A							
Location field sheet completed? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> N/A			Well field sheet completed? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> N/A							
Stabilisation criteria field sheet completed? <input checked="" type="checkbox"/> Yes										

* = needs to be recorded each time you take a set of parameters

NZDF PFAS SAMPLING FORM (separate form for each primary sample)

Location:	Ohakea / Woodbourne (circle as appropriate)	Job Number:	A0274412 3
Land owner:	—	Sample Code (Name):	GnW107
Address:	—	Date and time:	30/09/22
Weather:	—	Coordinates: (NZTM)	E _____ N _____
Sample point:	tap / well / surface water	Sampled By:	Myra (Clean hands) Brynn (Dirty hands)
Description of sample point:	—	Site Photos taken?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Distance of sample point from bore:	— (m)	Water use:	Drinking water / Stock watering / Fodder irrigation / Non-potable
Sampling equipment:	—	Animals observed on site:	Chickens / cows / sheep / pigs / goats NO
QA/QA Sample Codes:	—	Minimum volume between readings: 1 sample train volume (see formula below)	
Duplicate	—		
Trip Blank	—		
Field Blank	—		
Rinsate Blank (include description of equipment cleaned e.g. dipper)	—		
NOTE: purge until well has stabilised using field parameters below (3 consecutive readings)			

Key Stabilisation Criteria:

pH \pm 0.1, EC \pm 3%, T \pm 3%, turbidity \pm 10% of prior reading and \pm 10 for values greater than 10 NTU

TRANSFER FINAL READINGS TO STABILISATION FIELD SHEET

	Time Elapsed	Time	Volume Removed (L)	Water Temp. (°C)	pH	EC (μ S/cm)	ORP (mV)	Dissolved Oxygen (mg/L)	Water Level (m)*	Turbidity (NTU) / Water Appearance†
Before	-	7:30	-	14.4	7.33	564		5.07	2.94	59.17
During	2	7:32	0.6	14.5	6.95	601		1.66	2.94	55.21
During	3	7:33	1.2	14.5	6.89	602		1.10	2.94	65.74
During	5	7:35	1.8	14.5	6.88	601		0.86	2.94	103.12
During	7	7:37	2.4	14.5	6.87	608		0.73	2.94	74.83
During	8	7:38	3.0	14.3	6.89	604		0.63	2.94	45.68
During	10	7:40	3.6	14.5	6.87	601		0.58	2.94	30.55
During	12	7:42	4.2	14.6	6.87	603		0.53	2.94	30.33
During	13	7:43	4.8	14.1	6.88	601		0.49	2.94	32.13
During										
During										

† CL=clear, CO=cloudy, TU=turbid, SI=silty, SA=sandy

Sample Train Volume Calculation (L)

(length of sample tube x $3.141 \times d^2 / 4000$) + flow through cell volume.
Where d = internal diameter of sample tube in mm

Comments

Water sample internal ϕ = 6mm \approx 30mL per meter

DTW: 2.93
DTW: 11.83

x Tubing was removed

11 x 30 + 280 5800

Intake depth 10m.

Analyses Required: PFAS suite

Serial number of water quality sensor unit:

Shake test – foam produced? Yes No

COC form completed and checked? Yes Letter given to landowner? Yes

Location field sheet completed? Yes N/A Well field sheet completed? Yes N/A

Stabilisation criteria field sheet completed? Yes

* = needs to be recorded each time you take a set of parameters

NZDF PFAS SAMPLING FORM (separate form for each primary sample)

Location:	Ohakea / Woodbourne (circle as appropriate)		Job Number:	A02744123							
Land owner:	—		Sample Code (Name):	GW108							
Address:	—		Date and time:	29/09/22							
Weather:	Overcast		Coordinates: (NZTM):	E							
Sample point:	tap <input checked="" type="checkbox"/> well <input type="checkbox"/> surface water		Sampled By:	Brynn Myra (Clean hands) (Dirty hands)							
Description of sample point:	—		Site Photos taken?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No							
Distance of sample point from bore:	— (m)		Water use:	Drinking water / Stock watering / Fodder irrigation <input checked="" type="checkbox"/> Non-potable							
Sampling equipment:	low flow		Animals observed on site:	Chickens / cows / sheep / pigs / goats <input checked="" type="checkbox"/> No							
QA/QA Sample Codes:			Minimum volume between readings: 1 sample train volume (see formula below)								
Duplicate	—		$= 3.87 \times 30 + 250 \approx 0.5L$								
Trip Blank	—										
Field Blank	—										
Rinsate Blank (include description of equipment cleaned e.g. dipper)	—										
NOTE: purge until well has stabilised using field parameters below (3 consecutive readings)											
TRANSFER FINAL READINGS TO STABILISATION FIELD SHEET											
	Time Elapsed	Time	Volume Removed (L)	Water Temp. (°C)	pH	EC ($\mu\text{S}/\text{cm}$)	ORP (mV)	Dissolved Oxygen (mg/L)	Water Level (m)*	Turbidity (NTU) / Water Appearance†	
Before	0	10:08	0	13.4	6.29	493.3	—	2.02	1.18	49.71	
During	5	10:13	0.5	13.4	6.24	503	—	0.84	1.19	133.5	
During	8	10:16	1.0	13.4	6.23	503	—	0.66	1.20	54.0	
During	12	10:20	1.5	13.5	6.23	502	—	0.52	1.20	27.22	
During	17	10:25	2.0	13.5	6.22	499.9	—	0.49	1.21	21.53	
During	20	10:28	2.5	13.5	6.22	498.6	—	0.47	1.21	22.49	
During											
During											
During											
During											
Comments						Sample Train Volume Calculation (L) (length of sample tube x $3.141 \times d^2 / 4000$) + flow through cell volume. Where d = internal diameter of sample tube in mm					
DTW: 1.14						Water sample internal $\phi = 6\text{mm} \approx 30\text{mL per meter}$					
DTB: 3.87											
- Water is turbid with some precipitate - cleared up after 1.5L removed											
Analyses Required: PFAS suite											
Serial number of water quality sensor unit:											
Shake test – foam produced?		<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No								
COC form completed and checked?		<input checked="" type="checkbox"/> Yes			Letter given to landowner?		<input type="checkbox"/> Yes				
Location field sheet completed?		<input type="checkbox"/> Yes	<input type="checkbox"/> N/A		Well field sheet completed?		<input type="checkbox"/> Yes	<input type="checkbox"/> N/A			
Stabilisation criteria field sheet completed?		<input type="checkbox"/> Yes									

* = needs to be recorded each time you take a set of parameters

NZDF PFAS SAMPLING FORM (separate form for each primary sample)

Location:	<u>Ohakea / Woodbourne (circle as appropriate)</u>	Job Number:	A0274412'3
Land owner:	—	Sample Code (Name):	GWLOG
Address:	—	Date and time:	28.9.22
Weather:	overcast	Coordinates: (NZTM)	E N
Sample point:	tap / well / surface water	Sampled By:	Myra (Clean hands) Brynn (Dirty hands)
Description of sample point:		Site Photos taken?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Distance of sample point from bore:	(m)	Water use:	Drinking water / Stock watering / Fodder irrigation / Non-potable
Sampling equipment:	low flow (peri)	Animals observed on site:	Chickens / cows / sheep / pigs / goats <u>No</u>
QA/QA Sample Codes:		Minimum volume between readings: 1 sample train volume (see formula below)	
Duplicate	—	$Y \times 30 + 230 = 490$	
Trip Blank	—		
Field Blank	—		
Rinsate Blank (include description of equipment cleaned e.g. dipper)	—		
NOTE: purge until well has stabilised using field parameters below (3 consecutive readings)			

TRANSFER FINAL READINGS TO STABILISATION FIELD SHEET

	Time Elapsed	Time	Volume Removed (L)	Water Temp. (°C)	pH	EC ((µS/cm))	ORP (mV)	Dissolved Oxygen (mg/L)	Water Level (m)*	Turbidity (NTU) / Water Appearance†
Before	—	1510	—	14.9	6.29	351.5		2.48	3.77	100.28
During	2	1512	0.5	14.9	6.06	353.2		0.83	3.77	65.27
During	3	1515	1.0	14.9	6.03	352.2		0.58	3.77	121.89
During	7	1517	1.5	14.9	6.02	351.7		0.50	3.77	94.56
During	9	1519	2.0	14.9	6.01	351.2		0.45	3.77	90.85
During	11	1521	2.5	14.9	6.01	351.4		0.40	3.77	85.25
During	13	1523	3.0	14.9	6.01	350.7		0.37	3.77	55.22
During	15	1525	3.5	14.9	6.01	351.2		0.36	3.77	43.97
During										
During										
During										

† CL=clear, CO=cloudy, TU=turbid, SI=silty, SA=sandy

Sample Train Volume Calculation (L)
(length of sample tube x $3.141 \times d^2 / 4000$) + flow through cell volume.
Where d = internal diameter of sample tube in mm

Comments

Water sample internal ϕ = 6mm \approx 30mL per meter

DTW: 3.77

DTB: 7.83

Analyses Required: PFAS suite

Serial number of water quality sensor unit: —

Shake test – foam produced? Yes No

COC form completed and checked? Yes Letter given to landowner? Yes NA

Location field sheet completed? Yes N/A Well field sheet completed? Yes N/A

Stabilisation criteria field sheet completed? Yes

* = needs to be recorded each time you take a set of parameters

NZDF PFAS SAMPLING FORM (separate form for each primary sample)

Location: Ohakea / Woodbourne (circle as appropriate)

Job Number: A0274412 2

Land owner: NZDF

Sample Code (Name): GW 111.1

Address: _____

Date and time: 28/09/22

Weather: Cloudy

Coordinates: (NZTM) E

Sample point: tap / well surface water

Sampled By: Bryn (Clean hands)

Description of sample point: —

Myra (Dirty hands)

Distance of sample point from bore: — (m)

Site Photos taken? Yes No

Sampling equipment: low flow

Water use: Drinking water / Stock watering / ?

QA/QA Sample Codes: —

Animals observed on site: Chickens / cows / sheep / pigs / goats No

Duplicate —

Trip Blank —

Minimum volume between readings: 1 sample train volume (see formula below)

Field Blank —

~0.6

Rinsate Blank (include description of equipment cleaned e.g. dipper) KBP (Dipper)

(label says 27 but sample was collected 28/09)

NOTE: purge until well has stabilised using field parameters below (3 consecutive readings)

Key Stabilisation Criteria:

pH ± 0.1, EC ± 3%, T ± 3%, turbidity ± 10% of prior reading and ± 10 for values greater than 10 NTU

TRANSFER FINAL READINGS TO STABILISATION FIELD SHEET

	Time Elapsed	Time	Volume Removed (L)	Water Temp. (°C)	pH	EC ((µS/cm))	ORP (mV)	Dissolved Oxygen (mg/L)	Water Level (m)*	Turbidity (NTU) / Water Appearance†
Before	0	14.22	0	15	6.67	316.3	-	5.15	5.26	18.79
During	2	14.24	0.6	14.6	6.23	313.1	-	3.26	5.26	27.96
During	4	14.26	1.2	14.6	6.16	311.2	-	2.98	5.26	53.74
During	6	14.28	1.8	14.6	6.13	310.5	-	2.85	5.26	64.21
During	10	14.32	2.4	14.8	6.10	309.8	-	2.82	5.26	52.86
During	14	14.36	3.0	14.7	6.08	307.7	-	2.76	5.26	30.36
During	16	14.38	3.6	14.6	6.07	307.0	-	2.74	5.26	32.66
During	19	14:41	4.2	14.6	6.06	306.0	-	2.73	5.26	34.65
During										
During										
During										

† CL=clear, CO=cloudy, TU=turbid, SI=silty, SA=sandy

Sample Train Volume Calculation (L)

(length of sample tube x $3.141 \times d^2 / 4000$) + flow through cell volume.
Where d = internal diameter of sample tube in mm

Comments

Water sample internal ϕ = 6mm \approx 30mL per meter

DTW: 5.25

DTB: 11.49

Analyses Required: PFAS suite

Serial number of water quality sensor unit: —

Shake test – foam produced? Yes No

COC form completed and checked? Yes Letter given to landowner? Yes NA

Location field sheet completed? Yes N/A Well field sheet completed? Yes N/A

Stabilisation criteria field sheet completed? Yes

* = needs to be recorded each time you take a set of parameters

NZDF PFAS SAMPLING FORM (separate form for each primary sample)

Location:	Ohakea / Woodbourne (circle as appropriate)		Job Number:	A0274412 2							
Land owner:	NZDF		Sample Code (Name):	GWIII.2							
Address:	Bayley		Date and time:	27/09/2022							
Weather:	Sunny, clear		Coordinates: (NZTM)	E _____ N _____							
Sample point:	tap / well	surface water	Sampled By:	Myra (Clean hands) Beth Bryn (Dirty hands)							
Description of sample point:	—		Site Photos taken?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No						
Distance of sample point from bore:	— (m)		Water use:	Drinking water / Stock watering / Fodder irrigation / Non-potable							
Sampling equipment:	Dedicated pump		Animals observed on site:	Chickens / cows / sheep / pigs / goats No							
QA/QA Sample Codes:	—		Minimum volume between readings: 1 sample train volume (see formula below)								
Duplicate	—		1.4L								
Trip Blank	—		Key Stabilisation Criteria: pH ± 0.1, EC ± 3%, T ± 3%, turbidity ± 10% of prior reading and ± 10 for values greater than 10 NTU								
Field Blank	—										
Rinsate Blank (include description of equipment cleaned e.g. dipper)	TPS										
NOTE: purge until well has stabilised using field parameters below (3 consecutive readings)											
TRANSFER FINAL READINGS TO STABILISATION FIELD SHEET											
	Time Elapsed	Time	Volume Removed (L)	Water Temp. (°C)	pH	EC ($\mu\text{S}/\text{cm}$)	ORP (mV)	Dissolved Oxygen (mg/L)	Water Level (m)*	Turbidity (NTU) / Water Appearance†	
Before	0	16:37	0	14.1	7.18	553	—	1.80	—	50-80	
During	2	16:39	3	13.9	6.52	538	—	0.92	—	37-50	
During	4	16:41	4.5	13.8	6.40	613	—	0.68	—	26-30	
During	6	16:43	6	13.8	6.29	617	—	0.51	—	20-66	
During	9	16:46	7.5	13.8	6.20	637	—	0.44	—	19-10	
During	11	16:48	10.0	13.8	6.19	648	—	0.39	—	16-36	
During	12	16:49	10.5	13.7	6.23	647	—	0.37	—	16-16	
During									100		
During											
During											
During											
† CL=clear, CO=cloudy, TU=turbid, SI=silty, SA=sandy						Sample Train Volume Calculation (L) (length of sample tube x $3.141 \times d^2 / 4000$) + flow through cell volume. Where d = internal diameter of sample tube in mm					
Comments						Water sample internal $\phi = 6\text{mm} \approx 30\text{mL per meter}$					
DW : 7.86 DT : 38						Water sample internal $\phi = 6\text{mm} \approx 30\text{mL per meter}$					
WL fluctuated with pump, stayed around 7.86											
Analyses Required: PFAS suite											
Serial number of water quality sensor unit: —											
Shake test – foam produced?		<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No								
COC form completed and checked?		<input checked="" type="checkbox"/> Yes	<input checked="" type="checkbox"/>	Letter given to landowner? <input type="checkbox"/> Yes N/A							
Location field sheet completed?		<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> N/A	Well field sheet completed? <input checked="" type="checkbox"/> Yes N/A							
Stabilisation criteria field sheet completed?		<input checked="" type="checkbox"/> Yes									

* = needs to be recorded each time you take a set of parameters

NZDF PFAS SAMPLING FORM (separate form for each primary sample)

Location:	Chakea / Woodbourne (circle as appropriate)	Job Number:	A02744122
Land owner:	NZDF	Sample Code (Name):	GW III.3
Address:	Bayley Road	Date and time:	27/09/22
Weather:	Sunny, clear	Coordinates: (NZTM)	E N
Sample point:	tap / well / surface water	Sampled By:	Bryn Myra (Clean hands) (Dirty hands)
Description of sample point:	—	Site Photos taken?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Distance of sample point from bore:	— (m)	Water use:	Drinking water / Stock watering / Fodder irrigation / Non-potable
Sampling equipment:	Dedicated pump	Animals observed on site:	Chickens / cows / sheep / pigs / goats No
QA/QA Sample Codes:	KBP KBQ	Minimum volume between readings: 1 sample train volume (see formula below)	
Duplicate		2.5 L	
Trip Blank	KBQ KBQ KBS	Key Stabilisation Criteria: pH ± 0.1, EC ± 3%, T ± 3%, turbidity ± 10% of prior reading and ± 10 for values greater than 10 NTU	
Field Blank	KBR		
Rinsate Blank (include description of equipment cleaned e.g. dipper)	—		
NOTE: purge until well has stabilised using field parameters below (3 consecutive readings)			

TRANSFER FINAL READINGS TO STABILISATION FIELD SHEET

	Time Elapsed	Time	Volume Removed (L)	Water Temp. (°C)	pH	EC ((µS/cm))	ORP (mV)	Dissolved Oxygen (mg/L)	Water Level (m)*	Turbidity (NTU) / Water Appearance†
Before	0	15:33	0	13.8	7.88	665	—	0.96	—	46.86
During	2	15:35	2.5	13.7	8.00	589	—	0.66	—	39.99
During	6	15:39	5.0	13.6	7.38	636	—	0.45	—	34.74
During	10	15:43	8.0	13.6	6.67	668	—	0.45	—	12.17
During	13	15:46	10.0	13.6	6.46	675	—	0.45	—	10.79
During	17	15:50	13.0	13.5	6.30	692	—	0.43	—	14.68
During	24	15:57	15.5	13.5	6.22	699	—	0.40	—	8.60
During	29	16:02	18.0	13.6	6.22	705	—	0.37	—	12.89
During										
During										
During										

† CL=clear, CO=cloudy, TU=turbid, SI=silty, SA=sandy

Sample Train Volume Calculation (L)

(length of sample tube x $3.141 \times d^2 / 4000$) + flow through cell volume.
Where d = internal diameter of sample tube in mm

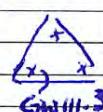
Comments

Water sample internal ø = 6mm ≈ 30mL per meter

DIN: 5.27

DIN: 81.00

WL fluctuated with pump stayed around 5.27



Analyses Required: PFAS suite

Serial number of water quality sensor unit:	—			
Shake test – foam produced?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No			
COC form completed and checked?	<input checked="" type="checkbox"/> Yes	Letter given to landowner?	<input type="checkbox"/> Yes	
Location field sheet completed?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> N/A	Well field sheet completed?	<input checked="" type="checkbox"/> Yes
Stabilisation criteria field sheet completed?	<input checked="" type="checkbox"/> Yes	NA		

* = needs to be recorded each time you take a set of parameters

NZDF PFAS SAMPLING FORM (separate form for each primary sample)

