Ōhakea: Surface water and groundwater monitoring for PFAS, April 2024

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Prepared for:

Amy Lennard
Science Manager

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Prepared by:

Nathan van Maanen
Pattle Delamore Partners Ltd

PATTLE DELAMORE PARTNERS LTD
Level 2, Fonterra Centre
109 Fanshawe Street, Auckland Central 1010
PO Box 9528, Auckland 1149, New Zealand

Office +64 9 **523 6900**
Web **www.pdp.co.nz**

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Kate Leydon
Principal Environmental Officer
New Zealand Defence Force
Linton Military Camp
PALMERSTON NORTH

Dr Huma Saeed
Scientist – Groundwater
Horizons Regional Council
PALMERSTON NORTH

Dear Kate and Huma

ŌHAKEA: SURFACE WATER AND GROUNDWATER MONITORING FOR PFAS, APRIL 2024

1.0 Introduction

Monitoring for per- and polyfluoroalkyl substances (PFAS) concentrations in groundwater and surface water was conducted between 9 and 11 April 2024 in accordance with the RNZAF Base Ōhakea PFAS Investigation: Long Term Monitoring Plan (LTMP) (PDP, 2020a). This is the eighth round of monitoring following the implementation of the LTMP (PDP, 2020a). Previous monitoring rounds, undertaken in October 2020, March 2021, October 2021, March 2022, September 2022, April 2023 and November 2023 are reported in PDP (2020b), PDP (2021), PDP (2022a), PDP (2022b), PDP (2023a), PDP (2023b) and PDP (2024) 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 18 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 Ōhakea ("Ōhakea" 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; PDP, 2023a, PDP 2023b; PDP 2024).

2.0 Methodology

2.1 Sampling Methodology

Sampling was undertaken by PDP field staff between 9 and 11 April 2024. Sampling was undertaken in accordance with the procedures in the draft guidance document Sampling and Analysis of Per- and Poly-fluorinated Substances (Ministry for the Environment (MfE), 2018).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 Ōhakea	MW4	323153	Monitoring Well	Key source area (historic fire training area (FTA)).	09/04/24
	WS1	323085	Tap	Farm bore downgradient of FTA and near site boundary with a long existing monitoring record.	10/04/24
	GW6	-	Well	Open well downgradient of key source areas and historically elevated PFAS concentrations.	10/04/24
	MW6	-	Monitoring Well	Key source area (run-up pit).	09/04/24
	MW9	-	Monitoring Well	Key source area (diversion tank for hangar deluge systems).	09/04/24
	WS2	313096	Tap	North-western plume edge (base drinking water supply).	10/04/24
	GW111.1	323183	Monitoring Well	Downgradient of FTA.	10/04/24
	GW111.2	323185	Monitoring Well	Downgradient of FTA. Deeper well (~40 m) to monitor the vertical extent of PFAS.	10/04/24
	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.	10/04/24

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.	10/04/24
	GW53	-	Tap	Eastern plume edge.	10/04/24
	GW65	323019	Tap	Southern plume edge.	11/04/24
	GW67	323173	Tap	North-eastern plume edge.	Not sampled. Bore has been decommissioned
	GW106	323175	Monitoring Well	Plume is predicted to approach and then encompass the shallow well into the future.	09/04/24
	GW107	323177	Monitoring Well	Act as a sentinel monitoring location e.g., to monitor the predicted maximum lateral edge of the future plume.	11/04/24
	GW108	323179	Monitoring Well	Plume is predicted to approach and then encompass the shallow well into the future.	09/04/24
	GW109	323181	Monitoring Well	Plume is predicted to approach and then encompass the shallow well into the future.	11/04/24
	GW112.1	-	Monitoring Well	Well near the centre of the main plume.	10/04/24
	GW112.2	-	Monitoring Well	Well near the centre of the main plume. Deeper well (~55 m) to monitor the vertical extent of PFAS.	10/04/24