Location:	Ohakea / Woodbourne (circle as appropriate)		Job Number:	A02744123						
Land owner:	<u>—</u>		Sample Code (Name):	GW112.1						
Address:	<u>—</u>		Date and time:	28/09/22						
Weather:	<u>—</u>		Coordinates: (NZTM)	E <u>—</u> N <u>—</u>						
Sample point:	tap / well surface water		Sampled By:	Myra (Clean hands) Brynn (Dirty hands)						
Description of sample point:	<u>—</u>		Site Photos taken?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No						
Distance of sample point from bore:	<u>—</u> (m)		Water use:	Drinking water / Stock watering / Fodder irrigation / Non-potable						
Sampling equipment:	low flow		Animals observed on site:	Chickens / cows / sheep / pigs / goats <u>No</u>						
QA/QA Sample Codes:	KBT		Minimum volume between readings: 1 sample train volume (see formula below)							
Duplicate	<u>—</u>		≈ 0.6							
Trip Blank	KBU									
Field Blank	KBU									
Rinsate Blank (include description of equipment cleaned e.g. dipper)	<u>—</u>									
NOTE: purge until well has stabilised using field parameters below (3 consecutive readings)										
TRANSFER FINAL READINGS TO STABILISATION FIELD SHEET										
	Time Elapsed	Time	Volume Removed (L)	Water Temp. (°C)	pH	EC ((µS/cm))	ORP (mV)	Dissolved Oxygen (mg/L)	Water Level (m)*	Turbidity (NTU) / Water Appearance†
Before	<u>—</u>	<u>1207</u>	<u>—</u>	<u>14.3</u>	<u>6.7</u>	<u>382.7</u>		<u>3.86</u>	<u>0.83</u>	<u>681.2</u>
During	<u>2</u>	<u>1209</u>	<u>0.6</u>	<u>14.0</u>	<u>6.36</u>	<u>371.5</u>		<u>0.99</u>	<u>0.83</u>	<u>275.1</u>
During	<u>9</u>	<u>1216</u>	<u>3.2</u>	<u>14.1</u>	<u>6.17</u>	<u>363.5</u>		<u>1.14</u>	<u>0.83</u>	<u>184.72</u>
During	<u>11</u>	<u>1218</u>	<u>3.8</u>	<u>14.4</u>	<u>6.10</u>	<u>362.3</u>		<u>0.71</u>	<u>0.83</u>	<u>139.5</u>
During	<u>17</u>	<u>1219</u>	<u>4.4</u>	<u>14.2</u>	<u>6.08</u>	<u>389.8</u>		<u>0.61</u>	<u>0.83</u>	<u>133.6</u>
During	<u>14</u>	<u>1221</u>	<u>5.0</u>	<u>14.1</u>	<u>6.06</u>	<u>358.4</u>		<u>0.52</u>	<u>0.83</u>	<u>130.4</u>
During	<u>16</u>	<u>123</u>	<u>3.6</u>	<u>14.3</u>	<u>6.04</u>	<u>386.6</u>		<u>0.44</u>	<u>0.83</u>	<u>124.6</u>
During	<u>18</u>	<u>125</u>	<u>6.2</u>	<u>14.3</u>	<u>6.03</u>	<u>355.8</u>		<u>0.37</u>	<u>0.83</u>	<u>100.22</u>
During	<u>19.</u>	<u>126</u>	<u>6.8</u>	<u>14.2</u>	<u>6.02</u>	<u>355.1</u>		<u>0.34</u>	<u>0.83</u>	<u>98.4</u>
† CL=clear, CO=cloudy, TU=turbid, SI=silty, SA=sandy						Sample Train Volume Calculation (L) (length of sample tube x 3.141 x d ² / 4000) + flow through cell volume. Where d = internal diameter of sample tube in mm				
Comments						Water sample internal ø = 6mm ≈ 30mL per meter				
<u>DTW: 0.83</u> <u>DTB: 10.34</u>										
<u>Rust staining</u>						<u>* Took 2L to see if rust ppt disappeared did not.</u>				
						<u>* * clearer</u>				
Analyses Required: PFAS suite										
Serial number of water quality sensor unit: <u>—</u>										
Shake test – foam produced?		<input type="checkbox"/> Yes		<input checked="" type="checkbox"/> No						
COC form completed and checked?		<input checked="" type="checkbox"/> Yes		<input checked="" type="checkbox"/>		Letter given to landowner?		<input type="checkbox"/> Yes		<u>NA</u>
Location field sheet completed?		<input type="checkbox"/> Yes		<input checked="" type="checkbox"/> N/A		Well field sheet completed?		<input checked="" type="checkbox"/> Yes		<input type="checkbox"/> N/A
Stabilisation criteria field sheet completed?		<input checked="" type="checkbox"/> Yes		<u>,</u>						

* = needs to be recorded each time you take a set of parameters

NZDF PFAS SAMPLING FORM (separate form for each primary sample)

Location:	Ohakea	Woodbourne (circle as appropriate)	Job Number:	A02744123
Land owner:	—	Sample Code (Name):	GW112.2	
Address:	—	Date and time:	28/09/22	
Weather:	Sunny turning cloudy			
Sample point:	tap / well	surface water	Coordinates: (NZTM)	E
Description of sample point:	—			
Distance of sample point from bore:	—	(m)	N	.
Sampling equipment:	Dedicated pump			
QA/QA Sample Codes:	KBF			
Duplicate				
Trip Blank	KBF			
Field Blank	KBF			
Rinsate Blank (include description of equipment cleaned e.g. dipper)	—			
NOTE: purge until well has stabilised using field parameters below (3 consecutive readings)				

Minimum volume between readings: 1 sample train volume
(see formula below)

~ 2.1

Key Stabilisation Criteria:

pH ± 0.1, EC ± 3%, T ± 3%, turbidity ± 10% of prior reading and ± 10 for values greater than 10 NTU

TRANSFER FINAL READINGS TO STABILISATION FIELD SHEET

	Time Elapsed	Time	Volume Removed (L)	Water Temp. (°C)	pH	EC ((µS/cm))	ORP (mV)	Dissolved Oxygen (mg/L)	Water Level (m)*	Turbidity (NTU) / Water Appearance†
Before	0	12:37	0	13.8	7.03	865	—	1.46	0.23	16.30
During	3	12:40	2	13.8	6.97	864	—	0.88	#	13.08
During	5	12:42	4	13.7	6.93	820	—	0.64	#	6.87
During	8	12:45	6	13.6	6.90	809	—	0.53	#	6.52
During	11	12:48	8	13.6	6.88	804	—	0.44	#	6.44
During	13	12:50	10	13.7	6.87	804	—	0.40	#	6.40
During										
During										
During										
During										
During										

† CL=clear, CO=cloudy, TU=turbid, SI=silty, SA=sandy

Sample Train Volume Calculation (L)

(length of sample tube x $3.141 \times d^2 / 4000$) + flow through cell volume.
Where d = internal diameter of sample tube in mm

Comments

Water sample internal ϕ = 6mm ≈ 30mL per meter

DTW = 0.23

DTB = 50.0

logger present

Analyses Required: PFAS suite

Serial number of water quality sensor unit:	—	
Shake test – foam produced?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
COC form completed and checked?	<input checked="" type="checkbox"/> Yes	Letter given to landowner? <input type="checkbox"/> Yes
Location field sheet completed?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> N/A Well field sheet completed? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> N/A
Stabilisation criteria field sheet completed?	<input checked="" type="checkbox"/> Yes	

* = needs to be recorded each time you take a set of parameters

Appendix D: QAQC Results

Table D-1: QA/QC Water Sampling Results - Per- and Poly-Fluoroalkyl Substances (PFAS)¹ Field Duplicates

Sample Location	GW112.1	GW112.1	%RPD (GW112.1 and GWKBQ)	GW111.3	GW111.3	%RPD (MGW111.3 and GWKBQ)
Sample Name	OHA_ADJ_GW112.1_4_280922	OHA_ADJ_GWKBQ_280922		OHA_BAI_GW111.3_4_270922	OHA_BAI_GWKBQ_270922	
Laboratory Reference	3020548	3020548		3021350	3021350	
Monitoring Zone	Off base	Off base		On base	On base	
Sampled Date	28/09/2022	28/09/2022		27/09/2022	27/09/2022	
PFPrS	<0.025	<0.025	-	<0.001	<0.001	-
PFBS	0.031	0.028	10	<0.001	<0.001	-
PFPeS	0.028	0.03	7	<0.001	<0.001	-
di-PFHxS	<0.025	<0.025	-	<0.001	<0.001	-
Mono-PFHxS	0.043	0.044	2	<0.001	<0.001	-
L-PFHxS	0.24	0.26	8	<0.001	<0.001	-
Total PFHxS	0.28	0.3	7	<0.001	<0.001	-
PFHpS	<0.025	<0.025	-	<0.001	<0.001	-
di-PFOS	<0.025	<0.025	-	<0.001	<0.001	-
Mono-PFOS	0.093	0.086	8	<0.001	<0.001	-
L-PFOS	0.1	0.12	18	<0.001	<0.001	-
Total PFOS	0.19	0.21	10	<0.001	<0.001	-
Sum of PFHxS and PFOS	0.47	0.51	8	<0.001	<0.001	-
PFECHS	<0.025	<0.025	-	<0.001	<0.001	-
PFBA	0.12	0.11	9	<0.001	<0.001	-
PFPeA	0.44	0.44	-	<0.001	<0.001	-
PFHxA	0.34	0.37	8	<0.001	<0.001	-
PFHpA	0.16	0.16	-	<0.001	<0.001	-
PFOA	0.086	0.086	-	<0.001	<0.001	-
PFNA	0.03	0.038	24	<0.001	<0.001	-
PFDA	<0.025	<0.025	-	<0.001	<0.001	-
PFUnDA	<0.025	<0.025	-	<0.001	<0.001	-
PFTrDA	<0.1	<0.1	-	<0.001	<0.001	-
PTeDA	<0.1	<0.1	-	<0.001	<0.001	-
PFDoDA	<0.1	<0.1	-	<0.001	<0.001	-
FOSA	<0.025	<0.025	-	<0.001	<0.001	-
MeFOSA	<0.1	<0.1	-	<0.001	<0.001	-
MeFOSAA	<0.025	<0.025	-	<0.001	<0.001	-
EtFOSAA	<0.025	<0.025	-	<0.001	<0.001	-
4:2 FTS	<0.025	<0.025	-	<0.001	<0.001	-
6:2 FTS	0.12	0.11	9	<0.001	<0.001	-
8:2 FTS	<0.1	<0.1	-	<0.001	<0.001	-
10:2 FTS	<0.025	<0.025	-	<0.001	<0.001	-
FPPrPA	<0.1	<0.1	-	<0.001	<0.001	-
EtFOSA	<0.1	<0.1	-	<0.001	<0.001	-
EtFOSE	<0.1	<0.1	-	<0.001	<0.001	-
FPePA	<0.025	<0.025	-	<0.001	<0.001	-
FHpPA	<0.025	<0.025	-	<0.001	<0.001	-
F-53B minor	<0.05	<0.05	-	<0.001	<0.001	-
HFOPO-DA*	<0.05	<0.05	-	<0.001	<0.001	-
Sum F-53B	<0.1	<0.1	-	<0.001	<0.001	-
ADONA	<0.025	<0.025	-	<0.001	<0.001	-
P37DMOA	<0.05	<0.05	-	<0.001	<0.001	-
F-53B major	<0.1	<0.1	-	<0.1	<0.1	-

Notes:

1. Results in µg/L.

-	No value available
<0.001	Below the limit of reporting

Table D-2: QA/QC Water Sampling Results - Blanks - Per- and Poly-Fluoroalkyl Substances (PFAS)¹

Sample Location	Ohakea - on base			Ohakea - off base		
Sample Name	OHA_BAI_GWKBR_270922	OHA_BAI_GWKBP_270922	OHA_BAI_GWKBS_270922	OHA_ADJ_GWKBU_280922	OHA_ADJ_GWKBW_290922	OHA_ADJ_GWKBV_280922
Laboratory Reference	3021350	3021350	3021350	3020548	3041553	3020548
Monitoring Zone	Field Blank	Rinsate	Trip Blank	Field Blank	Rinsate	Trip Blank
Sampled Date	27/09/2022	27/09/2022	27/09/2022	28/09/2022	29/09/2022	28/09/2022
PPrS	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
PFBS	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
PFPeS	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
di-PFHxS	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Mono-PFHxS	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
L-PFHxS	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Total PFHxS	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
PFHpS	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
di-PFOS	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Mono-PFOS	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
L-PFOS	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Total PFOS	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Sum of PFHxS and PFOS	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
PFECHS	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
PFBA	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
PFPeA	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
PFHxA	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
PFHpA	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
PFOA	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
PFNA	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
PFDA	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
PFUnDA	<0.001	<0.001	-	<0.001	<0.001	<0.001
PFTrDA	-	-	-	-	-	-
PFTeDA	<0.001	<0.001	<0.001	-	<0.001	-
PFDoDA	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
FOSA	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
MeFOSA	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
MeFOSAA	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
EtFOSAA	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
4:2 FTS	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
6:2 FTS	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
8:2 FTS	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
10:2 FTS	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
FPPA	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
EtFOSA	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
EtFOSE	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
FPePA	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
FHpPA	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
F-53B minor	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
HFPO-DA*	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Sum F-53B	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
ADONA	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
P37DMOA	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
F-53B major	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001

Notes:

1. Results in µg/L.

-	Not Reported
<0.001	Below the limit of reporting

Appendix E: Sample Results Tables

Table E-1: Groundwater Sampling Results - Per- and Poly-Fluoroalkyl Substances (PFAS)¹

Sample Name	PFAS in Groundwater								Guidelines		
	MW4-1	MW4	MW4	MW4	OHA_FTA_MW4_5_300920	OHA_FTA_MW4_6_190321	OHA_FTA_MW4_7_271021	OHA_FTA_MW4_8_300322	NZ Drinking Water Standard, MoH 2022 ²	ANZ WQG 99% Species Protection - Technical Draft Default Guideline Values ³	ANZ WQG 95% Species Protection - Technical Draft Default Guideline Values ³
Location	MW4	MW4	MW4	MW4	MW4	MW4	MW4	MW4			
Sample Date	9/07/2015	1/08/2017	31/10/2017	5/07/2018	30/09/2020	19/03/2021	27/10/2021	30/03/2022			
Lab Report Number	ES1526105	841470	937355	1186580	2132127	2314824	2590573	2788510			
Monitoring Zone	On-base	On-base	On-base	On-base	On-base	On-base	On-base	On-base			
Sample Results											
PFPeS	-	0.0072	0.011	0.011	<0.025	<0.025	<0.025	<0.025	-	-	-
PFBs	0.05	0.032	0.043	0.034	0.025	0.034	0.033	0.035	-	-	-
PFPeS	-	0.022	0.065	0.051	0.029	0.046	0.048	0.046	-	-	-
di-PFHxS	-	<0.001	0.0017	0.0011	<0.025	<0.025	<0.025	<0.025	-	-	-
Mono-PFHxS	-	0.1	0.14	0.081	0.061	0.083	0.091	0.098	-	-	-
L-PFHxS	-	0.54	0.76	0.49	0.35	0.46	0.6	0.6	-	-	-
Total PFHxS ⁴	1.35	0.64	0.9	0.57	0.41	0.54	0.69	0.7	-	-	-
PFHpS	-	0.032	0.059	0.032	<0.025	<0.025	<0.025	<0.025	-	-	-
di-PFOS	-	0.025	0.066	0.027	<0.025	0.029	0.032	0.026	-	-	-
Mono-PFOS	-	0.45	1.1	0.5	0.33	0.46	0.68	0.49	-	-	-
L-PFOS	-	1	2.1	1	0.69	0.91	1.2	0.9	-	-	-
Total PFOS ⁴	3.02	1.5	3.3	1.5	1	1.4	1.9	1.4	-	0.0091 ⁶	0.48 ⁶
Sum of PFHxS and PFOS ⁵	-	-	-	2.1	1.4	1.9	2.6	2.1	0.07	-	-
PFECfHS	-	-	-	-	-	<0.025	<0.025	<0.025	-	-	-
PFBA	-	0.21	0.29	0.2	0.17	0.17	0.27	0.21	-	-	-
PFPeA	-	1	1.7	1	0.65	0.79	1.1	0.87	-	-	-
PFHxA	2.09	0.99	0.96	0.74	0.41	0.51	0.73	0.6	-	-	-
PFHpA	0.71	0.34	0.43	0.32	0.22	0.26	0.37	0.33	-	-	-
PFoA	0.54	0.26	0.48	0.3	0.19	0.25	0.38	0.29	0.56	19	220
PFNA	0.32	0.16	0.35	0.18	0.1	0.13	0.24	0.17	-	-	-
PFDA	-	0.0021	0.0053	0.0048	<0.025	<0.025	<0.025	<0.025	-	-	-
PFUnDA	<0.05	<0.005	0.003	-	<0.025	<0.025	<0.025	<0.025	-	-	-
PFTrDA	<0.05	-	-	-	<0.1	<0.1	<0.1	<0.1	-	-	-
PFTeDA	<0.5	-	-	-	<0.1	<0.1	<0.1	<0.1	-	-	-
PFDoDA	<0.05	<0.005	<0.001	-	<0.1	<0.1	<0.1	<0.1	-	-	-
FOSA	<0.02	<0.001	0.0032	0.004	<0.025	<0.025	<0.025	<0.025	-	-	-
MeFOSA	<0.5	<0.005	<0.005	-	<0.1	<0.1	<0.1	<0.1	-	-	-
MeFOsA	-	<0.005	<0.005	-	<0.025	<0.025	<0.025	<0.025	-	-	-
EtFOsAA	-	<0.005	<0.005	-	<0.025	<0.025	<0.025	<0.025	-	-	-
4:2 FTS	-	<0.005	0.0054	0.0031	<0.025	<0.025	<0.025	<0.025	-	-	-
6:2 FTS	5.6	0.88	1.6	0.86	0.45	0.45	1.1	0.53	-	-	-
8:2 FTS	<0.1	0.036	0.077	0.066	<0.1	<0.1	<0.1	<0.1	-	-	-
10:2 FTS	-	-	-	-	-	<0.025	<0.025	<0.025	-	-	-
FPrPA	-	-	-	-	-	<0.1	<0.1	<0.1	-	-	-
EtFOsA	<0.05	<0.005	<0.005	-	<0.1	<0.1	<0.1	<0.1	-	-	-
EtFOsE	<0.5	<0.005	<0.005	-	<0.1	<0.1	<0.1	<0.1	-	-	-
FPePA	-	-	-	-	-	<0.025	<0.025	<0.025	-	-	-
FHPaPA	-	-	-	-	-	<0.025	<0.025	<0.025	-	-	-
F-53B minor	-	-	-	-	-	<0.05	<0.05	<0.05	-	-	-
HFPO-DA	-	-	-	-	-	<0.05	<0.05	<0.05	-	-	-
Sum F-53B	-	-	-	-	-	<0.1	<0.1	<0.1	-	-	-
ADONA	-	-	-	-	-	<0.025	<0.025	<0.025	-	-	-
P37DMOA	-	-	-	-	-	<0.05	<0.05	<0.05	-	-	-
F-53B major	-	-	-	-	-	<0.1	<0.1	<0.1	-	-	-

Notes:

- Results in µg/L.
- Ministry of Health (MoH, 2022) Water Services (Drinking Water Standards for New Zealand) Regulations 2022, PFOA, and sum of PFOS + PFHxS.
- Australian and New Zealand Guidelines for Fresh and Marine Water Quality – technical draft guideline values in PFAS National Environmental Management Plan 2.0 – Table 5. The Heads of EPAs Australia and New Zealand (HEPA), January 2020.
- Total PFOS, PFHxS are calculated by summing monoethyl, dimethyl and linear isomers. Where an isomer is below the detection limit it is not added to the summation. This is following the method in the reported lab results.
- Summations are made by adding compounds Total PFOS, Total PFHxS together. Where one compound is below detection, it is not included in the summation.
- ANZG 2023, Toxicant default guideline values for aquatic ecosystem protection: Perfluorooctane sulfonate (PFOS) in freshwater. Australian and New Zealand Guidelines for Fresh and Marine Water Quality. CC BY 4.0. Australian and New Zealand Governments and Australian state and territory governments, Canberra, ACT, Australia.

-	Parameter not tested / no guideline value available.
0.3	Concentration exceeds 99% ecological guidelines.
1.2	Concentration exceeds 95% ecological guidelines.
3.6	Concentration exceeds drinking water standard.

Table E-1: Groundwater Sampling Results - Per- and Poly-Fluoroalkyl Substances (PFAS)¹

Sample Name	PFAS in Groundwater									Guidelines		
	OHA_FTA_MW4_9_270922	MW6	MW6	MW6	OHA_MW6	MW6	OHA_RUP_MW6_6_300920	OHA_RUP_MW6_7_170321	NZ Drinking Water Standard, MoH 2022 ²	ANZ WQG 99% Species Protection - Technical Draft Default Guideline Values ³	ANZ WQG 95% Species Protection - Technical Draft Default Guideline Values ³	
Location	MW4	MW6	MW6	MW6	MW6	MW6	MW6	MW6				
Sample Date	27/09/2022	20/04/2017	1/08/2017	31/10/2017	22/02/2018	4/07/2018	30/09/2020	17/03/2021				
Lab Report Number	3008321	1327497	841470	937355	1055089	1186580	2132127	2314824				
Monitoring Zone	On-base	On-base	On-base	On-base	On-base	On-base	On-base	On-base				
Sample Results												
PFPeS	<0.025	0.11	0.21	0.66	0.17	0.22	0.063	0.028	-	-	-	-
PFBS	0.032	0.56	0.76	1.8	0.43	0.72	0.22	0.11	-	-	-	-
PFPeS	0.045	0.81	0.81	2.3	0.66	0.77	0.26	0.12	-	-	-	-
di-PFHxS	<0.025	0.014	0.02	0.052	0.025	0.015	<0.025	<0.025	-	-	-	-
Mono-PFHxS	0.11	1.1	1.9	4.1	1.8	1.7	0.62	0.25	-	-	-	-
L-PFHxS	0.62	5.3	8.1	22	4.1	11	4.2	1.6	-	-	-	-
Total PFHxS ⁴	0.73	6.4	10	26	5.9	13	4.8	1.8	-	-	-	-
PFHpS	<0.025	0.34	0.6	0.49	0.38	0.34	0.15	0.06	-	-	-	-
di-PFOS	0.026	0.31	0.23	0.27	0.39	0.27	0.13	0.075	-	-	-	-
Mono-PFOS	0.72	4.9	2.8	2.4	3.3	4.5	2.9	1.1	-	-	-	-
L-PFOS	1.3	6.6	5.9	3	4.5	9.7	6.5	1.7	-	-	-	-
Total PFOS ⁴	2	12	8.9	5.7	8.2	14	9.5	2.9	-	0.0091 ⁶	0.48 ⁶	
Sum of PFHxS and PFOS ⁵	2.7	18	-	-	14	27	14	4.7	0.07	-	-	
PFECfHS	<0.025	-	-	-	-	-	<0.025	-	-	-	-	-
PFBA	0.24	1.1	1.1	1.3	0.66	1.2	1.4	0.35	-	-	-	-
PFPeA	0.95	3.6	4	6.8	2.5	4.1	3.2	1.1	-	-	-	-
PFHxA	0.61	2.8	4.4	7	2	4	2.2	0.78	-	-	-	-
PFHpA	0.36	0.9	1.5	2.5	0.93	1.9	1	0.37	-	-	-	-
PFOA	0.37	1.3	1.8	1.7	0.89	2.2	1.1	0.35	0.56	19	220	
PFNA	0.23	0.75	0.86	0.37	0.66	1.3	0.75	0.28	-	-	-	-
PFDA	<0.025	0.016	0.029	0.013	0.012	0.045	<0.025	<0.025	-	-	-	-
PFUnDA	<0.025	-	0.0057	0.0043	<0.005	-	<0.025	<0.025	-	-	-	-
PFTrDA	<0.1	-	-	-	-	-	<0.1	<0.1	-	-	-	-
PFTeDA	<0.1	-	-	-	-	-	<0.1	<0.1	-	-	-	-
PFDoDA	<0.1	-	<0.005	<0.001	-	-	<0.1	<0.1	-	-	-	-
FOSA	<0.025	0.0014	<0.001	<0.001	0.0085	<0.001	<0.025	<0.025	-	-	-	-
MeFOSA	<0.1	-	<0.005	<0.005	-	-	<0.1	<0.1	-	-	-	-
MeFOSAA	<0.025	-	<0.005	<0.005	<0.005	-	<0.025	<0.025	-	-	-	-
EtFOSAA	<0.025	-	<0.005	<0.005	<0.005	-	<0.025	<0.025	-	-	-	-
4:2 FTS	<0.025	<0.001	<0.005	<0.005	<0.005	<0.001	<0.025	<0.025	-	-	-	-
6:2 FTS	0.73	0.53	0.74	0.33	1.7	0.46	0.23	0.84	-	-	-	-
8:2 FTS	<0.1	0.0089	0.0064	<0.005	0.04	0.0069	<0.1	<0.1	-	-	-	-
10:2 FTS	<0.025	-	-	-	-	-	<0.025	-	-	-	-	-
FPrPA	<0.1	-	-	-	-	-	<0.1	<0.1	-	-	-	-
EtFOSA	<0.1	-	<0.005	<0.005	-	-	<0.1	<0.1	-	-	-	-
EtFOSE	<0.1	-	<0.005	<0.005	<0.005	-	<0.1	<0.1	-	-	-	-
FPepA	<0.025	-	-	-	-	-	-	<0.025	-	-	-	-
FHPPA	<0.025	-	-	-	-	-	-	<0.025	-	-	-	-
F-53B minor	<0.05	-	-	-	-	-	-	<0.05	-	-	-	-
HFPO-DA	<0.05	-	-	-	-	-	-	<0.05	-	-	-	-
Sum F-53B	<0.1	-	-	-	-	-	-	<0.1	-	-	-	-
ADONA	<0.025	-	-	-	-	-	-	<0.025	-	-	-	-
P37DMOA	<0.05	-	-	-	-	-	-	<0.05	-	-	-	-
F-53B major	<0.1	-	-	-	-	-	-	<0.1	-	-	-	-

Notes:

- Results in µg/L.
- Ministry of Health (MoH, 2022) Water Services (Drinking Water Standards for New Zealand) Regulations 2022, PFOA, and sum of PFOS + PFHxS.
- Australian and New Zealand Guidelines for Fresh and Marine Water Quality – technical draft guideline values in PFAS National Environmental Management Plan 2.0 – Table 5. The Heads of EPAs Australia and New Zealand (HEPA), January 2020.
- Total PFOS, PFHxS are calculated by summing monoethyl, dimethyl and linear isomers. Where an isomer is below the detection limit it is not added to the summation. This is following the method in the reported lab results.
- Summations are made by adding compounds Total PFOS, Total PFHxS together. Where one compound is below detection, it is not included in the summation.
- ANZG 2023, Toxicant default guideline values for aquatic ecosystem protection: Perfluorooctane sulfonate (PFOS) in freshwater. Australian and New Zealand Guidelines for Fresh and Marine Water Quality. CC BY 4.0. Australian and New Zealand Governments and Australian state and territory governments, Canberra, ACT, Australia.

-	Parameter not tested / no guideline value available.
0.3	Concentration exceeds 99% ecological guidelines.
1.2	Concentration exceeds 95% ecological guidelines.
3.6	Concentration exceeds drinking water standard.

Table E-1: Groundwater Sampling Results - Per- and Poly-Fluoroalkyl Substances (PFAS)¹

Sample Name	PFAS in Groundwater									Guidelines		
	OHA_RUP_MW6_8_271021	OHA_RUP_MW6_9_300322	OHA_RUP_MW6_10_270922	OHA_BAI_GW111.1_1_170321	OHA_BAI_GW111.1_2_281021	OHA_BAI_GW111.1_3_300322	OHA_BAI_GW111.1_4_280922	OHA_BAI_GW111.2_1_040221	NZ Drinking Water Standard, MoH 2022 ²	ANZ WQG 99% Species Protection - Technical Draft Default Guideline Values ³	ANZ WQG 95% Species Protection - Technical Draft Default Guideline Values ³	
Location	MW6	MW6	MW6	GW111.1	GW111.1	GW111.1	GW111.1	GW111.2				
Sample Date	27/10/2021	30/03/2022	27/09/2022	17/03/2021	28/10/2021	30/03/2022	28/09/2022	4/02/2021				
Lab Report Number	2590573	2788509	3008307	2390370	2593741	2787340	3021350	2256089				
Monitoring Zone	On-base	On-base	On-base	On-base	On-base	On-base	On-base	On-base				
Sample Results												
PFPeS	0.1	0.053	0.16	<0.025	<0.025	0.0023	0.0031	<0.001	-	-	-	
PFBS	0.33	0.19	0.46	<0.025	<0.025	0.0083	0.011	<0.001	-	-	-	
PFPeS	0.38	0.24	0.64	<0.025	<0.025	0.0083	0.014	<0.001	-	-	-	
di-PFHxS	<0.025	<0.025	<0.025	<0.025	<0.025	<0.001	<0.001	-	-	-	-	
Mono-PFHxS	0.77	0.57	1.3	<0.025	0.032	0.012	0.03	<0.001	-	-	-	
L-PFHxS	5.7	3.8	7.7	0.083	0.2	0.076	0.14	<0.001	-	-	-	
Total PFHxS ⁴	6.5	4.4	9	0.083	0.23	0.088	0.17	<0.001	-	-	-	
PFHpS	0.24	0.15	0.24	<0.025	<0.025	0.0022	0.0045	<0.001	-	-	-	
di-PFOS	0.18	0.15	0.17	<0.025	<0.025	0.0036	0.0061	<0.001	-	-	-	
Mono-PFOS	2.7	2.5	2.3	0.035	0.15	0.061	0.087	<0.001	-	-	-	
L-PFOS	4.6	5.5	3.4	0.05	0.21	0.14	0.14	<0.001	-	-	-	
Total PFOS ⁴	7.5	8.2	5.9	0.085	0.36	0.2	0.23	<0.001	-	0.0091 ⁶	0.48 ⁶	
Sum of PFHxS and PFOS ⁵	14	13	15	0.17	0.59	0.29	0.4	<0.001	0.07	-	-	
PFECFS	<0.025	<0.025	<0.025	<0.025	<0.025	<0.001	<0.001	<0.001	-	-	-	
PFBA	0.57	0.57	0.61	0.11	0.15	0.079	0.11	<0.001	-	-	-	
PFPeA	1.7	2	2.2	0.39	0.86	0.26	0.53	<0.001	-	-	-	
PFHxA	1.6	1.4	2.2	0.28	0.47	0.2	0.33	<0.001	-	-	-	
PFHpA	0.69	0.63	0.9	0.15	0.17	0.092	0.16	<0.001	-	-	-	
PFDA	0.97	0.68	1	0.073	0.13	0.064	0.084	<0.001	0.56	19	220	
PFNA	0.61	0.55	0.49	<0.025	0.048	0.017	0.044	<0.001	-	-	-	
PFDA	<0.025	<0.025	<0.025	<0.025	<0.025	<0.001	<0.001	<0.001	-	-	-	
PFUnDA	<0.025	<0.025	<0.025	<0.025	<0.025	<0.001	<0.001	<0.001	-	-	-	
PFTrDA	<0.1	<0.1	<0.1	<0.1	<0.1	<0.001	-	-	-	-	-	
PTFeDA	<0.1	<0.1	<0.1	<0.1	<0.1	<0.001	-	-	-	-	-	
PFDoDA	<0.1	<0.1	<0.1	<0.1	<0.1	<0.001	<0.001	<0.001	-	-	-	
FOSA	<0.025	<0.025	<0.025	<0.025	<0.025	<0.001	<0.001	<0.001	-	-	-	
MeFOSA	<0.1	<0.1	<0.1	<0.1	<0.1	<0.001	<0.001	<0.001	-	-	-	
MeFOSSA	<0.025	<0.025	<0.025	<0.025	<0.025	<0.001	<0.001	<0.001	-	-	-	
EtFOSSAA	<0.025	<0.025	<0.025	<0.025	<0.025	<0.001	<0.001	<0.001	-	-	-	
4:2 FTS	<0.025	<0.025	<0.025	<0.025	<0.025	<0.001	<0.001	-	-	-	-	
6:2 FTS	<1	0.78	0.32	<0.05	0.15	0.012	0.25	<0.001	-	-	-	
8:2 FTS	<0.1	<0.1	<0.1	<0.1	<0.1	<0.001	0.0032	<0.001	-	-	-	
10:2 FTS	<0.025	<0.025	<0.025	<0.025	<0.025	<0.001	<0.001	<0.001	-	-	-	
FPrPA	<0.1	<0.1	<0.1	<0.1	<0.1	<0.001	<0.001	<0.001	-	-	-	
EtFOSSA	<0.1	<0.1	<0.1	<0.1	<0.1	<0.001	<0.001	<0.001	-	-	-	
EtFOSE	<0.1	<0.1	<0.1	<0.1	<0.1	<0.001	<0.001	<0.001	-	-	-	
FPepA	<0.025	<0.025	<0.025	<0.025	<0.025	<0.001	<0.001	<0.001	-	-	-	
FHPPA	<0.025	<0.025	<0.025	<0.025	<0.025	<0.001	<0.001	<0.001	-	-	-	
F-53B minor	<0.05	<0.05	<0.05	<0.05	<0.05	<0.001	<0.001	<0.001	-	-	-	
HFPO-DA	<0.05	<0.05	<0.05	<0.05	<0.05	<0.001	<0.001	<0.001	-	-	-	
Sum F-53B	<0.1	<0.1	<0.1	<0.1	<0.1	<0.001	<0.001	<0.001	-	-	-	
ADONA	<0.025	<0.025	<0.025	<0.025	<0.025	<0.001	<0.001	<0.001	-	-	-	
P37DMOA	<0.05	<0.05	<0.05	<0.05	<0.05	<0.001	<0.001	<0.001	-	-	-	
F-53B major	<0.1	<0.1	<0.1	<0.1	<0.1	<0.001	<0.001	<0.001	-	-	-	

Notes:

1. Results in µg/L.

2. Ministry of Health (MoH, 2022) Water Services (Drinking Water Standards for New Zealand) Regulations 2022, PFOA, and sum of PFOS + PFHxS.

3. Australian and New Zealand Guidelines for Fresh and Marine Water Quality – technical draft guideline values in PFAS National Environmental Management Plan 2.0 – Table 5. The Heads of EPAs Australia and New Zealand (HEPA), January 2020.

4. Total PFOS, PFHxS are calculated by summing monoethyl, dimethyl and linear isomers. Where an isomer is below the detection limit it is not added to the summation. This is following the method in the reported lab results.

5. Summations are made by adding compounds Total PFOS, Total PFHxS together. Where one compound is below detection, it is not included in the summation.

6. ANZG 2023, Toxicant default guideline values for aquatic ecosystem protection: Perfluorooctane sulfonate (PFOS) in freshwater. Australian and New Zealand Guidelines for Fresh and Marine Water Quality. CC BY 4.0. Australian and New Zealand Governments and Australian state and territory governments, Canberra, ACT, Australia.

-	Parameter not tested / no guideline value available.
0.3	Concentration exceeds 99% ecological guidelines.
1.2	Concentration exceeds 95% ecological guidelines.
3.6	Concentration exceeds drinking water standard.

Table E-1: Groundwater Sampling Results - Per- and Poly-Fluoroalkyl Substances (PFAS)¹

Sample Name	PFAS in Groundwater									Guidelines		
	OHA_BAI_GW111.2_2_170321	OHA_BAI_GW111.2_3_281021	OHA_BAI_GW111.2_4_300322	OHA_BAI_GW111.2_5_270922	OHA_BAI_GW111.3_1_170321	OHA_BAI_GW111.3_2_281021	OHA_BAI_GW111.3_3_300322	OHA_BAI_GW111.3_4_270922	NZ Drinking Water Standard, MoH 2022 ²	ANZ WQG 99% Species Protection - Technical Draft Default Guideline Values ³	ANZ WQG 95% Species Protection - Technical Draft Default Guideline Values ³	
Location	GW111.2	GW111.2	GW111.2	GW111.2	GW111.3	GW111.3	GW111.3	GW111.3				
Sample Date	17/03/2021	28/10/2021	30/03/2022	28/09/2022	17/03/2021	28/10/2021	30/03/2022	27/09/2022				
Lab Report Number	2390370	2593741	2787340	3021350	2390370	2593741	2787340	3021350				
Monitoring Zone	On-base											
Sample Results												
PFPeS	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-	-
PFBS	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-	-
PFPeS	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-	-
di-PFHxS	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-	-
Mono-PFHxS	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-	-
L-PFHxS	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-	-
Total PFHxS ⁴	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-	-
PFHpS	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-	-
di-PFOS	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-	-
Mono-PFOS	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-	-
L-PFOS	<0.001	0.0012	<0.001	<0.001	<0.001	0.0021	0.0027	<0.001	-	0.0091 ⁶	0.48 ⁶	
Total PFOS ⁴	<0.001	0.0012	<0.001	<0.001	<0.001	0.0021	0.0027	<0.001	-	0.0091 ⁶	0.48 ⁶	
Sum of PFHxS and PFOS ⁵	<0.001	0.0012	<0.001	<0.001	<0.001	0.0021	0.0027	<0.001	0.07	-	-	
PFECFS	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-	-
PFBA	<0.001	<0.001	-	<0.001	<0.001	<0.001	-	<0.001	-	-	-	-
PFPeA	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-	-
PFHxA	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-	-
PFHpA	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-	-
PFDA	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.56	19	220	
PFNA	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-	
PFDA	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-	
PFUnDA	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-	
PFTDA	-	-	-	-	-	-	-	-	-	-	-	
PTFeDA	-	-	<0.001	-	-	<0.001	<0.001	<0.001	-	-	-	
PFDoDA	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-	
FOSA	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-	
MeFOSA	-	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	-	-	-	
MeFOSSA	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-	
EtFOSSAA	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-	
4:2 FTS	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-	
6:2 FTS	<0.001	0.0024	<0.001	<0.001	<0.001	0.0037	<0.001	<0.001	-	-	-	
8:2 FTS	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-	
10:2 FTS	-	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	-	-	-	
FPrPA	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-	
EtFOSSA	-	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	-	-	-	
EtFOSE	-	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	-	-	-	
FPePA	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-	
FHPaPA	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-	
F-53B minor	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-	
HFPO-DA	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	
Sum F-53B	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	
ADONA	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	
P37DMOA	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	
F-53B major	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	

Notes:

1. Results in µg/L.

2. Ministry of Health (MoH, 2022) Water Services (Drinking Water Standards for New Zealand) Regulations 2022, PFOA, and sum of PFOS + PFHxS.

3. Australian and New Zealand Guidelines for Fresh and Marine Water Quality – technical draft guideline values in PFAS National Environmental Management Plan 2.0 – Table 5. The Heads of EPAs Australia and New Zealand (HEPA), January 2020.

4. Total PFOS, PFHxS are calculated by summing monoethyl, dimethyl and linear isomers. Where an isomer is below the detection limit it is not added to the summation. This is following the method in the reported lab results.

5. Summations are made by adding compounds Total PFOS, Total PFHxS together. Where one compound is below detection, it is not included in the summation.