Table 2: Surface Water Monitoring Locations

Location	Rationale	Sampled
SW6	Previous high PFAS concentrations leaving the base.	Not sampled, drain was dry.
SW33	Resurgence of high PFAS concentrations on the Makowhai Stream downstream of the base. Accessible from the road.	9/04/24
SW36	Makowhai Stream just upstream from confluence with the Rangitikei River. To assess the maximum extent of PFAS in the Makowhai Stream.	10/04/24
SW4	Upstream location to assess whether PFAS is present in the Makowhai Stream before entering the base boundary.	10/04/24

2.2 Variations from the Monitoring Plan

As noted in Table 1, bore GW67 has been decommissioned and filled in. Consequently, a sample was unable to be collected.

2.3 Field Measurements

2.3.1 Water Level Measurements

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 April 2024 monitoring round.

The vertical heights of the monitoring wells were surveyed relative to a common datum by Cuttriss Consultants Limited during the November 2023 round to allow for an accurate assessment and comparison of the groundwater levels within each well.

Time series plots of the water level in each of the five wells relative to the surveyed heights of the wells are provided in Appendix B[1]. In summary, the data continues to indicate that there is an upward hydraulic gradient in all monitored wells both for the deeper aquifer (GW111.3 and GW112.2) and the shallow aquifer (GW111.1, GW111.2 and GW112.1). This upward hydraulic gradient was an assumption in the PFAS groundwater model (PDP, 2019) developed for the area. Due to this upward gradient, it is considered unlikely that PFAS compounds present in the shallow aquifer would be able to migrate into the deeper aquifer. It is important to note here however, that groundwater abstraction (e.g., for irrigation) could create localised areas of downward hydraulic gradient.

2.3.2 Field Parameters

Using a YSI ProDSS multi-meter, and in accordance with the draft 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 14.8 mm. The majority of this rain (10.4 mm) fell on two separate days prior to the commencement of sampling (Friday 29 March, 4.7 mm; Thursday 4 April, 5.7 mm). No rain fell during the investigation period. The Rangitikei River and surrounding streams where surface water samples were collected were clear during the sampling round. The stream at SW37 was noted to be slow flowing and the drain at SW6 was observed to be dry and was therefore unable to be sampled.

[1] Due to logger malfunctions, there is some missing data for some of the time periods. The malfunctioning loggers were sent back to the manufacturer (Solinst) for data retrieval. Data was able to be retrieved from the logger in GW111.1, but the data on the logger from GW111.3 was corrupted. Replacement loggers, provided by Solinst, have been installed.

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 draft 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 to Selected Guideline Values

3.1 Selected Guideline Values

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

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 perfluorooctanoic acid (PFOA) and the Sum of Total perfluorooctane sulfonate (PFOS) + perfluorohexane sulfonate (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 Australian and New Zealand Guidelines for Fresh and Marine Water Quality (ANZG) (2018) draft default guideline values (DGVs) for PFOS in freshwater for 99%, 95%, 90% and 80% species protection were updated in May 2023[2]. 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 was released (November 2022) for consultation (HEPA, 2022). 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, the ecological water quality guideline values provided in Table 5 of the NEMP 3.0 (HEPA, 2022) recommend a comparison to the ANZG (formerly ANZECC) exposure scenario for 99% species protection for slightly to moderately disturbed ecosystems. Therefore, the results from the April 2024 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, first being used for comparison in the September 2022 monitoring round. The recently updated draft DGV for 99% species protection for Total PFOS is 0.0091 µg/L[3].