6. ANZG 2023, Toxicant default guideline values for aquatic ecosystem protection:

Table E-1: Groundwater Sampling Results - Per- and Poly-Fluoroalkyl Substances (PFAS)¹

Sample Name	PFAS in Groundwater								Guidelines		
	MW9	MW9	OHA_MW9	MW9	OHA_DTK_MW9_5_300920	OHA_DTK_MW9_6_180321	OHA_DTK_MW9_7_271021	OHA_DTK_MW9_8_300322	NZ Drinking Water Standard, MoH 2022 ²	ANZ WQG 99% Species Protection - Technical Draft Default Guideline Values ³	ANZ WQG 95% Species Protection - Technical Draft Default Guideline Values ³
Location	MW9	MW9	MW9	MW9	MW9	MW9	MW9	MW9			
Sample Date	20/04/2017	1/11/2017	20/02/2018	4/07/2018	30/09/2020	18/03/2021	27/10/2021	30/03/2022			
Lab Report Number	1327497	937355	1055089	1186581	2132127	2314824	2590573	2786745			
Monitoring Zone	On-base	On-base	On-base	On-base	On-base	On-base	On-base	On-base			
Sample Results											
PFPeS	0.019	0.018	0.031	0.0091	<0.025	<0.025	<0.025	0.022	-	-	-
PFBS	0.12	0.072	0.093	0.028	0.034	0.064	0.046	0.049	-	-	-
PFPeS	0.16	0.11	0.14	0.043	0.038	0.069	0.057	0.074	-	-	-
di-PFHxS	0.003	0.0025	0.003	<0.001	<0.025	<0.025	<0.025	0.0015	-	-	-
Mono-PFHxS	0.21	0.16	0.26	0.058	0.071	0.14	0.1	0.14	-	-	-
L-PFHxS	1.5	1.1	1.3	0.42	0.47	0.91	0.79	0.89	-	-	-
Total PFHxS ⁴	1.7	1.3	1.6	0.48	0.54	1	0.89	1	-	-	-
PFHpS	0.072	0.06	0.071	0.021	<0.025	0.034	0.029	0.042	-	-	-
di-PFOS	0.055	0.057	0.078	0.013	<0.025	0.045	0.042	0.049	-	-	-
Mono-PFOS	0.62	0.46	0.72	0.18	0.19	0.52	0.46	0.55	-	-	-
L-PFOS	0.52	0.31	0.58	0.19	0.24	0.46	0.53	0.59	-	-	-
Total PFOS ⁴	1.2	0.83	1.4	0.38	0.43	1	1	1.2	-	0.0091 ⁶	0.48 ⁶
Sum of PFHxS and PFOS ⁵	2.9	-	3	0.86	0.97	2	1.9	2.2	0.07	-	-
PFECHS	-	-	-	-	<0.025	<0.025	<0.001	-	-	-	-
PFBA	0.69	0.57	0.54	0.45	0.57	0.51	0.52	0.59	-	-	-
PFPeA	3.5	2.9	2.6	1.7	2.1	2.3	2	2.1	-	-	-
PFHxA	1.8	1.5	1.5	0.92	1	1.3	1	1.1	-	-	-
PFHpA	1	0.57	0.68	0.44	0.43	0.56	0.49	0.56	-	-	-
PFOA	0.67	0.52	0.67	0.36	0.33	0.48	0.47	0.51	0.56	19	220
PFNA	0.36	0.34	0.41	0.23	0.13	0.26	0.26	0.28	-	-	-
PFDA	0.0014	<0.001	<0.001	0.0011	<0.025	<0.025	<0.025	0.0015	-	-	-
PFUnDA	-	<0.001	<0.005	<0.001	<0.025	<0.025	<0.025	<0.001	-	-	-
PFTrDA	-	-	-	<0.025	<0.1	<0.1	<0.1	<0.001	-	-	-
PFTeDA	-	-	-	<0.1	<0.1	<0.1	<0.1	<0.001	-	-	-
PFDoDA	-	<0.001	-	<0.025	<0.1	<0.1	<0.1	<0.001	-	-	-
FOSA	<0.001	<0.001	<0.001	<0.001	<0.025	<0.025	<0.025	<0.001	-	-	-
MeFOSA	-	<0.005	-	<0.005	<0.1	<0.1	<0.1	<0.001	-	-	-
MeFOSAA	-	<0.005	<0.005	<0.001	<0.025	<0.025	<0.025	<0.001	-	-	-
EtFOSAA	-	<0.005	<0.005	<0.001	<0.025	<0.025	<0.025	<0.001	-	-	-
4:2 FTS	0.012	0.0095	0.011	0.004	<0.025	<0.025	<0.025	0.0018	-	-	-
6:2 FTS	1.9	3.6	1.7	1.5	1.1	3.2	2.3	2.6	-	-	-
8:2 FTS	0.0035	<0.005	<0.005	0.0022	<0.1	<0.1	<0.1	0.0043	-	-	-
10:2 FTS	-	-	-	-	-	<0.025	<0.025	<0.001	-	-	-
FPrPA	-	-	-	-	-	<0.1	<0.1	<0.001	-	-	-
EtFOSA	-	<0.005	-	<0.005	<0.1	<0.1	<0.1	<0.001	-	-	-
EtFOSE	-	<0.005	<0.025	<0.005	<0.1	<0.1	<0.1	<0.001	-	-	-
FPepA	-	-	-	-	-	<0.025	<0.025	0.0032	-	-	-
FHPA	-	-	-	-	-	<0.025	<0.025	<0.001	-	-	-
F-53B minor	-	-	-	-	-	<0.05	<0.05	<0.001	-	-	-
HFPO-DA	-	-	-	-	-	<0.05	<0.05	<0.001	-	-	-
Sum F-53B	-	-	-	-	-	<0.1	<0.1	<0.001	-	-	-
ADONA	-	-	-	-	-	<0.025	<0.025	<0.001	-	-	-
P37DMOA	-	-	-	-	-	<0.05	<0.05	<0.001	-	-	-
F-53B major	-	-	-	-	-	<0.1	<0.1	<0.001	-	-	-

Notes:

1. Results in µg/L.

2. Ministry of Health (MoH, 2022) Water Services (Drinking Water Standards for New Zealand) Regulations 2022, PFOA, and sum of PFOS + PFHxS.

3. Australian and New Zealand Guidelines for Fresh and Marine Water Quality – technical draft guideline values in PFAS National Environmental Management Plan 2.0 – Table 5. The Heads of EPAs Australia and New Zealand (HEPA), January 2020.

4. Total PFOS, PFHxS are calculated by summing monoethyl, dimethyl and linear isomers. Where an isomer is below the detection limit it is not added to the summation. This is following the method in the reported lab results.

5. Summations are made by adding compounds Total PFOS, Total PFHxS together. Where one compound is below detection, it is not included in the summation.

6. ANZG 2023, Toxicant default guideline values for aquatic ecosystem protection: Perfluorooctane sulfonate (PFOS) in freshwater. Australian and New Zealand Guidelines for Fresh and Marine Water Quality. CC BY 4.0. Australian and New Zealand Governments and Australian state and territory governments, Canberra, ACT, Australia.

-	Parameter not tested / no guideline value available.
0.3	Concentration exceeds 99% ecological guidelines.
1.2	Concentration exceeds 95% ecological guidelines.
3.6	Concentration exceeds drinking water standard.

Table E-1: Groundwater Sampling Results - Per- and Poly-Fluoroalkyl Substances (PFAS)¹

Sample Name	OHA_DTK_MW9_9_270922	PFAS in Groundwater								Guidelines		
		OHA_WS1	WS01	WS1	OHA_FTA_WS1_4_290920	OHA_FTA_WS1_5_170321	OHA_FTA_WS1_6_271021	OHA_FTA_WS1_7_290322	NZ Drinking Water Standard, MoH 2022 ²	ANZ WQG 99% Species Protection - Technical Draft Default Guideline Values ³	ANZ WQG 95% Species Protection - Technical Draft Default Guideline Values ³	
Location	MW9	WS1	WS1	WS1	WS1	WS1	WS1	WS1				
Sample Date	27/09/2022	19/02/2018	3/07/2018	21/07/2018	29/09/2020	17/03/2021	27/10/2021	29/03/2022				
Lab Report Number	3019529	1055089	1186578	1326866	2096316	2318531	2590573	2775976				
Monitoring Zone	On-base	On-base	On-base	On-base	On-base	On-base	On-base	On-base				
Sample Results												
PFPeS	0.0094	0.01	0.0098	0.0097	0.012	0.013	<0.025	0.014	-	-	-	-
PFBS	0.02	0.022	0.024	0.023	0.026	0.026	0.026	0.027	-	-	-	-
PFPeS	0.029	0.02	0.021	0.023	0.023	0.024	0.026	0.028	-	-	-	-
di-PFHxS	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.025	<0.001	-	-	-	-
Mono-PFHxS	0.053	0.027	0.029	0.03	0.035	0.033	0.037	0.034	-	-	-	-
L-PFHxS	0.42	0.11	0.12	0.12	0.12	0.13	0.14	0.14	-	-	-	-
Total PFHxS ⁴	0.47	0.14	0.15	0.15	0.16	0.16	0.18	0.17	-	-	-	-
PFHpS	0.02	0.0022	0.0026	0.0034	0.0023	0.0018	<0.025	0.003	-	-	-	-
di-PFOS	0.023	0.0029	0.0031	0.0024	0.0041	0.0029	<0.025	0.0032	-	-	-	-
Mono-PFOS	0.32	0.02	0.022	0.013	0.021	0.019	<0.025	0.025	-	-	-	-
L-PFOS	0.34	0.0077	0.011	0.0071	0.0073	0.011	<0.025	0.013	-	-	-	-
Total PFOS ⁴	0.68	0.031	0.036	0.022	0.032	0.033	<0.025	0.041	-	0.0091 ⁶	0.48 ⁶	
Sum of PFHxS and PFOS ⁵	1.2	0.17	0.19	0.17	0.19	0.19	0.18	0.21	0.07	-	-	-
PFECHS	<0.001	-	-	-	<0.001	<0.001	<0.025	<0.001	-	-	-	-
PFBA	0.39	0.019	0.018	0.018	0.018	0.018	<0.1	0.023	-	-	-	-
PFPeA	1	0.11	0.1	0.1	0.093	0.089	0.11	0.11	-	-	-	-
PFHxA	0.49	0.09	0.092	0.097	0.088	0.082	0.093	0.098	-	-	-	-
PFHpA	0.29	0.028	0.027	0.025	0.029	0.03	0.036	0.035	-	-	-	-
PFDA	0.3	0.02	0.022	0.018	0.021	0.024	0.029	0.028	0.56	19	220	
PFNA	0.21	0.0064	0.0078	0.0056	0.0062	0.0065	<0.025	0.0084	-	-	-	-
PFDA	0.0013	<0.001	<0.001	<0.001	<0.001	<0.001	<0.025	<0.001	-	-	-	-
PFUnDA	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.025	<0.001	-	-	-	-
PFTrDA	-	-	<0.025	-	-	-	<0.1	-	-	-	-	-
PTFeDA	-	-	<0.1	-	-	-	<0.1	<0.001	-	-	-	-
PFDoDA	<0.001	-	<0.025	<0.005	<0.001	<0.001	<0.1	<0.001	-	-	-	-
FOSA	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.025	<0.001	-	-	-	-
MeFOSA	<0.001	<0.005	-	<0.005	<0.001	-	<0.1	<0.001	-	-	-	-
MeFOSSA	<0.001	<0.005	<0.001	<0.005	<0.001	<0.001	<0.025	<0.001	-	-	-	-
EtFOSSAA	<0.001	<0.005	<0.001	<0.005	<0.001	<0.001	<0.025	<0.001	-	-	-	-
4:2 FTS	-	<0.005	<0.001	<0.001	<0.001	<0.001	<0.025	0.0012	-	-	-	-
6:2 FTS	0.98	0.12	0.11	0.12	0.089	0.1	<1	0.13	-	-	-	-
8:2 FTS	0.0027	<0.005	<0.001	<0.001	<0.001	<0.001	<0.1	<0.001	-	-	-	-
10:2 FTS	<0.001	-	-	-	-	<0.001	<0.025	<0.001	-	-	-	-
FPrPA	<0.001	-	-	-	-	<0.001	<0.1	<0.001	-	-	-	-
EtFOSSA	<0.001	<0.005	-	<0.005	<0.001	-	<0.1	<0.001	-	-	-	-
EtFOSE	<0.001	<0.005	-	<0.005	<0.001	-	<0.1	<0.001	-	-	-	-
FPepA	0.0029	-	-	-	-	<0.001	<0.025	<0.001	-	-	-	-
FHPPA	<0.001	-	-	-	-	<0.001	<0.025	<0.001	-	-	-	-
F-53B minor	<0.001	-	-	-	-	<0.001	<0.05	<0.001	-	-	-	-
HFPO-DA	<0.001	-	-	-	-	<0.001	<0.05	<0.001	-	-	-	-
Sum F-53B	<0.001	-	-	-	-	<0.001	<0.1	<0.001	-	-	-	-
ADONA	<0.001	-	-	-	-	<0.001	<0.025	<0.001	-	-	-	-
P37DMOA	<0.001	-	-	-	-	<0.001	<0.05	<0.001	-	-	-	-
F-53B major	<0.001	-	-	-	-	<0.001	<0.1	<0.001	-	-	-	-

Notes:

1. Results in µg/L.

2. Ministry of Health (MoH, 2022) Water Services (Drinking Water Standards for New Zealand) Regulations 2022, PFOA, and sum of PFOS + PFHxS.

3. Australian and New Zealand Guidelines for Fresh and Marine Water Quality – technical draft guideline values in PFAS National Environmental Management Plan 2.0 – Table 5. The Heads of EPAs Australia and New Zealand (HEPA), January 2020.

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5. Summations are made by adding compounds Total PFOS, Total PFHxS together. Where one compound is below detection, it is not included in the summation.

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-	Parameter not tested / no guideline value available.
0.3	Concentration exceeds 99% ecological guidelines.
1.2	Concentration exceeds 95% ecological guidelines.
3.6	Concentration exceeds drinking water standard.

Table E-1: Groundwater Sampling Results - Per- and Poly-Fluoroalkyl Substances (PFAS)¹

Sample Name	OHA_FTA_WS1_8_270922	PFAS in Groundwater								Guidelines		
		WS1	WS2	WS2	OHA_WS2	WS02	OHA_QRY_WS2_5_221119	OHA_QRY_WS2_6_020620	OHA_QRY_WS2_7_290920	NZ Drinking Water Standard, MoH 2022 ²	ANZ WQG 99% Species Protection - Technical Draft Default Guideline Values ³	ANZ WQG 95% Species Protection - Technical Draft Default Guideline Values ³
Location	WS1	WS2	WS2	WS2	WS2	WS2	WS2	WS2	WS2			
Sample Date	27/09/2022	24/07/2015	21/07/2017	21/02/2018	3/07/2018	22/11/2019	2/06/2020	29/09/2020				
Lab Report Number	3009068	ES1526917	1326866	1055089	1186581	1740590	1983524	2096325				
Monitoring Zone	On-base	On-base	On-base	On-base	On-base	On-base	On-base	On-base				
Sample Results												
PFPeS	0.014	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-
PFBS	0.026	<0.02	<0.001	<0.001	0.0011	<0.001	<0.001	<0.001	<0.001	-	-	-
PFPeS	0.026	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-
di-PFHxS	<0.001	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-
Mono-PFHxS	0.034	-	<0.001	<0.001	0.0011	0.0011	<0.001	<0.001	<0.001	-	-	-
L-PFHxS	0.14	-	0.0038	0.0033	0.0053	0.0031	0.0021	0.0024	-	-	-	-
Total PFHxS ⁴	0.17	<0.02	0.0038	0.0033	0.0064	0.0031	0.0021	0.0024	-	-	-	-
PFHpS	0.0028	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-
di-PFOS	0.0034	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-
Mono-PFOS	0.031	-	<0.001	0.001	0.0016	<0.001	<0.001	<0.001	<0.001	-	-	-
L-PFOS	0.017	-	<0.001	<0.001	0.0025	<0.001	0.0011	0.0016	-	-	-	-
Total PFOS ⁴	0.051	<0.02	<0.001	0.001	0.0041	<0.001	0.0011	0.0016	-	0.0091 ⁶	0.48 ⁶	
Sum of PFHxS and PFOS ⁵	0.22	-	0.0038	0.0043	0.01	0.0031	0.0032	0.004	0.07	-	-	-
PFECFS	<0.001	-	-	-	-	-	-	-	-	-	-	-
PFBA	0.023	-	<0.005	<0.005	<0.005	0.0033	<0.005	0.0029	-	-	-	-
PFPeA	0.12	-	0.0072	0.0049	0.0076	0.0043	0.0027	0.0025	-	-	-	-
PFHxA	0.097	<0.02	0.004	0.0031	0.0055	0.0031	0.0017	0.0016	-	-	-	-
PFHpA	0.035	<0.02	0.002	0.0017	0.0028	0.0016	0.0011	<0.001	-	-	-	-
PFDA	0.029	<0.02	0.0018	0.0014	0.0024	0.0012	0.0036	<0.001	0.56	19	220	
PFNA	0.0097	<0.02	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-	-
PFDA	<0.001	<0.02	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-	-
PFUnDA	<0.001	<0.05	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-	-
PFTrDA	-	<0.05	-	-	-	<0.001	<0.001	-	-	-	-	-
PTFeDA	-	<0.5	-	-	-	<0.001	<0.001	-	-	-	-	-
PFDoDA	<0.001	<0.05	<0.005	-	-	<0.001	<0.001	<0.001	-	-	-	-
FOSA	<0.001	<0.02	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-	-
MeFOSA	<0.001	<0.5	<0.005	<0.005	-	<0.001	<0.001	-	-	-	-	-
MeFOSSA	<0.001	-	<0.005	<0.005	<0.001	<0.001	<0.001	<0.001	-	-	-	-
EtFOSSAA	<0.001	-	<0.005	<0.005	<0.001	<0.001	<0.001	<0.001	-	-	-	-
4:2 FTS	0.0012	-	<0.001	<0.005	<0.001	<0.001	<0.001	<0.001	-	-	-	-
6:2 FTS	0.13	<0.1	<0.001	<0.005	<0.001	<0.001	<0.001	<0.001	-	-	-	-
8:2 FTS	<0.001	<0.1	<0.001	<0.005	<0.001	<0.001	<0.001	<0.001	-	-	-	-
10:2 FTS	<0.001	-	-	-	-	-	-	-	-	-	-	-
FPrPA	<0.001	-	-	-	-	-	-	-	-	-	-	-
EtFOSA	<0.001	<0.05	<0.005	<0.005	-	<0.001	<0.001	-	-	-	-	-
EtFOSE	<0.001	<0.5	<0.005	<0.005	<0.005	<0.001	<0.001	<0.001	-	-	-	-
FPePA	<0.001	-	-	-	-	-	-	-	-	-	-	-
FHPA	<0.001	-	-	-	-	-	-	-	-	-	-	-
F-53B minor	<0.001	-	-	-	-	-	-	-	-	-	-	-
HFPO-DA	<0.001	-	-	-	-	-	-	-	-	-	-	-
Sum F-53B	<0.001	-	-	-	-	-	-	-	-	-	-	-
ADONA	<0.001	-	-	-	-	-	-	-	-	-	-	-
P37DMOA	<0.001	-	-	-	-	-	-	-	-	-	-	-
F-53B major	<0.001	-	-	-	-	-	-	-	-	-	-	-

Notes:

- Results in µg/L.
- Ministry of Health (MoH, 2022) Water Services (Drinking Water Standards for New Zealand) Regulations 2022, PFOA, and sum of PFOS + PFHxS.
- Australian and New Zealand Guidelines for Fresh and Marine Water Quality – technical draft guideline values in PFAS National Environmental Management Plan 2.0 – Table 5. The Heads of EPAs Australia and New Zealand (HEPA), January 2020.
- Total PFOS, PFHxS are calculated by summing monoethyl, dimethyl and linear isomers. Where an isomer is below the detection limit it is not added to the summation. This is following the method in the reported lab results.
- Summations are made by adding compounds Total PFOS, Total PFHxS together. Where one compound is below detection, it is not included in the summation.
- ANZG 2023, Toxicant default guideline values for aquatic ecosystem protection: Perfluorooctane sulfonate (PFOS) in freshwater. Australian and New Zealand Guidelines for Fresh and Marine Water Quality. CC BY 4.0. Australian and New Zealand Governments and Australian state and territory governments, Canberra, ACT, Australia.

-	Parameter not tested / no guideline value available.
0.3	Concentration exceeds 99% ecological guidelines.
1.2	Concentration exceeds 95% ecological guidelines.
3.6	Concentration exceeds drinking water standard.