[2] https://www.waterquality.gov.au/anz-guidelines/guideline-values/default/water-quality-toxicants/toxicants/draft-pfos-fresh-2023

[3] The previous draft DGV for 99% species protection for Total PFOS was 0.00023 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 primarily relates to concentrations of total PFOS, total PFHxS, the Sum of Total PFOS + PFHxS and 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 April 2024 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 (April 2024 Sampling Round)

	Core PFAS Compounds (µg/L)		
Location	**Sum of Total PFOS + PFHxS**	**PFOA**	**Total PFOS**
WS1	0.24	0.032	0.055
WS2	0.0073	0.0015	0.0048
MW4	1.6	0.16	1.2
GW6	0.034	0.0036	0.014
MW6	4.4	0.27	2.7
MW9	1.4	0.33	0.71
GW111.1	0.22	0.070	0.14
GW111.2	<0.0010	<0.0010	<0.0010
GW111.3	<0.0010	<0.0010	<0.0010
GW31	0.12	0.019	0.045
GW53	<0.0010	<0.0010	<0.0010
GW65	<0.0010	<0.0010	<0.0010
GW67	not sampled		
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	0.54	0.079	0.24
GW112.2	<0.0010	<0.0010	<0.0010
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 [2]	-	220 µg/L [2]	0.48 µg/L [3]
Ecological Freshwater Guideline 99% ecosystem protection [2]	-	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 April 2024 monitoring round a total of 18 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 seven locations. These were: WS1 (0.24 µg/L), MW4 (1.6 µg/L), MW6 (4.4 µg/L), MW9 (1.4 µg/L), GW111.1 (0.22 µg/L), GW31 (0.12 µg/L) and GW112.1 (0.54 µg/L). None of these wells are currently used for drinking water supply.
- Total PFOS exceeded the ANZG for the protection of 99% of freshwater species (0.0091 µg/L) in eight locations. These were: WS1 (0.055 µg/L), MW4 (1.2 µg/L), GW6 (0.014 µg/L), MW6 (2.7 µg/L), MW9 (0.71 µg/L), GW111.1 (0.14 µg/L), GW31 (0.045 µg/L), and GW112.1 (0.24 µg/L).
- Total PFOS samples exceeded the ANZG for the protection of 95% of freshwater species (0.48 µg/L) at three locations. These were: MW4 (1.2 µg/L), MW6 (2.7 µg/L) and MW9 (0.71 µg/L).
- PFOA was below the selected guideline values for all groundwater samples.
- The core PFAS compounds were detected at concentrations above the laboratory limit of reporting (LOR) but below the relevant guideline values at one location WS2.
- The core PFAS compounds were not reported (i.e., below the laboratory LOR) at nine locations (GW111.2, GW111.3, GW53, GW65, GW106, GW107, GW108, GW109, and GW112.2). Note, there was a minor detection of PFPeA in GW111.2, this is discussed in more detail in Section 4.1.1.

3.2.2 Surface Water

The results of the laboratory analyses for the core PFAS compounds in surface water samples collected in April 2024 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 (April 2024 Sampling Round)

	Core PFAS Compounds (µg/L)		
Location	**Sum of Total PFOS + PFHxS**	**PFOA**	**Total PFOS**
SW4	0.012	0.0038	0.010
SW6	not sampled		
SW33	0.23	0.030	0.14
SW36	0.036	0.0067	0.017
Guideline Values	**Sum of Total PFOS + PFHxS**	**PFOA**	**Total PFOS**
Ecological Freshwater Guideline 95% ecosystem protection [1]	-	220 µg/L [1]	0.48 µg/L [2]
Ecological Freshwater Guideline 99% ecosystem protection [1]	-	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 April 2024 monitoring round four surface water samples were collected. The analytical results are summarised as follows:

- SW6 was unable to be sampled as the drain was dry at the time of the investigation.
- SW4, SW33 and SW36 reported concentrations of total PFOS above the ANZG for the protection of 99% of freshwater species.
- No surface water samples exceed the 95% species protection scenario for total PFOS.
- No surface water samples exceeded the 95% or 99% protection scenario for PFOA.

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 18% 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 April 2024 monitoring round are within the historical ranges previously recorded at these locations. Time series plots showing a comparison of the Sum of Total PFOS + PFHxS over time at select sampling locations are 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 have remained consistent with the previous monitoring round and are all within their historic ranges and well below the spike observed in the April 2023 monitoring round.
- At MW6, concentrations of the core PFAS compounds have shown a continual decreasing trend. Concentrations at this location are the lowest recorded to date.
- At MW9, concentrations of the core PFAS compounds are similar to or lower than those observed in previous monitoring rounds.
- At WS2 and MW4, concentrations of the core PFAS compounds remain within their historical ranges.
- At WS1, concentrations of the core PFAS compounds have shown a gradual increasing trend over the last 4-5 monitoring rounds. The current concentrations are the highest recorded to date.