Table E-1: Groundwater Sampling Results - Per- and Poly-Fluoroalkyl Substances (PFAS)¹

Sample Name	PFAS in Groundwater									Guidelines		
	OHA_QRY_WS2_8_181120	OHA_QRY_WS2_9_180321	OHA_QRY_WS2_10_220621	OHA_QRY_WS2_11_281021	OHA_QRY_WS2_12_300322	OHA_QRY_WS2_14_280922	OHA_ADJ_GW106_1_160321	OHA_ADJ_GW106_2_291021	NZ Drinking Water Standard, MoH 2022 ²	ANZ WQG 99% Species Protection - Technical Draft Default Guideline Values ³	ANZ WQG 95% Species Protection - Technical Draft Default Guideline Values ³	
Location	WS2	WS2	WS2	WS2	WS2	WS2	GW106	GW106				
Sample Date	18/11/2020	18/03/2021	22/06/2021	28/10/2021	30/03/2022	28/09/2022	16/03/2021	29/10/2021				
Lab Report Number	2172205	2327922	2434042	2593734	2786751	3019773	2316433	2590583				
Monitoring Zone	On-base	On-base	On-base	On-base	On-base	On-base	Off-base	Off-base				
Sample Results												
PFPeS	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-	-
PFBS	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-	-
PFPeS	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-	-
di-PFHxS	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-	-
Mono-PFHxS	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-	-
L-PFHxS	0.0041	0.0029	0.0027	0.0044	0.0037	0.0036	<0.001	<0.001	-	-	-	-
Total PFHxS ⁴	0.0041	0.0029	0.0027	0.0044	0.0037	0.0036	<0.001	<0.001	-	-	-	-
PFHpS	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-	-
di-PFOS	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-	-
Mono-PFOS	<0.001	<0.001	<0.001	0.0011	0.0013	0.0016	<0.001	<0.001	-	-	-	-
L-PFOS	<0.001	<0.001	<0.001	<0.001	0.002	0.0017	<0.001	<0.001	-	-	-	-
Total PFOS ⁴	<0.001	<0.001	<0.001	0.0011	0.0033	0.0033	<0.001	<0.001	-	0.0091 ⁶	0.48 ⁶	
Sum of PFHxS and PFOS ⁵	0.0041	0.0029	0.0027	0.0055	0.007	0.0069	<0.001	<0.001	0.07	-	-	
PFECFS	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-	-
PFBA	0.0035	0.0034	<0.005	0.0039	0.0048	0.0037	<0.002	<0.001	-	-	-	-
PFPeA	0.0041	0.004	0.0032	0.0048	0.0052	0.0039	<0.001	<0.001	-	-	-	-
PFHxA	0.003	0.0026	0.002	0.0034	0.0036	0.0027	<0.001	<0.001	-	-	-	-
PFHpA	0.0019	0.0015	0.0014	0.0017	0.0019	0.0017	<0.001	<0.001	-	-	-	-
PFDA	0.0015	0.0012	0.0013	0.0016	0.0017	0.0015	<0.001	<0.001	0.56	19	220	
PFNA	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-	-
PFDA	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-	-
PFunDA	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-	-
PFTrDA	-	-	-	<0.001	-	-	-	-	-	-	-	-
PTFeDA	-	-	-	<0.001	<0.001	<0.001	-	-	-	-	-	-
PFDoDA	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-	-
FOSA	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-	-
MeFOSA	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-	-
MeFOSAA	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-	-
EtFOSAA	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-	-
4:2 FTS	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-	-
6:2 FTS	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-	-
8:2 FTS	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-	-
10:2 FTS	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-	-
FPrPA	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-	-
EtFOSA	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-	-
EtFOSE	<0.001	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-	-
FPepA	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-	-
FHPeA	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-	-
F-53B minor	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-	-
HFPO-DA	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-	-
Sum F-53B	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-	-
ADONA	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-	-
P37DMOA	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-	-
F-53B major	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-	-

Notes:

- Results in µg/L.
- Ministry of Health (MoH, 2022) Water Services (Drinking Water Standards for New Zealand) Regulations 2022, PFOA, and sum of PFOS + PFHxS.
- Australian and New Zealand Guidelines for Fresh and Marine Water Quality – technical draft guideline values in PFAS National Environmental Management Plan 2.0 – Table 5. The Heads of EPAs Australia and New Zealand (HEPA), January 2020.
- Total PFOS, PFHxS are calculated by summing monoethyl, dimethyl and linear isomers. Where an isomer is below the detection limit it is not added to the summation. This is following the method in the reported lab results.
- Summations are made by adding compounds Total PFOS, Total PFHxS together. Where one compound is below detection, it is not included in the summation.
- ANZG 2023, Toxicant default guideline values for aquatic ecosystem protection: Perfluorooctane sulfonate (PFOS) in freshwater. Australian and New Zealand Guidelines for Fresh and Marine Water Quality. CC BY 4.0. Australian and New Zealand Governments and Australian state and territory governments, Canberra, ACT, Australia.

-	Parameter not tested / no guideline value available.
0.3	Concentration exceeds 99% ecological guidelines.
1.2	Concentration exceeds 95% ecological guidelines.

Table E-1: Groundwater Sampling Results - Per- and Poly-Fluoroalkyl Substances (PFAS)¹

Sample Name	PFAS in Groundwater									Guidelines		
	OHA_ADJ_GW106_3_290322	OHA_ADJ_GW106_4_290922	OHA_ADJ_GW107_1_011020	OHA_ADJ_GW107_2_291021	OHA_ADJ_GW107_3_300322	OHA_ADJ_GW107_4_300922	OHA_ADJ_GW108_1_011020	OHA_ADJ_GW108_2_150321	NZ Drinking Water Standard, MoH 2022 ²	ANZ WQG 99% Species Protection - Technical Draft Default Guideline Values ³	ANZ WQG 95% Species Protection - Technical Draft Default Guideline Values ³	
Location	GW106	GW106	GW107	GW107	GW107	GW107	GW108	GW108				
Sample Date	29/03/2022	29/09/2022	1/10/2020	29/10/2021	30/03/2022	30/09/2022	15/03/2021	15/03/2021				
Lab Report Number	2780982	3011677	2096735	2590579	2786744	3020439	2096735	2313652				
Monitoring Zone	Off-base											
Sample Results												
PFPeS	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-	
PFBS	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-	
PFPeS	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-	
di-PFHxS	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-	
Mono-PFHxS	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-	
L-PFHxS	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-	
Total PFHxS ⁴	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-	
PFHpS	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-	
di-PFOS	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-	
Mono-PFOS	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-	
L-PFOS	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-	
Total PFOS ⁴	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	0.0091 ⁶	0.48 ⁶	
Sum of PFHxS and PFOS ⁵	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.07	-	-	
PFECFS	<0.001	<0.001	-	<0.001	<0.001	<0.001	-	<0.001	-	-	-	
PFBA	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-	
PFPeA	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-	
PFHxA	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-	
PFHpA	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-	
PFDA	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.56	19	220	
PFNA	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-	
PFDA	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-	
PFUnDA	<0.001	<0.001	-	<0.001	<0.001	-	-	<0.001	-	-	-	
PFTrDA	<0.001	-	-	<0.001	<0.001	-	-	-	-	-	-	
PTFeDA	-	-	-	-	<0.001	-	-	-	-	-	-	
PFDoDA	<0.001	<0.001	-	<0.001	<0.001	<0.001	-	<0.001	-	-	-	
FOSA	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-	
MeFOSA	<0.001	<0.001	-	<0.001	<0.001	<0.001	-	-	-	-	-	
MeFOSSA	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-	
EtFOSSAA	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-	
4:2 FTS	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-	
6:2 FTS	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-	
8:2 FTS	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-	
10:2 FTS	<0.001	<0.001	-	<0.001	<0.001	<0.001	-	-	-	-	-	
FPrPA	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	-	<0.001	-	-	
EtFOSSA	<0.001	<0.001	-	<0.001	<0.001	<0.001	-	-	-	-	-	
EtFOSE	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-	-	
FPepA	<0.001	<0.001	-	<0.001	<0.001	<0.001	-	<0.001	-	-	-	
FHppA	<0.001	<0.001	-	<0.001	<0.001	<0.001	-	<0.001	-	-	-	
F-53B minor	<0.001	<0.001	-	<0.001	<0.001	<0.001	-	<0.001	-	-	-	
HFPO-DA	<0.001	<0.001	-	<0.001	<0.001	<0.001	-	<0.001	-	-	-	
Sum F-53B	<0.001	<0.001	-	<0.001	<0.001	<0.001	-	<0.001	-	-	-	
ADONA	<0.001	<0.001	-	<0.001	<0.001	<0.001	-	<0.001	-	-	-	
P37DMOA	<0.001	<0.001	-	<0.001	<0.001	<0.001	-	<0.001	-	-	-	
F-53B major	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-	

Notes:

1. Results in µg/L.

2. Ministry of Health (MoH, 2022) Water Services (Drinking Water Standards for New Zealand) Regulations 2022, PFOA, and sum of PFOS + PFHxS.

3. Australian and New Zealand Guidelines for Fresh and Marine Water Quality – technical draft guideline values in PFAS National Environmental Management Plan 2.0 – Table 5. The Heads of EPAs Australia and New Zealand (HEPA), January 2020.

4. Total PFOS, PFHxS are calculated by summing monoethyl, dimethyl and linear isomers. Where an isomer is below the detection limit it is not added to the summation. This is following the method in the reported lab results.

5. Summations are made by adding compounds Total PFOS, Total PFHxS together. Where one compound is below detection, it is not included in the summation.

6. ANZG 2023, Toxicant default guideline values for aquatic ecosystem protection: Perfluorooctane sulfonate (PFOS) in freshwater. Australian and New Zealand Guidelines for Fresh and Marine Water Quality. CC BY 4.0. Australian and New Zealand Governments and Australian state and territory governments, Canberra, ACT, Australia.

-	Parameter not tested / no guideline value available.
0.3	Concentration exceeds 99% ecological guidelines.
1.2	Concentration exceeds 95% ecological guidelines.
3.6	Concentration exceeds drinking water standard.

Table E-1: Groundwater Sampling Results - Per- and Poly-Fluoroalkyl Substances (PFAS)¹

Sample Name	PFAS in Groundwater								Guidelines		
	OHA_Adj_GW108_3_291021	OHA_Adj_GW108_4_290322	OHA_Adj_GW108_5_290922	OHA_Adj_GW109_1_011020	OHA_Adj_GW109_2_150321	OHA_Adj_GW109_3_291021	OHA_Adj_GW109_4_290322	OHA_Adj_GW109_5_280922	NZ Drinking Water Standard, MoH 2022 ²	ANZ WQG 99% Species Protection - Technical Draft Default Guideline Values ³	ANZ WQG 95% Species Protection - Technical Draft Default Guideline Values ³
Location	GW108	GW108	GW108	GW109	GW109	GW109	GW109	GW109			
Sample Date	29/10/2021	29/03/2022	29/09/2022	1/10/2020	15/03/2021	29/10/2021	29/03/2022	28/09/2022			
Lab Report Number	2590569	2780972	3011674	2096735	2313643	2593930	2780975	3007288	Sample Results	ANZ WQG 99% Species Protection - Technical Draft Default Guideline Values ³	ANZ WQG 95% Species Protection - Technical Draft Default Guideline Values ³
Monitoring Zone	Off-base										
PFPeS	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001			
di-PFHxS	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001			
Mono-PFHxS	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001			
L-PFHxS	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001			
Total PFHxS ⁴	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001			
PFHpS	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001			
di-PFOS	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001			
Mono-PFOS	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001			
L-PFOS	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001			
Total PFOS ⁴	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	0.0091 ⁶	0.48 ⁶
Sum of PFHxS and PFOS ⁵	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.07	-	-
PFECFS	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	-	-	-
PFBA	<0.001	0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-
PFPeA	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-
PFHxA	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-
PFHpA	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-
PFDA	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.56	19	220
PFNA	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-
PFDA	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-
PFUnDA	<0.001	<0.001	-	-	<0.001	<0.001	<0.001	<0.001	-	-	-
PFTrDA	<0.001	<0.001	-	-	-	-	<0.001	-	-	-	-
PTFeDA	<0.001	-	-	-	-	<0.001	-	<0.001	-	-	-
PFDoDA	<0.001	<0.001	-	-	-	<0.001	<0.001	<0.001	-	-	-
FOSA	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-
MeFOSA	<0.001	-	<0.001	-	-	<0.001	<0.001	<0.001	-	-	-
MeFOSSA	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-
EtFOSSAA	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-
4:2 FTS	<0.001	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-
6:2 FTS	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-
8:2 FTS	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-
10:2 FTS	<0.001	<0.001	-	-	-	<0.001	<0.001	<0.001	-	-	-
FPrPA	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	-	-	-
EtFOSSA	<0.001	-	<0.001	-	-	<0.001	<0.001	<0.001	-	-	-
EtFOSE	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	-	-	-
FPepA	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	-	-	-
FHppA	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	-	-	-
F-53B minor	<0.001	<0.001	-	-	<0.001	<0.001	<0.001	<0.001	-	-	-
HFPO-DA	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	-	-	-
Sum F-53B	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	-	-	-
ADONA	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	-	-	-
P37DMOA	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	-	-	-
F-53B major	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	-	-	-

Notes:

1. Results in µg/L.

2. Ministry of Health (MoH, 2022) Water Services (Drinking Water Standards for New Zealand) Regulations 2022, PFOA, and sum of PFOS + PFHxS.

3. Australian and New Zealand Guidelines for Fresh and Marine Water Quality – technical draft guideline values in PFAS National Environmental Management Plan 2.0 – Table 5. The Heads of EPAs Australia and New Zealand (HEPA), January 2020.

4. Total PFOS, PFHxS are calculated by summing monoethyl, dimethyl and linear isomers. Where an isomer is below the detection limit it is not added to the summation. This is following the method in the reported lab results.

5. Summations are made by adding compounds Total PFOS, Total PFHxS together. Where one compound is below detection, it is not included in the summation.

6. ANZG 2023, Toxicant default guideline values for aquatic ecosystem protection: Perfluorooctane sulfonate (PFOS) in freshwater. Australian and New Zealand Guidelines for Fresh and Marine Water Quality. CC BY 4.0. Australian and New Zealand Governments and Australian state and territory governments, Canberra, ACT, Australia.

-	Parameter not tested / no guideline value available.
0.3	Concentration exceeds 99% ecological guidelines.
1.2	Concentration exceeds 95% ecological guidelines.
3.6	Concentration exceeds drinking water standard.

Table E-1: Groundwater Sampling Results - Per- and Poly-Fluoroalkyl Substances (PFAS)¹

Sample Name	PFAS in Groundwater									Guidelines		
	OHA_Adj_GW112.1_1_180321	OHA_Adj_GW112.1_2_281021	OHA_Adj_GW112.1_3_290322	OHA_Adj_GW112.1_4_280922	OHA_Adj_GW112.2_1_180321	OHA_Adj_GW112.2_2_281021	OHA_Adj_GW112.2_3_280322	OHA_Adj_GW112.2_4_280922	NZ Drinking Water Standard, MoH 2022 ²	ANZ WQG 99% Species Protection - Technical Draft Default Guideline Values ³	ANZ WQG 95% Species Protection - Technical Draft Default Guideline Values ³	
Location	GW112.1	GW112.1	GW112.1	GW112.1	GW112.2	GW112.2	GW112.2	GW112.2				
Sample Date	18/03/2021	28/10/2021	29/03/2022	28/09/2022	18/03/2021	28/10/2021	28/03/2022	28/09/2022				
Lab Report Number	2335132	2593744	2785103	3020548	2335132	2593744	2785781	3020548				
Monitoring Zone	Off-base											
Sample Results												
PFPeS	<0.001	0.012	<0.025	<0.025	0.012	<0.001	<0.001	<0.001	-	-	-	-
PFBS	<0.001	0.028	0.028	0.031	0.03	<0.001	<0.001	<0.001	-	-	-	-
PFPeS	<0.001	0.033	0.028	0.028	0.035	<0.001	<0.001	<0.001	-	-	-	-
di-PFHxS	<0.001	<0.001	<0.025	<0.025	<0.001	<0.001	<0.001	<0.001	-	-	-	-
Mono-PFHxS	<0.001	0.052	0.045	0.043	0.056	<0.001	<0.001	<0.001	-	-	-	-
L-PFHxS	<0.001	0.25	0.25	0.24	0.29	<0.001	<0.001	<0.001	-	-	-	-
Total PFHxS ⁴	<0.001	0.3	0.3	0.28	0.35	<0.001	<0.001	<0.001	-	-	-	-
PFHpS	<0.001	0.0076	<0.025	<0.025	0.0075	<0.001	<0.001	<0.001	-	-	-	-
di-PFOS	<0.001	0.011	<0.025	<0.025	0.012	<0.001	<0.001	<0.001	-	-	-	-
Mono-PFOS	<0.001	0.14	0.088	0.093	0.16	<0.001	<0.001	<0.001	-	-	-	-
L-PFOS	<0.001	0.21	0.094	0.1	0.21	<0.001	<0.001	<0.001	-	-	-	-
Total PFOS ⁴	<0.001	0.36	0.18	0.19	0.38	<0.001	<0.001	<0.001	-	0.0091⁶	0.48⁶	
Sum of PFHxS and PFOS ⁵	<0.001	0.66	0.48	0.47	0.73	<0.001	<0.001	<0.001	0.07	-	-	-
PFECFS	<0.001	<0.001	<0.025	<0.025	<0.001	<0.001	<0.001	<0.001	-	-	-	-
PFBA	<0.001	0.11	<0.2	0.12	0.11	<0.001	<0.001	<0.001	-	-	-	-
PFPeA	<0.001	0.42	0.42	0.44	0.4	<0.001	<0.001	<0.001	-	-	-	-
PFHxA	<0.001	0.33	0.34	0.34	0.34	<0.001	<0.001	<0.001	-	-	-	-
PFHpA	<0.001	0.17	0.16	0.16	0.17	<0.001	<0.001	<0.001	-	-	-	-
PFDA	<0.001	0.094	0.093	0.086	0.092	<0.001	<0.001	<0.001	0.56	19	220	
PFNA	<0.001	0.037	0.026	0.03	0.041	<0.001	<0.001	<0.001	-	-	-	-
PFDA	<0.001	<0.001	<0.025	<0.025	<0.001	<0.001	<0.001	<0.001	-	-	-	-
PFUnDA	<0.001	<0.001	<0.025	<0.025	<0.001	<0.001	<0.001	<0.001	-	-	-	-
PFTDA	-	-	<0.1	<0.1	-	-	-	<0.001	-	-	-	-
PTFE DA	-	-	<0.1	<0.1	-	-	-	-	-	-	-	-
PFDoDA	-	<0.001	<0.1	<0.1	-	<0.001	<0.001	<0.001	-	-	-	-
FOSA	<0.001	<0.001	<0.025	<0.025	<0.001	<0.001	<0.001	<0.001	-	-	-	-
MeFOSA	-	<0.001	<0.1	<0.1	<0.001	<0.001	<0.001	<0.001	-	-	-	-
MeFOSSA	<0.001	<0.001	<0.025	<0.025	<0.001	<0.001	<0.001	<0.001	-	-	-	-
EtFOSSAA	<0.001	<0.001	<0.025	<0.025	<0.001	<0.001	<0.001	<0.001	-	-	-	-
4:2 FTS	<0.001	<0.001	<0.025	<0.025	<0.001	<0.001	<0.001	<0.001	-	-	-	-
6:2 FTS	<0.001	0.1	0.11	0.12	0.066	0.0052	<0.001	<0.001	-	-	-	-
8:2 FTS	<0.001	<0.001	<0.1	<0.1	<0.001	<0.001	<0.001	<0.001	-	-	-	-
10:2 FTS	<0.001	<0.001	<0.025	<0.025	-	<0.001	<0.001	<0.001	-	-	-	-
FPrPA	<0.001	<0.001	<0.1	<0.1	<0.001	<0.001	<0.001	<0.001	-	-	-	-
EtFOSSA	-	<0.001	<0.1	<0.1	-	<0.001	-	<0.001	-	-	-	-
EtFOSE	-	<0.001	<0.1	<0.1	-	<0.001	<0.001	<0.001	-	-	-	-
FPepA	<0.001	<0.001	<0.025	<0.025	<0.001	<0.001	<0.001	<0.001	-	-	-	-
FHPpA	<0.001	<0.001	<0.025	<0.025	<0.001	<0.001	<0.001	<0.001	-	-	-	-
F-53B minor	<0.001	<0.001	<0.05	<0.05	<0.001	<0.001	<0.001	<0.001	-	-	-	-
HFPO-DA	<0.001	<0.001	<0.05	<0.05	<0.001	<0.001	<0.001	<0.001	-	-	-	-
Sum F-53B	<0.001	<0.001	<0.1	<0.1	<0.001	<0.001	<0.001	<0.001	-	-	-	-
ADONA	<0.001	<0.001	<0.025	<0.025	<0.001	<0.001	<0.001	<0.001	-	-	-	-
P37DMOA	<0.001	<0.001	<0.05	<0.05	<0.001	<0.001	<0.001	<0.001	-	-	-	-
F-53B major	<0.001	<0.001	<0.1	<0.1	<0.001	<0.001	<0.001	<0.001	-	-	-	-

Notes:

1. Results in µg/L.

2. Ministry of Health (MoH, 2022) Water Services (Drinking Water Standards for New Zealand) Regulations 2022, PFOA, and sum of PFOS + PFHxS.

3. Australian and New Zealand Guidelines for Fresh and Marine Water Quality – technical draft guideline values in PFAS National Environmental Management Plan 2.0 – Table 5. The Heads of EPAs Australia and New Zealand (HEPA), January 2020.

4. Total PFOS, PFHxS are calculated by summing monoethyl, dimethyl and linear isomers. Where an isomer is below the detection limit it is not added to the summation. This is following the method in the reported lab results.

5. Summations are made by adding compounds Total PFOS, Total PFHxS together. Where one compound is below detection, it is not included in the summation.