- This was the seventh monitoring round at GW111.1 and GW111.3 and the eighth round at GW111.2.
  - Concentrations of the core PFAS compounds at GW111.1 have remained consistent with the results from the November 2023 monitoring round and are all within their historic ranges.
  - A minor detection of PFPeA was reported in GW111.2. This is the second time this compound has been detected in GW111.2 (minor detections of PFPeA and PFHxA were reported in the November 2023 sample). No other PFAS compounds were detected during the April 2024 round.
  - All PFAS compounds in GW111.3 were reported below the LOR, which is in agreement with the predicted groundwater conditions at this location. This is consistent with the previous three monitoring rounds.

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, the Sum of Total PFOS and PFHxS was reported above the drinking water standard and is slightly higher than the previous two monitoring rounds, but the results are considered to be consistent with historical results, except September 2022 when all PFAS compounds were reported below the LOR. The result from the September 2022 monitoring round was unexpected but was likely a result of the landowner switching to the new Sanson reticulated water supply prior to sampling.
- This was the seventh monitoring round at GW112.1 and GW112.2.
  - In the shallow well GW112.1 (screened from 3.5 to 9.5 m bgl), the core PFAS compounds have remained consistent with the results from the November 2023 monitoring round and are all within their historical ranges.
  - PFAS compounds in GW112.2 were all reported below the LOR. This is consistent with the results from the last five sampling rounds, and 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 and GW109.
- No PFAS compounds were reported in GW108 during the April 2024 monitoring round. Very low concentrations of PFBA have been reported in GW108 in March 2021, March 2022 and November 2023.

Wells GW53, GW65 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.
- As noted in Section 2.2, sample GW67 was not collected as the groundwater bore has been decommissioned.

A comparison of the sampling results to the PFAS groundwater model (PDP, 2019) developed for the area continues to show relatively good agreement. The April 2024 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). The data from the level loggers installed in the nested wells shows the deeper aquifer has a greater hydraulic head compared to the shallow aquifer which indicates there is an upward hydraulic gradient. This was an assumption of the PFAS groundwater model and would act to limit the migration of any PFAS compounds present in the shallow groundwater down into the deeper aquifer. It is important to note here however, that groundwater abstraction (e.g., for irrigation) could create localised areas of downward hydraulic gradient.

No obvious seasonal or rainfall induced patterns in PFAS concentrations at groundwater sampling locations are evident to date.

4.1.3 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 path[4]. 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[5] 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 eight rounds of sampling are shown (note that there are only seven rounds of data for GW106, GW111.1 and GW112.1 and GW67[5]). As expected, the plot shows the concentration of the sum of PFOS + PFHxS generally decreases with distance away from the Base.

4.2 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, the ANZG 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.

At SW33, the concentration of Total PFOS for the April 2024 round (0.14 µg/L) is the highest recorded concentration since monitoring began. The concentrations of other PFAS compounds in the sample collected from SW33 have also increased relative to recent monitoring rounds and are at or close to the highest levels recorded at this location. Total PFOS has been increasing since March 2022.

The concentrations of the core PFAS compounds in the sample collected from SW36 in April 2024 have decreased relative to recent monitoring rounds and are approaching the lowest recorded concentrations for this location which were reported in March 2022. The March 2021 monitoring round was the first time PFAS compounds were detected at this location.

At SW4, the core PFAS compounds have increased relative to recent monitoring rounds. The concentration of Total PFOS recorded during the April 2024 sampling round is the highest concentration recorded at this location and exceeds the ANZG 99% draft DGV for Total PFOS. This is the first time a sample from SW4 has exceed this guideline value.