6. ANZG 2023, Toxicant default guideline values for aquatic ecosystem protection: Perfluorooctane sulfonate (PFOS) in freshwater. Australian and New Zealand Guidelines for Fresh and Marine Water Quality. CC BY 4.0. Australian and New Zealand Governments and Australian state and territory governments, Canberra, ACT, Australia.

-	Parameter not tested / no guideline value available.

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Table E-1: Groundwater Sampling Results - Per- and Poly-Fluoroalkyl Substances (PFAS)¹

Sample Name	PFAS in Groundwater									Guidelines		
	OHA_Adj_GW31_1_120218	OHA_Adj_GW31_2_230518	OHA_Adj_GW31_3_12918	OHA_Adj_GW31_4_290920	OHA_Adj_GW31_5_160321	OHA_Adj_GW31_6_291021	OHA_Adj_GW31_7_290322	OHA_Adj_GW31_8_290922	NZ Drinking Water Standard, MoH 2022 ²	ANZ WQG 99% Species Protection - Technical Draft Default Guideline Values ³	ANZ WQG 95% Species Protection - Technical Draft Default Guideline Values ³	
Location	GW31	GW31	GW31	GW31	GW31	GW31	GW31	GW31				
Sample Date	12/02/2018	23/05/2018	12/09/2018	29/09/2020	16/03/2021	29/10/2021	29/03/2022	29/09/2022				
Lab Report Number	1032528	1153593	1252502	2096319	2316425	2593739	2786750	3007286				
Monitoring Zone	Off-base	Off-base	Off-base	Off-base	Off-base	Off-base	Off-base	Off-base				
Sample Results												
PFPeS	0.0033	0.0038	0.0058	0.0045	0.0042	0.0054	0.0046	<0.001	-	-	-	-
PFBS	0.011	0.01	0.0095	0.01	0.011	0.009	0.0095	<0.001	-	-	-	-
PFPeS	0.014	0.0089	0.0084	0.0085	0.0096	0.0083	0.0085	<0.001	-	-	-	-
di-PFHxS	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-	-
Mono-PFHxS	0.016	0.013	0.014	0.016	0.017	0.013	0.013	<0.001	-	-	-	-
L-PFHxS	0.064	0.055	0.056	0.063	0.073	0.059	0.058	<0.001	-	-	-	-
Total PFHxS ⁴	0.08	0.068	0.07	0.079	0.09	0.072	0.071	<0.001	-	-	-	-
PFHpS	0.0014	0.0011	0.0011	0.0015	0.0016	0.0013	0.0013	<0.001	-	-	-	-
di-PFOS	0.0042	0.002	<0.001	0.0034	0.0034	0.0026	0.0025	<0.001	-	-	-	-
Mono-PFOS	0.033	0.016	0.016	0.028	0.037	0.025	0.024	<0.001	-	-	-	-
L-PFOS	0.023	0.0079	0.0058	0.013	0.028	0.011	0.015	<0.001	-	-	-	-
Total PFOS ⁴	0.06	0.026	0.022	0.044	0.068	0.039	0.042	<0.001	-	0.0091⁶	0.48⁶	
Sum of PFHxS and PFOS ⁵	0.14	0.094	0.092	0.12	0.16	0.11	0.11	<0.001	0.07	-	-	-
PFECHS	-	-	-	-	<0.001	<0.001	<0.001	<0.001	-	-	-	-
PFBA	0.055	0.035	0.035	0.047	0.06	0.042	0.047	<0.001	-	-	-	-
PFPeA	0.21	0.097	0.083	0.15	0.25	0.13	0.15	<0.001	-	-	-	-
PFHxA	0.14	0.074	0.067	0.12	0.17	0.083	0.1	<0.001	-	-	-	-
PFHpA	0.053	0.027	0.024	0.042	0.063	0.031	0.036	<0.001	-	-	-	-
PFDA	0.024	0.013	0.011	0.019	0.025	0.016	0.017	<0.001	0.56	19	220	
PFNA	0.0059	0.0021	0.0014	0.0039	0.0076	0.0029	0.0041	<0.001	-	-	-	-
PFDA	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-	-
PFunDA	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-	-
PFTrDA	-	<0.025	<0.005	-	-	-	<0.001	-	-	-	-	-
PTFeDA	-	<0.1	<0.005	-	-	<0.001	-	<0.001	-	-	-	-
PFDoDA	<0.001	<0.025	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-	-
FOSA	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-	-
MeFOSA	<0.025	<0.005	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-	-
MeFOSSA	<0.005	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-	-
EtFOSSAA	<0.005	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-	-
4:2 FTS	<0.005	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-	-
6:2 FTS	0.036	0.0092	0.0052	0.0049	0.0052	0.0036	0.0038	<0.001	-	-	-	-
8:2 FTS	<0.005	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-	-
10:2 FTS	-	-	-	-	<0.001	<0.001	<0.001	<0.001	-	-	-	-
FPrPA	-	-	-	-	<0.001	<0.001	<0.001	<0.001	-	-	-	-
EtFOSSA	<0.025	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	-	-	-	-
EtFOSE	<0.025	<0.005	<0.001	<0.001	<0.001	-	<0.001	<0.001	-	-	-	-
FPepA	-	-	-	-	<0.001	<0.001	<0.001	<0.001	-	-	-	-
FHPepA	-	-	-	-	<0.001	<0.001	<0.001	<0.001	-	-	-	-
F-53B minor	-	-	-	-	<0.001	<0.001	<0.001	<0.001	-	-	-	-
HFPO-DA	-	-	-	-	<0.001	<0.001	<0.001	<0.001	-	-	-	-
Sum F-53B	-	-	-	-	<0.001	<0.001	<0.001	<0.001	-	-	-	-
ADONA	-	-	-	-	<0.001	<0.001	<0.001	<0.001	-	-	-	-
P37DMOA	-	-	-	-	<0.001	<0.001	<0.001	<0.001	-	-	-	-
F-53B major	-	-	-	-	<0.001	<0.001	<0.001	<0.001	-	-	-	-

Notes:

1. Results in µg/L.

2. Ministry of Health (MoH, 2022) Water Services (Drinking Water Standards for New Zealand) Regulations 2022, PFOA, and sum of PFOS + PFHxS.

3. Australian and New Zealand Guidelines for Fresh and Marine Water Quality – technical draft guideline values in PFAS National Environmental Management Plan 2.0 – Table 5. The Heads of EPAs Australia and New Zealand (HEPA), January 2020.

4. Total PFOS, PFHxS are calculated by summing monoethyl, dimethyl and linear isomers. Where an isomer is below the detection limit it is not added to the summation. This is following the method in the reported lab results.

5. Summations are made by adding compounds Total PFOS, Total PFHxS together. Where one compound is below detection, it is not included in the summation.

6. ANZG 2023, Toxicant default guideline values for aquatic ecosystem protection: Perfluorooctane sulfonate (PFOS) in freshwater. Australian and New Zealand Guidelines for Fresh and Marine Water Quality. CC BY 4.0. Australian and New Zealand Governments and Australian state and territory governments, Canberra, ACT, Australia.

-	Parameter not tested / no guideline value available.
0.3	Concentration exceeds 99% ecological guidelines.
1.2	Concentration exceeds 95% ecological guidelines.
3.6	Concentration exceeds drinking water standard.

Table E-1: Groundwater Sampling Results - Per- and Poly-Fluoroalkyl Substances (PFAS)¹

Sample Name	PFAS in Groundwater									Guidelines		
	OHA_ADJ_GW53_1_150218	OHA_ADJ_GW53_2_150518	OHA_ADJ_GW53_3_10918	OHA_ADJ_GW53_4_300920	OHA_ADJ_GW53_5_160321	OHA_ADJ_GW53_6_291021	OHA_ADJ_GW53_7_290322	OHA_ADJ_GW53_8_290922	NZ Drinking Water Standard, MoH 2022 ²	ANZ WQG 99% Species Protection - Technical Draft Default Guideline Values ³	ANZ WQG 95% Species Protection - Technical Draft Default Guideline Values ³	
Location	GW53	GW53	GW53	GW53	GW53	GW53	GW53	GW53				
Sample Date	15/02/2018	15/05/2018	10/09/2018	30/09/2020	16/03/2021	29/10/2021	29/03/2022	29/09/2022				
Lab Report Number	1040534	1139707	1244388	2096317	2316429	2593735	2780973	3011675				
Monitoring Zone	Off-base	Off-base	Off-base	Off-base	Off-base	Off-base	Off-base	Off-base				
Sample Results												
PFPeS	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-	-
PFBS	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-	-
PFPeS	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-	-
di-PFHxS	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-	-
Mono-PFHxS	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-	-
L-PFHxS	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-	-
Total PFHxS ⁴	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-	-
PFHpS	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-	-
di-PFOS	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-	-
Mono-PFOS	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-	-
L-PFOS	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-	-
Total PFOS ⁴	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	0.0091 ⁶	0.48 ⁶	
Sum of PFHxS and PFOS ⁵	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.07	-	-	-
PFECFS	-	-	-	-	<0.001	<0.001	<0.001	<0.001	-	-	-	-
PFBA	<0.005	<0.005	<0.005	<0.001	<0.002	<0.001	<0.001	<0.001	-	-	-	-
PFPeA	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-	-
PFHxA	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-	-
PFHpA	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-	-
PFDA	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.56	19	220	
PFNA	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-	-
PFDA	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-	-
PFunDA	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-	-
PFTDA	<0.025	<0.025	-	-	-	-	-	-	-	-	-	-
PTFeDA	-	-	-	-	-	<0.001	-	<0.001	-	-	-	-
PFDoDA	<0.025	<0.025	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-	-
FOSA	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-	-
MeFOSA	<0.025	<0.005	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-	-
MeFOSSA	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-	-
EtFOSSAA	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-	-
4:2 FTS	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-	-
6:2 FTS	<0.001	<0.01	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-	-
8:2 FTS	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-	-
10:2 FTS	-	-	-	-	<0.001	<0.001	<0.001	-	<0.001	-	-	-
FPrPA	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-
EtFOSSA	<0.025	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-	-
EtFOSE	<0.025	<0.005	<0.005	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-	-
FPepA	-	-	-	-	<0.001	<0.001	<0.001	<0.001	-	-	-	-
FHPepA	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-
F-53B minor	-	-	-	-	<0.001	<0.001	<0.001	-	<0.001	-	-	-
HFPO-DA	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-
Sum F-53B	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-
ADONA	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-
P37DMOA	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-
F-53B major	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-

Notes:

1. Results in µg/L.

2. Ministry of Health (MoH, 2022) Water Services (Drinking Water Standards for New Zealand) Regulations 2022, PFOA, and sum of PFOS + PFHxS.

3. Australian and New Zealand Guidelines for Fresh and Marine Water Quality – technical draft guideline values in PFAS National Environmental Management Plan 2.0 – Table 5. The Heads of EPAs Australia and New Zealand (HEPA), January 2020.

4. Total PFOS, PFHxS are calculated by summing monoethyl, dimethyl and linear isomers. Where an isomer is below the detection limit it is not added to the summation. This is following the method in the reported lab results.

5. Summations are made by adding compounds Total PFOS, Total PFHxS together. Where one compound is below detection, it is not included in the summation.

6. ANZG 2023, Toxicant default guideline values for aquatic ecosystem protection: Perfluorooctane sulfonate (PFOS) in freshwater. Australian and New Zealand Guidelines for Fresh and Marine Water Quality. CC BY 4.0. Australian and New Zealand Governments and Australian state and territory governments, Canberra, ACT, Australia.

-	Parameter not
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Table E-1: Groundwater Sampling Results - Per- and Poly-Fluoroalkyl Substances (PFAS)¹

Sample Name	PFAS in Groundwater									Guidelines		
	OHA_Adj_GW6_1_111217	OHA_Adj_GW6_2_130218	OHA_Adj_GW6_3_140518	OHA_Adj_GW6_4_13918	OHA_Adj_GW6_5_290920	OHA_Adj_GW6_6_160321	OHA_Adj_GW6_7_281021	OHA_Adj_GW6_8_290322	NZ Drinking Water Standard, MoH 2022 ²	ANZ WQG 99% Species Protection - Technical Draft Default Guideline Values ³	ANZ WQG 95% Species Protection - Technical Draft Default Guideline Values ³	
Location	GW6	GW6	GW6	GW6	GW6	GW6	GW6	GW6				
Sample Date	11/12/2017	13/02/2018	14/05/2018	13/09/2018	29/09/2020	16/03/2021	28/10/2021	29/03/2022				
Lab Report Number	989127	1032179	1133549	1260155	2096315	2313648	2590577	2780968				
Monitoring Zone	On-base	On-base	On-base	On-base	On-base	On-base	On-base	On-base				
Sample Results												
PFPeS	0.0022	0.0034	-	0.004	0.0025	0.0016	0.0025	-	-	-	-	
PFBS	0.0067	0.0065	0.0022	0.0038	0.0027	0.0023	0.0028	0.0021	-	-	-	
PFPeS	0.0054	0.0056	0.0013	0.0038	0.0039	0.0031	0.0033	0.0042	-	-	-	
di-PFHxS	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-	
Mono-PFHxS	0.011	0.0097	0.002	0.0026	0.0023	0.0035	0.0026	0.004	-	-	-	
L-PFHxS	0.066	0.054	0.014	0.014	0.014	0.014	0.013	0.027	-	-	-	
Total PFHxS ⁴	0.077	0.064	0.016	0.017	0.016	0.018	0.016	0.031	-	-	-	
PFHpS	0.0018	0.0023	<0.001	<0.001	<0.001	<0.001	<0.001	0.0014	-	-	-	
di-PFOS	0.0027	0.0022	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-	
Mono-PFOS	0.026	0.025	0.0089	0.003	0.0044	0.0038	0.0051	0.014	-	-	-	
L-PFOS	0.023	0.023	0.0092	0.0014	0.0042	0.0043	0.009	0.017	-	-	-	
Total PFOS ⁴	0.052	0.05	0.018	0.0044	0.0086	0.0081	0.014	0.031	-	0.0091 ⁶	0.48 ⁶	
Sum of PFHxS and PFOS ⁵	0.13	0.11	0.034	0.021	0.025	0.026	0.03	0.062	0.07	-	-	
PFECHS	-	-	-	-	<0.001	<0.001	<0.001	<0.001	-	-	-	
PFBA	0.025	0.02	-	<0.01	-	0.011	0.0053	-	-	-	-	
PPPeA	0.057	0.044	0.0035	0.0037	0.003	<0.001	0.0068	0.018	-	-	-	
PFHxA	0.044	0.038	0.0039	0.0053	0.0038	0.0072	0.0078	0.017	-	-	-	
PFHpA	0.02	0.016	0.0018	0.0021	0.0024	0.003	0.0033	0.0091	-	-	-	
PFOA	0.014	0.014	0.0022	0.0018	0.0019	0.0031	0.0019	0.0088	0.56	19	220	
PFNA	0.0038	0.0034	<0.001	<0.001	<0.001	<0.001	<0.001	0.0033	-	-	-	
PFDA	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-	
PFUnDA	<0.005	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	-	-	-	
PFTrDA	-	-	<0.025	<0.005	-	-	<0.001	<0.001	-	-	-	
PTFeDA	-	-	<0.025	<0.005	-	-	-	-	-	-	-	
PFDoDA	-	<0.001	<0.025	<0.001	-	-	<0.001	<0.001	-	-	-	
FOSA	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-	
MeFOSA	-	-	<0.005	<0.001	<0.001	-	<0.001	<0.001	-	-	-	
MeFOSAA	<0.005	<0.025	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-	
EtFOSAA	<0.005	<0.025	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-	
4:2 FTS	<0.005	<0.001	<0.001	-	-	-	-	-	-	-	-	
6:2 FTS	0.023	0.0032	<0.01	0.001	-	-	0.0013	<0.001	-	-	-	
8:2 FTS	<0.005	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	-	-	-	
10:2 FTS	-	-	-	-	-	-	<0.001	<0.001	-	-	-	
FPtPA	-	-	-	-	-	<0.001	<0.001	<0.001	-	-	-	
EtFOFA	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-	
EtFOSE	-	<0.025	<0.005	<0.001	<0.001	-	<0.001	<0.001	-	-	-	
FPepA	-	-	-	-	-	<0.001	<0.001	<0.001	-	-	-	
FPtPA	-	-	-	-	-	<0.001	<0.001	<0.001	-	-	-	
F-53B minor	-	-	-	-	-	<0.001	<0.001	<0.001	-	-	-	
HFPO-DA	-	-	-	-	-	<0.001	<0.001	<0.001	-	-	-	
Sum F-53B	-	-	-	-	-	<0.001	<0.001	<0.001	-	-	-	
ADONA	-	-	-	-	-	<0.001	<0.001	<0.001	-	-	-	
P37DMOA	-	-	-	-	-	<0.001	<0.001	<0.001	-	-	-	
F-53B major	-	-	-	-	-	<0.001	<0.001	<0.001	-	-	-	

Notes:

1. Results in µg/L.

2. Ministry of Health (MoH, 2022) Water Services (Drinking Water Standards for New Zealand) Regulations 2022, PFOA, and sum of PFOS + PFHxS.

3. Australian and New Zealand Guidelines for Fresh and Marine Water Quality – technical draft guideline values in PFAS National Environmental Management Plan 2.0 – Table 5. The Heads of EPAs Australia and New Zealand (HEPA), January 2020.

4. Total PFOS, PFHxS are calculated by summing monoethyl, dimethyl and linear isomers. Where an isomer is below the detection limit it is not added to the summation. This is following the method in the reported lab results.

5. Summations are made by adding compounds Total PFOS, Total PFHxS together. Where one compound is below detection, it is not included in the summation.

6. ANZG 2023, Toxicant default guideline values for aquatic ecosystem protection: Perfluorooctane sulfonate (PFOS) in freshwater. Australian and New Zealand Guidelines for Fresh and Marine Water Quality. CC BY 4.0. Australian and New Zealand Governments and Australian state and territory governments, Canberra, ACT, Australia.

-	Parameter not tested / no guideline value available.
0.3	Concentration exceeds 99% ecological guidelines.
1.2	Concentration exceeds 95% ecological guidelines.
3.6	Concentration exceeds drinking water standard.

Table E-1: Groundwater Sampling Results - Per- and Poly-Fluoroalkyl Substances (PFAS)¹

Sample Name	PFAS in Groundwater									Guidelines		
	OHA_Adj_GW6_9_280922	OHA_Adj_GW65_1_210218	OHA_Adj_GW65_2_170518	OHA_Adj_GW65_3_11918	OHA_Adj_GW65_4_290920	OHA_Adj_GW65_5_150321	OHA_Adj_GW65_6_291021	OHA_Adj_GW65_7_290322	NZ Drinking Water Standard, MoH 2022 ²	ANZ WQG 99% Species Protection - Technical Draft Default Guideline Values ³	ANZ WQG 95% Species Protection - Technical Draft Default Guideline Values ³	
Location	GW6	GW65	GW65	GW65	GW65	GW65	GW65	GW65				
Sample Date	28/09/2022	21/02/2018	17/05/2018	11/09/2018	29/09/2020	15/03/2021	29/10/2021	29/03/2022				
Lab Report Number	3007292	1047797	1142284	1244707	2096328	2313647	2593738	2780969				
Monitoring Zone	On-base	Off-base	Off-base	Off-base	Off-base	Off-base	Off-base	Off-base				
Sample Results												
PFPeS	0.0019	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-	
PFBS	0.0026	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-	
PFPeS	0.003	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-	
di-PFHxS	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-	
Mono-PFHxS	0.0035	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-	
L-PFHxS	0.02	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-	
Total PFHxS ⁴	0.024	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-	
PFHpS	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-	
di-PFOS	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-	
Mono-PFOS	0.011	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-	
L-PFOS	0.0041	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-	
Total PFOS ⁴	0.015	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	0.0091⁶	0.48⁶	
Sum of PFHxS and PFOS ⁵	0.039	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.07	-	-	
PFECHS	<0.001	-	-	-	-	<0.001	<0.001	<0.001	-	-	-	
PFBA	0.0061	<0.005	<0.01	<0.005	<0.001	<0.001	<0.001	<0.001	-	-	-	
PPPeA	0.009	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-	
PFHxA	0.01	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-	
PFHpA	0.0047	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-	
PFOA	0.003	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.56	19	220	
PFNA	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-	
PFDA	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-	
PFUnDA	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-	
PFTrDA	-	-	<0.025	<0.001	-	-	-	-	-	-	-	
PTFeDA	-	-	-	<0.005	-	-	<0.001	-	-	-	-	
PFDoDA	<0.001	-	-	<0.025	<0.001	<0.001	<0.001	<0.001	-	-	-	
FOSA	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-	
MeFOSA	<0.001	-	-	<0.005	<0.005	<0.001	-	<0.001	-	-	-	
MeFOSAA	<0.001	<0.005	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-	
EtFOSAA	<0.001	<0.005	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-	
4:2 FTS	-	<0.005	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-	
6:2 FTS	<0.001	<0.005	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-	
8:2 FTS	<0.001	<0.005	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-	
10:2 FTS	<0.001	-	-	-	-	-	<0.001	<0.001	-	-	-	
FPrPA	<0.001	-	-	-	-	<0.001	<0.001	<0.001	-	-	-	
EtFOFA	<0.001	-	<0.001	<0.005	<0.001	<0.001	-	<0.001	-	-	-	
EtFOSE	<0.001	-	<0.005	<0.001	<0.001	<0.001	-	<0.001	-	-	-	
FPePA	<0.001	-	-	-	-	<0.001	<0.001	<0.001	-	-	-	
FFrPA	<0.001	-	-	-	-	<0.001	<0.001	<0.001	-	-	-	
F-53B minor	<0.001	-	-	-	-	<0.001	<0.001	<0.001	-	-	-	
HFO-DA	<0.001	-	-	-	-	<0.001	<0.001	<0.001	-	-	-	
Sum F-53B	<0.001	-	-	-	-	<0.001	<0.001	<0.001	-	-	-	
ADONA	<0.001	-	-	-	-	<0.001	<0.001	<0.001	-	-	-	
P37DMOA	<0.001	-	-	-	-	<0.001	<0.001	<0.001	-	-	-	
F-53B major	<0.001	-	-	-	-	<0.001	<0.001	<0.001	-	-	-	

Notes:

1. Results in µg/L.

2. Ministry of Health (MoH, 2022) Water Services (Drinking Water Standards for New Zealand) Regulations 2022, PFOA, and sum of PFOS + PFHxS.