SW6 was not able to be sampled during the April 2024 monitoring round as the stream was dry at the time of sampling.

[4] 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] GW67 was unable to be sampled during the current round as the groundwater bore has been decommissioned.

The results from the April 2024 surface water sampling round are generally in agreement with those predicted by the PFAS groundwater model. Comparing the results of Total PFOS in SW36, there is a potential pattern emerging of higher concentrations being recorded in spring compared to autumn. No obvious seasonal or rainfall induced patterns in PFAS concentrations at the other surface water sample locations are evident to date.

5.0 Summary and Recommendations

Monitoring for per- and poly-fluoroalkyl substances (PFAS) in groundwater and surface water was conducted between 9 and 11 April 2024 in accordance with the RNZAF Base Ohakea PFAS Investigation: Long Term Monitoring Plan (PDP, 2020a). Eighteen groundwater and three surface water samples were collected from locations on, and adjacent to the base. In summary:

- The results from the April 2024 monitoring round are generally consistent with the results from previous monitoring rounds.
- PFOS was detected above the applicable guideline values in all three downgradient surface water samples and concentrations of PFOS were the highest recorded at SW4 and SW33. The reason(s) for the increases are unknown however as this is the first time PFOS has been recorded at these levels and concentrations have fluctuated in these locations historically, no additional follow up is recommended at this stage. If future results indicate an increasing trend, then this will be reassessed.
- PFAS has been detected at concentrations above the guideline values in eight groundwater samples collected in April 2024:
  - Two off-base groundwater samples (GW31 and GW112.1) exceeded the NZ Drinking Water Standard (these wells are not currently being used for drinking water supply) and the ANZG ecological guideline value for the protection of freshwater species at the 99% level.
  - Six on-base groundwater samples (WS1, MW4, GW6, MW6, MW9, and GW111.1) exceeded the ANZG for the protection of freshwater species at the 99% level. Five of these samples (WS1, MW4, MW6, MW9, and GW111.1) also exceeded the NZ Drinking Water Standard (none of the wells are used for drinking water supply). Three of these samples (MW4, MW6, and MW9) also exceeded the ANZG for the protection of freshwater species at the 95% level.
- Concentrations of the core PFAS compounds at GW6 have remained consistent from the previous monitoring round and well below the spike observed in the April 2023 monitoring round.
- A minor detection of PFPeA was reported in the April 2024 sample from GW111.2. Minor detections of PFPeA and PFHxA were reported in the November 2023 sample from GW111.2. This was the first time these compounds have been detected in this location and it is uncertain if these detections are representative of the groundwater conditions.

The data retrieved from the level loggers installed in the nested wells continues to show that the deeper aquifer has a greater hydraulic head compared to the shallow aquifer indicating an upward hydraulic gradient. This was an assumption of the PFAS groundwater model and would act to limit downward migration of any PFAS compounds from the shallow groundwater into the deeper aquifer.

No changes to the LTMP are recommended at this time.

6.0 References

ANZG, 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

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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. 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 April 2024 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.