3. Australian and New Zealand Guidelines for Fresh and Marine Water Quality – technical draft guideline values in PFAS National Environmental Management Plan 2.0 – Table 5. The Heads of EPAs Australia and New Zealand (HEPA), January 2020.

4. Total PFOS, PFHxS are calculated by summing monoethyl, dimethyl and linear isomers. Where an isomer is below the detection limit it is not added to the summation. This is following the method in the reported lab results.

5. Summations are made by adding compounds Total PFOS, Total PFHxS together. Where one compound is below detection, it is not included in the summation.

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-	Parameter not tested / no guideline value available.
0.3	Concentration exceeds 99% ecological guidelines.
1.2	Concentration exceeds 95% ecological guidelines.
3.6	Concentration exceeds drinking water standard.

Table E-1: Groundwater Sampling Results - Per- and Poly-Fluoroalkyl Substances (PFAS)¹

Sample Name	PFAS in Groundwater									Guidelines		
	OHA_Adj_GW65_8_290922	OHA_Adj_GW67_1_210218	OHA_Adj_GW67_2_140518	OHA_Adj_GW67_3_110918	OHA_Adj_GW67_4_300920	OHA_Adj_GW67_5_170321	OHA_Adj_GW67_6_271021	OHA_Adj_GW67_7_290322	NZ Drinking Water Standard, MoH 2022 ²	ANZ WQG 99% Species Protection - Technical Draft Default Guideline Values ³	ANZ WQG 95% Species Protection - Technical Draft Default Guideline Values ³	
Location	GW65	GW67										
Sample Date	29/09/2022	21/02/2018	14/05/2018	11/09/2018	30/09/2020	17/03/2021	27/10/2021	29/03/2022				
Lab Report Number	3011675	1047809	1134445	1244090	2096741	2317694	2618128	2780991				
Monitoring Zone	Off-base											
Sample Results												
PFPeS	<0.001	<0.001	<0.001	-	<0.001	0.0013	<0.001	<0.001	-	-	-	
PFBS	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-	
PFPeS	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-	
di-PFHxS	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-	
Mono-PFHxS	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-	
L-PFHxS	<0.001	0.0016	0.0018	0.0012	<0.001	<0.001	<0.001	<0.001	-	-	-	
Total PFHxS ⁴	<0.001	0.0016	0.0018	0.0012	<0.001	<0.001	<0.001	<0.001	-	-	-	
PFHpS	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-	
di-PFOS	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-	
Mono-PFOS	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-	
L-PFOS	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-	
Total PFOS ⁴	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	0.0091 ⁶	0.48 ⁶	
Sum of PFHxS and PFOS ⁵	<0.001	0.0016	0.0018	0.0012	<0.001	<0.001	<0.001	<0.001	0.07	-	-	
PFECHS	<0.001	-	-	-	-	<0.001	<0.001	<0.001	-	-	-	
PFBA	<0.001	-	-	-	<0.001	0.0072	-	0.0087	-	-	-	
PPPeA	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	-	-	-	
PFHxA	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-	
PFHpA	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-	
PFOA	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.56	19	220	
PFNA	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-	
PFDA	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-	
PFUnDA	-	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	-	-	-	
PFTrDA	-	-	<0.025	<0.005	-	-	-	-	-	-	-	
PTFeDA	-	-	<0.025	<0.005	-	-	<0.001	-	-	-	-	
PFDoDA	<0.001	-	<0.025	<0.001	-	<0.001	<0.001	<0.001	-	-	-	
FOSA	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-	
MeFOSA	<0.001	-	<0.005	<0.005	-	-	<0.001	<0.001	-	-	-	
MeFOSAA	<0.001	<0.005	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-	
EtFOSAA	<0.001	<0.005	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-	
4:2 FTS	<0.001	<0.005	<0.001	-	-	<0.001	<0.001	-	-	-	-	
6:2 FTS	<0.001	<0.005	<0.01	<0.001	<0.001	<0.001	<0.001	-	<0.001	-	-	
8:2 FTS	<0.001	<0.005	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-	
10:2 FTS	<0.001	-	-	-	-	<0.001	<0.001	<0.001	-	-	-	
FPrPA	<0.001	-	-	-	-	<0.001	<0.001	<0.001	-	-	-	
EtFOFA	<0.001	-	<0.001	<0.005	-	-	<0.001	<0.001	-	-	-	
EtFOSE	<0.001	-	<0.005	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-	
FPePA	<0.001	-	-	-	-	<0.001	<0.001	<0.001	-	-	-	
FHPA	<0.001	-	-	-	-	<0.001	<0.001	<0.001	-	-	-	
F-53B minor	<0.001	-	-	-	-	<0.001	<0.001	<0.001	-	-	-	
HFPO-DA	<0.001	-	-	-	-	<0.001	<0.001	<0.001	-	-	-	
Sum F-53B	<0.001	-	-	-	-	<0.001	<0.001	<0.001	-	-	-	
ADONA	<0.001	-	-	-	-	<0.001	<0.001	<0.001	-	-	-	
P37DMOA	<0.001	-	-	-	-	<0.001	<0.001	<0.001	-	-	-	
F-53B major	<0.001	-	-	-	-	<0.001	<0.001	<0.001	-	-	-	

Notes:

1. Results in µg/L.

2. Ministry of Health (MoH, 2022) Water Services (Drinking Water Standards for New Zealand) Regulations 2022, PFOA, and sum of PFOS + PFHxS.

3. Australian and New Zealand Guidelines for Fresh and Marine Water Quality – technical draft guideline values in PFAS National Environmental Management Plan 2.0 – Table 5. The Heads of EPAs Australia and New Zealand (HEPA), January 2020.

4. Total PFOS, PFHxS are calculated by summing monoethyl, dimethyl and linear isomers. Where an isomer is below the detection limit it is not added to the summation. This is following the method in the reported lab results.

5. Summations are made by adding compounds Total PFOS, Total PFHxS together. Where one compound is below detection, it is not included in the summation.

6. ANZG 2023, Toxicant default guideline values for aquatic ecosystem protection: Perfluorooctane sulfonate (PFOS) in freshwater. Australian and New Zealand Guidelines for Fresh and Marine Water Quality. CC BY 4.0. Australian and New Zealand Governments and Australian state and territory governments, Canberra, ACT, Australia.

-	Parameter not tested / no guideline value available.
0.3	Concentration exceeds 99% ecological guidelines.
1.2	Concentration exceeds 95% ecological guidelines.
3.6	Concentration exceeds drinking water standard.

Table E-1: Groundwater Sampling Results - Per- and Poly-Fluoroalkyl Substances (PFAS)¹

Sample Name	OHA_ADJ_GW67_8_280922	PFAS in Groundwater								Guidelines					
		Location	GW67							NZ Drinking Water Standard, MoH 2022 ²	ANZ WQG 99% Species Protection - Technical Draft Default Guideline Values ³	ANZ WQG 95% Species Protection - Technical Draft Default Guideline Values ³			
PFPeS	<0.025									-	-	-			
PFBS	<0.025									-	-	-			
PFPeS	<0.025									-	-	-			
di-PFHxS	<0.025									-	-	-			
Mono-PFHxS	<0.025									-	-	-			
L-PFHxS	<0.025									-	-	-			
Total PFHxS ⁴	<0.025									-	-	-			
PFHpS	<0.025									-	-	-			
di-PFOS	<0.025									-	-	-			
Mono-PFOS	<0.025									-	-	-			
L-PFOS	<0.025									-	-	-			
Total PFOS ⁴	<0.025									-	0.0091 ⁶	0.48 ⁶			
Sum of PFHxS and PFOS ⁵	<0.025									0.07	-	-			
PFECHS	<0.025									-	-	-			
PFBA	<0.1									-	-	-			
PPPeA	<0.1									-	-	-			
PFHxA	<0.025									-	-	-			
PFHpA	<0.025									-	-	-			
PFOA	<0.025									0.56	19	220			
PFNA	<0.025									-	-	-			
PFDA	<0.025									-	-	-			
PFUnDA	<0.025									-	-	-			
PFTrDA	<0.1									-	-	-			
PTFeDA	<0.1									-	-	-			
PFDoDA	<0.1									-	-	-			
FOSA	<0.025									-	-	-			
MeFOSA	<0.1									-	-	-			
MeFOSAA	<0.025									-	-	-			
EtFOSAA	<0.025									-	-	-			
4:2 FTS	<0.025									-	-	-			
6:2 FTS	<0.05									-	-	-			
8:2 FTS	<0.1									-	-	-			
10:2 FTS	<0.025									-	-	-			
FPrPA	<0.1									-	-	-			
EtFOFA	<0.1									-	-	-			
EtFOSE	<0.1									-	-	-			
FPepA	<0.025									-	-	-			
FHPA	<0.025									-	-	-			
F-53B minor	<0.05									-	-	-			
HFPO-DA	<0.05									-	-	-			
Sum F-53B	<0.1									-	-	-			
ADONA	<0.025									-	-	-			
P37DMOA	<0.05									-	-	-			
F-53B major	<0.1									-	-	-			

Notes:

1. Results in µg/L.

2. Ministry of Health (MoH, 2022) Water Services (Drinking Water Standards for New Zealand) Regulations 2022, PFOA, and sum of PFOS + PFHxS.

3. Australian and New Zealand Guidelines for Fresh and Marine Water Quality – technical draft guideline values in PFAS National Environmental Management Plan 2.0 – Table 5. The Heads of EPAs Australia and New Zealand (HEPA), January 2020.

4. Total PFOS, PFHxS are calculated by summing monoethyl, dimethyl and linear isomers. Where an isomer is below the detection limit it is not added to the summation. This is following the method in the reported lab results.

5. Summations are made by adding compounds Total PFOS, Total PFHxS together. Where one compound is below detection, it is not included in the summation.

6. ANZG 2023, Toxicant default guideline values for aquatic ecosystem protection: Perfluorooctane sulfonate (PFOS) in freshwater. Australian and New Zealand Guidelines for Fresh and Marine Water Quality. CC BY 4.0. Australian and New Zealand Governments and Australian state and territory governments, Canberra, ACT, Australia.

-	Parameter not tested / no guideline value available.
0.3	Concentration exceeds 99% ecological guidelines.
1.2	Concentration exceeds 95% ecological guidelines.
3.6	Concentration exceeds drinking water standard.

Table E-2: Surface Water Sampling Results - Per- and Poly-Fluoroalkyl Substances (PFAS)¹

Field_ID	PFAS Samples in Surface Water							Guidelines		
	Location_Code	OHA_ADJ_SW33_1_190218	OHA_ADJ_SW33_2_220518	OHA_ADJ_SW33_3_12918	OHA_ADJ_SW33_4_290920	OHA_ADJ_SW33_5_160321	OHA_ADJ_SW33_6_291021	OHA_ADJ_SW33_7_280322	ANZ WQG for 95% Species Protection - Technical Draft Default Guideline Values ²	ANZ WQG for 99% Species Protection - Technical Draft Default Guideline Values ²
	Sampled_Date_Time	SW33	SW33	SW33	SW33	SW33	SW33	SW33		
	Lab_Report_Number	19/02/2018	22/05/2018	12/09/2018	29/09/2020	16/03/2021	29/10/2021	28/03/2022		
	Sample Results	1047510	1147417	1248198	2094714	2316431	2590572	2785715		
PFPrS		0.0036	<0.001	0.0034	<0.025	0.002	0.0035	0.0018	-	-
PFBS		0.012	<0.001	0.0077	<0.025	0.0062	0.0072	0.0037	-	-
PFPeS		0.012	<0.001	0.0075	<0.025	0.0058	0.0077	0.004	-	-
di-PFHxS		<0.001	<0.001	<0.001	<0.025	<0.001	<0.001	<0.001	-	-
Mono-PFHxS		0.019	<0.001	0.012	<0.025	0.0088	0.012	0.0058	-	-
L-PFHxS		0.11	0.0015	0.067	<0.025	0.049	0.074	0.033	-	-
Total PFHxS ⁴		0.13	0.0015	0.079	<0.025	0.058	0.086	0.039	-	-
PFHpS		0.0033	<0.001	0.0017	<0.025	0.0013	0.002	<0.001	-	-
di-PFOS		0.0046	<0.001	0.0025	<0.025	0.0021	0.0028	0.0013	-	-
Mono-PFOS		0.06	<0.001	0.032	<0.025	0.036	0.041	0.019	-	-
L-PFOS		0.047	0.0013	0.024	<0.025	0.052	0.045	0.02	-	-
Total PFOS ⁴		<u>0.11</u>	0.0013	<u>0.058</u>	<0.025	<u>0.09</u>	<u>0.089</u>	<u>0.04</u>	0.48 ³	0.0091 ³
Sum of PFHxS and PFOS ⁵		0.24	0.0028	0.14	<0.025	0.15	0.18	0.079	-	-
PFECHS		-	-	-	-	<0.001	<0.001	<0.001	-	-
PFBA		0.087	-	0.044	<0.2	0.043	0.061	0.025	-	-
PFPeA		0.4	0.0037	0.16	<0.1	0.17	0.27	0.085	-	-
PFHxA		0.29	0.0033	0.13	<0.025	0.13	0.18	0.061	-	-
PFHpA		0.11	0.0013	0.049	<0.025	0.054	0.074	0.024	-	-
PFOA		0.051	<0.001	0.021	<0.025	0.021	0.027	0.01	220	19
PFNA		0.018	<0.001	0.0055	<0.025	0.0092	0.0091	0.0033	-	-
PFDA		<0.001	<0.001	<0.001	<0.025	<0.001	<0.001	<0.001	-	-
PFUnDA		<0.001	<0.001	<0.001	<0.025	<0.001	<0.001	<0.001	-	-
PFTrDA		-	<0.005	-	<0.1	-	<0.001	<0.001	-	-
PFTeDA		-	<0.025	-	<0.1	-	<0.001	<0.001	-	-
PFDoDA		-	<0.005	-	<0.1	<0.001	<0.001	<0.001	-	-
FOSA		<0.001	<0.001	<0.001	<0.025	<0.001	<0.001	<0.001	-	-
MeFOSA		-	<0.001	<0.005	<0.1	<0.001	<0.001	<0.001	-	-
MeFOSAA		<0.005	<0.001	<0.001	<0.025	<0.001	<0.001	<0.001	-	-
EtFOSAA		<0.005	<0.001	<0.001	<0.025	<0.001	<0.001	<0.001	-	-
4:2 FTS		<0.005	<0.001	-	<0.025	<0.001	-	-	-	-
6:2 FTS		0.0051	0.0016	0.017	<0.05	<0.001	0.0051	0.0022	-	-
8:2 FTS		<0.005	<0.001	<0.001	<0.1	<0.001	<0.001	<0.001	-	-
10:2 FTS		-	-	-	-	<0.001	<0.001	<0.001	-	-
FPrPA		-	-	-	-	<0.001	<0.001	<0.001	-	-
EtFOSA		-	<0.001	<0.005	<0.1	<0.001	<0.001	<0.001	-	-
EtFOSE		<0.025	<0.005	<0.005	<0.1	<0.001	<0.001	<0.001	-	-
FPePA		-	-	-	-	<0.001	<0.001	<0.001	-	-
FHpPA		-	-	-	-	<0.001	<0.001	<0.001	-	-
F-53B minor		-	-	-	-	<0.001	<0.001	<0.001	-	-
HFPO-DA		-	-	-	-	<0.001	<0.001	<0.001	-	-
Sum F-53B		-	-	-	-	<0.001	<0.001	<0.001	-	-
ADONA		-	-	-	-	<0.001	<0.001	<0.001	-	-
P37DMOA		-	-	-	-	<0.001	<0.001	<0.001	-	-
F-53B major		-	-	-	-	<0.001	<0.001	<0.001	-	-

Notes:

1. Results in µg/L.

2. Australian and New Zealand Guidelines for Fresh and Marine Water Quality (ANZ WQG) – technical draft guideline values in PFAS National Environmental Management Plan – Table 5. The Heads of EPAs Australia and New Zealand (HEPA), January 2020.

3. ANZG 2023, Toxicant default guideline values for aquatic ecosystem protection: Perfluorooctane sulfonate (PFOS) in freshwater. Australian and New Zealand Guidelines for Fresh and Marine Water Quality. CC BY 4.0. Australian and New Zealand Governments and Australian state and territory governments, Canberra, ACT, Australia.

4. Total PFOS, PFHxS are calculated by summing monoethyl, dimethyl and linear isomers. Where an isomer is below the detection limit it is not added to the summation. This is following the method in the reported lab results.

5. Summations are made by adding compounds Total PFOS, Total PFHxS together. Where one compound is below detection, it is not included in the summation.

-	Parameter not tested / no guideline value available
3.6	Concentration exceeds 95% ecological guidelines.
3.6	Concentration exceeds 99% ecological guidelines.

Table E-2: Surface Water Sampling Results - Per- and Poly-Fluoroalkyl Substances (PFAS)¹

Field_ID	PFAS Samples in Surface Water							Guidelines		
	Location_Code	OHA_ADJ_SW33_8_280922	OHA_ADJ_SW36_1_220218	OHA_ADJ_SW36_2_170518	OHA_ADJ_SW36_3_120918	OHA_ADJ_SW36_4_290920	OHA_ADJ_SW36_5_160321	OHA_ADJ_SW36_7_291021	ANZECC 95% Species Protection - Technical Draft Default Guideline Values ²	ANZ WQG for 99% Species Protection - Technical Draft Default Guideline Values ²
	Sampled_Date_Time	OHA_Adj_SW33	SW36	SW36	SW36	SW36	SW36	SW36		
	Lab_Report_Number	28/09/2022	22/02/2018	17/05/2018	12/09/2018	29/09/2020	16/03/2021	29/10/2021		
	Sample Results	3019751	1047802	1142104	1251329	2094717	2370192	2590570		
PFPrS	0.0022	<0.001	<0.001	<0.001	<0.001	<0.025	<0.001	0.0014	-	-
PFBS	0.0051	<0.001	<0.001	<0.001	<0.001	<0.025	0.0017	0.0026	-	-
PFPeS	0.0052	<0.001	<0.001	<0.001	<0.001	<0.025	0.0019	0.0028	-	-
di-PFHxS	<0.001	<0.001	<0.001	<0.001	<0.001	<0.025	<0.001	<0.001	-	-
Mono-PFHxS	0.008	<0.001	<0.001	<0.001	<0.001	<0.025	0.003	0.0039	-	-
L-PFHxS	0.044	<0.001	<0.001	<0.001	<0.001	<0.025	0.018	0.023	-	-
Total PFHxS ⁴	0.052	<0.001	<0.001	<0.001	<0.001	<0.025	0.021	0.027	-	-
PFHpS	0.0012	<0.001	<0.001	<0.001	<0.001	<0.025	<0.001	<0.001	-	-
di-PFOS	0.0016	<0.001	<0.001	<0.001	<0.001	<0.025	<0.001	<0.001	-	-
Mono-PFOS	0.029	<0.001	<0.001	<0.001	<0.001	<0.025	0.017	0.011	-	-
L-PFOS	0.017	<0.001	<0.001	<0.001	<0.001	<0.025	0.016	0.0095	-	-
Total PFOS ⁴	0.048	<0.001	<0.001	<0.001	<0.001	<0.025	0.033	0.02	0.48 ³	0.0091 ³
Sum of PFHxS and PFOS ⁵	0.1	<0.001	<0.001	<0.001	<0.001	<0.025	0.054	0.047	-	-
PFECHS	<0.001	-	-	-	-	-	<0.001	<0.001	-	-
PFBA	0.034	<0.005	<0.01	<0.005	<0.005	<0.2	0.019	0.017	-	-
PFPeA	0.13	<0.001	<0.001	<0.001	<0.001	<0.1	0.072	0.06	-	-
PFHxA	0.091	<0.001	<0.001	<0.001	<0.001	<0.025	0.05	0.039	-	-
PFHpA	0.037	<0.001	<0.001	<0.001	<0.001	<0.025	0.026	0.018	-	-
PFOA	0.015	<0.001	<0.001	<0.001	<0.001	<0.025	0.012	0.0079	220	19
PFNA	0.0044	<0.001	<0.001	<0.001	<0.001	<0.025	0.0048	0.0026	-	-
PFDA	<0.001	<0.001	<0.001	<0.001	<0.001	<0.025	<0.001	<0.001	-	-
PFUnDA	<0.001	<0.001	<0.001	<0.001	<0.005	<0.025	<0.001	<0.001	-	-
PFTrDA	-	-	<0.025	<0.005	<0.005	<0.1	-	<0.001	-	-
PFTeDA	-	-	<0.1	-	-	<0.1	-	<0.001	-	-
PFDoDA	<0.001	-	<0.025	<0.005	<0.005	<0.1	<0.001	<0.001	-	-
FOSA	<0.001	<0.001	<0.001	<0.001	<0.001	<0.025	<0.001	<0.001	-	-
MeFOSA	<0.001	-	<0.005	<0.005	<0.005	<0.1	<0.001	<0.001	-	-
MeFOSAA	<0.001	<0.005	<0.001	<0.005	<0.005	<0.025	<0.001	<0.001	-	-
EtFOSAA	<0.001	<0.005	<0.001	<0.005	<0.005	<0.025	<0.001	<0.001	-	-
4:2 FTS	-	<0.005	<0.001	<0.001	<0.001	<0.025	<0.001	-	-	-
6:2 FTS	0.0034	<0.005	<0.001	<0.001	<0.001	<0.05	<0.001	<0.001	-	-
8:2 FTS	<0.001	<0.005	<0.001	<0.005	<0.005	<0.1	<0.001	<0.001	-	-
10:2 FTS	<0.001	-	-	-	-	-	<0.001	<0.001	-	-
FPrPA	<0.001	-	-	-	-	-	<0.001	<0.001	-	-
EtFOSA	<0.001	-	<0.001	<0.005	<0.005	<0.1	<0.001	<0.001	-	-
EtFOSE	<0.001	-	<0.005	<0.005	<0.005	<0.1	<0.001	<0.001	-	-
FPePA	<0.001	-	-	-	-	-	<0.001	<0.001	-	-
FHpPA	<0.001	-	-	-	-	-	<0.001	<0.001	-	-
F-53B minor	<0.001	-	-	-	-	-	<0.001	<0.001	-	-
HFPO-DA	<0.001	-	-	-	-	-	<0.001	<0.001	-	-
Sum F-53B	<0.001	-	-	-	-	-	<0.001	<0.001	-	-
ADONA	<0.001	-	-	-	-	-	<0.001	<0.001	-	-
P37DMOA	<0.001	-	-	-	-	-	<0.001	<0.001	-	-
F-53B major	<0.001	-	-	-	-	-	<0.001	<0.001	-	-

Notes:

1. Results in µg/L.

2. Australian and New Zealand Guidelines for Fresh and Marine Water Quality (ANZ WQG) – technical draft guideline values in PFAS National Environmental Management Plan – Table 5. The Heads of EPAs Australia and New Zealand (HEPA), January 2020.

3. ANZG 2023, Toxicant default guideline values for aquatic ecosystem protection: Perfluorooctane sulfonate (PFOS) in freshwater. Australian and New Zealand Guidelines for Fresh and Marine Water Quality. CC BY 4.0. Australian and New Zealand Governments and Australian state and territory governments, Canberra, ACT, Australia.

4. Total PFOS, PFHxS are calculated by summing monoethyl, dimethyl and linear isomers. Where an isomer is below the detection limit it is not added to the summation. This is following the method in the reported lab results.

5. Summations are made by adding compounds Total PFOS, Total PFHxS together. Where one compound is below detection, it is not included in the summation.

-	Parameter not tested / no guideline value available
3.6	Concentration exceeds 95% ecological guidelines.
3.6	Concentration exceeds 99% ecological guidelines.

Table E-2: Surface Water Sampling Results - Per- and Poly-Fluoroalkyl Substances (PFAS)¹

Sample Results	PFAS Samples in Surface Water							Guidelines		
	Field_ID	OHA_ADJ_SW36_8_280322	OHA_ADJ_SW36_9_290922	SW6	SW6	SW6	OHA_DPB_SW6_4_290920	OHA_DPB_SW6_6_291021	ANZECC 95% Species Protection - Technical Draft Default Guideline Values ²	ANZ WQG for 99% Species Protection - Technical Draft Default Guideline Values ²
	Location_Code	SW36	OHA_ADJ_SW36	SW6	SW6	SW6	SW6	SW6		
	Sampled_Date_Time	28/03/2022	29/09/2022	4/08/2017	1/11/2017	3/07/2018	29/09/2020	29/10/2021		
	Lab_Report_Number	2785749	3041553	841470	937355	1186578	2094713	2590926		
PFPrS	<0.001	0.0013	0.023	0.042	0.013	<0.025	<0.025	-	-	
PFBS	0.0016	0.0029	0.079	0.12	0.037	<0.025	0.053	-	-	
PFPeS	0.0015	0.003	0.083	0.18	0.045	<0.025	0.057	-	-	
di-PFHxS	<0.001	<0.001	0.002	0.0039	<0.001	<0.025	<0.025	-	-	
Mono-PFHxS	0.0022	0.0047	0.3	0.28	0.073	0.03	0.11	-	-	
L-PFHxS	0.012	0.027	1.6	1.8	0.48	0.19	0.86	-	-	
Total PFHxS ⁴	0.014	0.032	1.9	2.1	0.55	0.22	0.97	-	-	
PFHpS	<0.001	<0.001	0.066	0.13	0.027	<0.025	0.046	-	-	
di-PFOS	<0.001	<0.001	0.036	0.096	0.013	<0.025	0.039	-	-	
Mono-PFOS	0.0061	0.015	0.52	0.82	0.15	0.093	0.58	-	-	
L-PFOS	0.0058	0.0086	0.86	1	0.21	0.13	0.83	-	-	
Total PFOS ⁴	0.012	0.024	1.4	1.9	0.37	0.22	1.4	0.48 ³	0.0091 ³	
Sum of PFHxS and PFOS ⁵	0.026	0.056	-	-	0.92	0.44	2.4	-	-	
PFECHS	<0.001	<0.001	-	-	-	-	<0.025	-	-	
PFBA	0.013	0.017	0.23	0.32	0.11	<0.2	0.16	-	-	
PFPeA	0.024	0.051	1.1	1.5	0.44	0.22	0.62	-	-	
PFHxA	0.018	0.038	1	0.96	0.32	0.14	0.39	-	-	
PFHpA	0.0073	0.018	0.32	0.47	0.16	0.073	0.23	-	-	
PFOA	0.0031	0.0079	0.61	0.73	0.19	0.065	0.34	220	19	
PFNA	0.0011	0.0022	0.15	0.32	0.092	0.029	0.18	-	-	
PFDA	<0.001	<0.001	0.0012	0.002	0.0011	<0.025	<0.025	-	-	
PFUnDA	<0.001	<0.001	<0.005	0.0012	<0.001	<0.025	<0.025	-	-	
PTrDA	<0.001	-	-	-	<0.025	<0.1	<0.1	-	-	
PFTeDA	<0.001	-	-	-	<0.1	<0.1	<0.1	-	-	
PFDoDA	<0.001	-	<0.005	<0.001	<0.025	<0.1	<0.1	-	-	
FOSA	<0.001	<0.001	<0.001	0.0012	<0.001	<0.025	<0.025	-	-	
MeFOSA	<0.001	<0.001	<0.005	<0.005	<0.005	<0.1	<0.1	-	-	
MeFOSAA	<0.001	<0.001	<0.005	<0.005	<0.001	<0.025	<0.025	-	-	
EtFOSAA	<0.001	<0.001	<0.005	<0.005	<0.001	<0.025	<0.025	-	-	
4:2 FTS	-	-	0.0059	0.0053	<0.001	<0.025	<0.025	-	-	
6:2 FTS	<0.001	<0.001	0.81	1.5	0.33	0.053	0.62	-	-	
8:2 FTS	<0.001	<0.001	<0.005	0.0054	<0.001	<0.1	<0.1	-	-	
10:2 FTS	<0.001	-	-	-	-	-	<0.025	-	-	
FPrPA	<0.001	<0.001	-	-	-	-	<0.1	-	-	
EtFOSA	<0.001	<0.001	<0.005	<0.005	<0.005	<0.1	<0.1	-	-	
EtFOSE	<0.001	<0.001	<0.005	<0.005	<0.005	<0.1	<0.1	-	-	
FPePA	<0.001	<0.001	-	-	-	-	<0.025	-	-	
FHpPA	<0.001	<0.001	-	-	-	-	<0.025	-	-	
F-53B minor	<0.001	-	-	-	-	-	<0.05	-	-	
HFPO-DA	<0.001	<0.001	-	-	-	-	<0.05	-	-	
Sum F-53B	<0.001	<0.001	-	-	-	-	<0.1	-	-	
ADONA	<0.001	<0.001	-	-	-	-	<0.025	-	-	
P37DMOA	<0.001	<0.001	-	-	-	-	<0.05	-	-	
F-53B major	<0.001	<0.001	-	-	<0.001	<0.1	-	-	-	

Notes:

1. Results in µg/L.

2. Australian and New Zealand Guidelines for Fresh and Marine Water Quality (ANZ WQG) – technical draft guideline values in PFAS National Environmental Management Plan – Table 5. The Heads of EPAs Australia and New Zealand (HEPA), January 2020.

3. ANZG 2023, Toxicant default guideline values for aquatic ecosystem protection: Perfluorooctane sulfonate (PFOS) in freshwater. Australian and New Zealand Guidelines for Fresh and Marine Water Quality. CC BY 4.0. Australian and New Zealand Governments and Australian state and territory governments, Canberra, ACT, Australia.

4. Total PFOS, PFHxS are calculated by summing monoethyl, dimethyl and linear isomers. Where an isomer is below the detection limit it is not added to the summation. This is following the method in the reported lab results.

5. Summations are made by adding compounds Total PFOS, Total PFHxS together. Where one compound is below detection, it is not included in the summation.

-	Parameter not tested / no guideline value available
3.6	Concentration exceeds 95% ecological guidelines.
3.6	Concentration exceeds 99% ecological guidelines.

Table E-2: Surface Water Sampling Results - Per- and Poly-Fluoroalkyl Substances (PFAS)¹

Sample Results	PFAS Samples in Surface Water							Guidelines		
	Field_ID	OHA_DPB_SW6_7_280322	OHA_DPB_SW6_8_280922	SW4	OHA_SHW_SW4_2_021020	OHA_SHW_SW4_3_180321	OHA_SHW_SW4_4_271021	OHA_SHW_SW4_5_300322	ANZECC 95% Species Protection - Technical Draft Default Guideline Values ²	ANZ WQG for 99% Species Protection - Technical Draft Default Guideline Values ²
	Location_Code	SW6	OHA_DPB_SW6	SW4	SW4	SW4	SW4			
	Sampled_Date_Time	28/03/2022	28/09/2022	4/08/2017	2/10/2020	18/03/2021	27/10/2021	30/03/2022		
	Lab_Report_Number	2785776	3008365	841470	2094371	2327926	2576268	2786753		
PFPrS	0.029	0.026	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-
PFBS	0.063	0.089	<0.001	<0.001	0.0012	<0.001	<0.001	<0.001	-	-
PFPeS	0.092	0.12	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-
di-PFHxS	0.0021	<0.025	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-
Mono-PFHxS	0.16	0.23	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-
L-PFHxS	0.95	1.4	<0.001	<0.001	0.005	<0.001	<0.001	<0.001	-	-
Total PFHxS ⁴	1.1	1.6	<0.001	<0.001	0.005	<0.001	<0.001	<0.001	-	-
PFHpS	0.05	0.061	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-
di-PFOS	0.051	0.059	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-
Mono-PFOS	0.64	0.89	<0.001	<0.001	0.0029	<0.001	<0.001	<0.001	-	-
L-PFOS	0.69	0.82	<0.001	<0.001	0.0036	<0.001	<0.001	<0.001	-	-
Total PFOS ⁴	1.4	1.8	<0.001	<0.001	0.0065	<0.001	<0.001	0.48 ³	0.0091 ³	
Sum of PFHxS and PFOS ⁵	2.5	3.4	-	<0.001	0.012	<0.001	<0.001	-	-	
PFECHS	<0.001	<0.025	-	-	<0.001	<0.001	<0.001	-	-	
PFBA	0.22	0.24	0.0054	0.0095	0.037	0.0085	0.0061	-	-	
PFPeA	0.86	0.9	<0.001	<0.001	0.096	0.0035	0.0013	-	-	
PFHxA	0.62	0.68	<0.001	0.001	0.079	0.0016	<0.001	-	-	
PFHpA	0.31	0.38	<0.001	<0.001	0.048	0.0011	<0.001	-	-	
PFOA	0.36	0.51	<0.001	<0.001	0.013	<0.001	<0.001	220	19	
PFNA	0.17	0.22	<0.001	<0.001	0.0039	<0.001	<0.001	-	-	
PFDA	0.0014	<0.025	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	
PFUnDA	0.0011	<0.025	<0.005	<0.001	<0.001	<0.001	<0.001	-	-	
PTrDA	<0.001	<0.1	-	<0.001	<0.005	-	<0.001	-	-	
PFTeDA	<0.001	<0.1	-	<0.001	-	-	<0.001	-	-	
PFDoDA	<0.001	<0.1	<0.005	<0.001	<0.005	<0.001	<0.001	-	-	
FOSA	<0.001	<0.025	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	
MeFOSA	<0.001	<0.1	-	-	<0.005	<0.001	<0.001	-	-	
MeFOSAA	<0.001	<0.025	<0.005	<0.001	<0.001	<0.001	<0.001	-	-	
EtFOSAA	<0.001	<0.025	<0.005	<0.001	<0.001	<0.001	<0.001	-	-	
4:2 FTS	-	<0.025	<0.005	-	<0.001	-	-	-	-	
6:2 FTS	0.44	0.7	<0.005	<0.001	0.0096	-	<0.001	-	-	
8:2 FTS	<0.001	<0.1	<0.005	<0.001	<0.001	<0.001	<0.001	-	-	
10:2 FTS	<0.001	<0.025	-	-	<0.001	<0.001	<0.001	-	-	
FPrPA	0.0022	<0.1	-	-	<0.001	<0.001	<0.001	-	-	
EtFOSA	<0.001	<0.1	-	-	<0.005	<0.001	<0.001	-	-	
EtFOSE	<0.001	<0.1	<0.005	-	<0.005	<0.001	<0.001	-	-	
FPePA	0.005	<0.025	-	-	<0.001	<0.001	<0.001	-	-	
FHpPA	<0.001	<0.025	-	-	<0.001	<0.001	<0.001	-	-	
F-53B minor	<0.001	<0.05	-	-	<0.001	<0.001	<0.001	-	-	
HFPO-DA	<0.001	<0.05	-	-	<0.001	<0.001	<0.001	-	-	
Sum F-53B	<0.001	<0.1	-	-	<0.001	<0.001	<0.001	-	-	
ADONA	<0.001	<0.025	-	-	<0.001	<0.001	<0.001	-	-	
P37DMOA	<0.001	<0.05	-	-	<0.001	<0.001	<0.001	-	-	
F-53B major	<0.1	<0.1	-	-	-	<0.001	<0.001	-	-	

Notes:

1. Results in µg/L.

2. Australian and New Zealand Guidelines for Fresh and Marine Water Quality (ANZ WQG) – technical draft guideline values in PFAS National Environmental Management Plan – Table 5. The Heads of EPAs Australia and New Zealand (HEPA), January 2020.

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5. Summations are made by adding compounds Total PFOS, Total PFHxS together. Where one compound is below detection, it is not included in the summation.

-	Parameter not tested / no guideline value available
3.6	Concentration exceeds 95% ecological guidelines.
3.6	Concentration exceeds 99% ecological guidelines.

Table E-2: Surface Water Sampling Results - Per- and Poly-Fluoroalkyl Substances (PFAS)¹

PFAS Samples in Surface Water							Guidelines			
Field_ID	OHA_SHW_SW4_6_280922	Location_Code	OHA_SHW_SW4	Sampled_Date_Time	28/09/2022	Lab_Report_Number	3009070	Sample Results	ANZECC 95% Species Protection - Technical Draft Default Guideline Values ²	ANZ WQG for 99% Species Protection - Technical Draft Default Guideline Values ²
PFPrS	<0.001							-	-	
PFBS	<0.001							-	-	
PFPeS	<0.001							-	-	
di-PFHxS	<0.001							-	-	
Mono-PFHxS	<0.001							-	-	
L-PFHxS	<0.001							-	-	
Total PFHxS ⁴	<0.001							-	-	
PFHpS	<0.001							-	-	
di-PFOS	<0.001							-	-	
Mono-PFOS	<0.001							-	-	
L-PFOS	<0.001							-	-	
Total PFOS ⁴	<0.001							0.48 ³	0.0091 ³	
Sum of PFHxS and PFOS ⁵	<0.001							-	-	
PFECHS	<0.001							-	-	
PFBA	0.008							-	-	
PFPeA	0.0018							-	-	
PFHxA	<0.001							-	-	
PFHpA	<0.001							-	-	
PFOA	<0.001							220	19	
PFNA	<0.001							-	-	
PFDA	<0.001							-	-	
PFUnDA	<0.001							-	-	
PFTrDA	-							-	-	
PFTeDA	-							-	-	
PFDoDA	<0.001							-	-	
FOSA	<0.001							-	-	
MeFOSA	<0.001							-	-	
MeFOSAA	<0.001							-	-	
EtFOSAA	<0.001							-	-	
4:2 FTS	-							-	-	
6:2 FTS	<0.001							-	-	
8:2 FTS	<0.001							-	-	
10:2 FTS	<0.001							-	-	
FPrPA	<0.001							-	-	
EtFOSA	<0.001							-	-	
EtFOSE	<0.001							-	-	
FPePA	<0.001							-	-	
FHpPA	<0.001							-	-	
F-53B minor	<0.001							-	-	
HFPO-DA	<0.001							-	-	
Sum F-53B	<0.001							-	-	
ADONA	<0.001							-	-	
P37DMOA	<0.001							-	-	
F-53B major	<0.001							-	-	

Notes:

1. Results in µg/L.

2. Australian and New Zealand Guidelines for Fresh and Marine Water Quality (ANZ WQG) – technical draft guideline values in PFAS National Environmental Management Plan – Table 5. The Heads of EPAs Australia and New Zealand (HEPA), January 2020.

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