Yours faithfully

PATTLE DELAMORE PARTNERS LIMITED

Prepared by

pp

Nathan van Maanen

Environmental Scientist

Reviewed by

James Conway

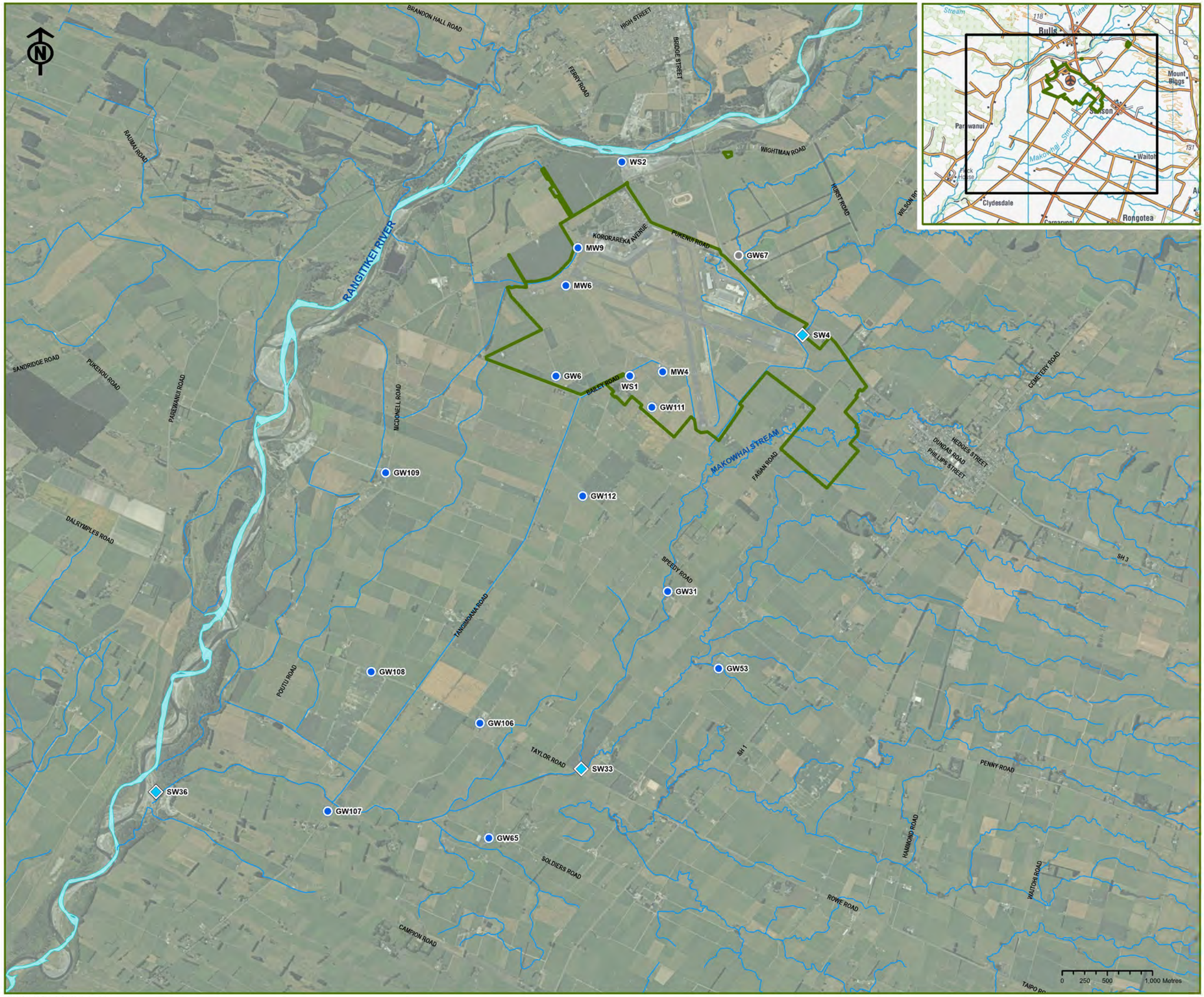
Service Leader – Contaminated Land

Approved by

Nerena Rhodes

Technical Director – Contaminated Land

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



TE OPE KĀTUA O AOTEAROA
DEFENCE FORCE

horizons
REGIONAL COUNCIL

KEY:

Sample Type:

- Groundwater
- Surface water
- Groundwater well destroyed/decommissioned
- RNZAF Base Ohakea Boundary
- River/Stream/Drain

SOURCE:
Aerial imagery (flown 2021-2022) 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	JUN24
	REVISION HISTORY	DATE

pdp

PROJECT NAME:

RNZAF BASE OHAKEA
PFAS INVESTIGATION:
LONG TERM
MONITORING PLAN

FIGURE TITLE:

SAMPLE LOCATION PLAN
APRIL 2024

SCALE:	FIGURE NO.:	ISSUE NO.:
1:40,000 (A3)	1	A

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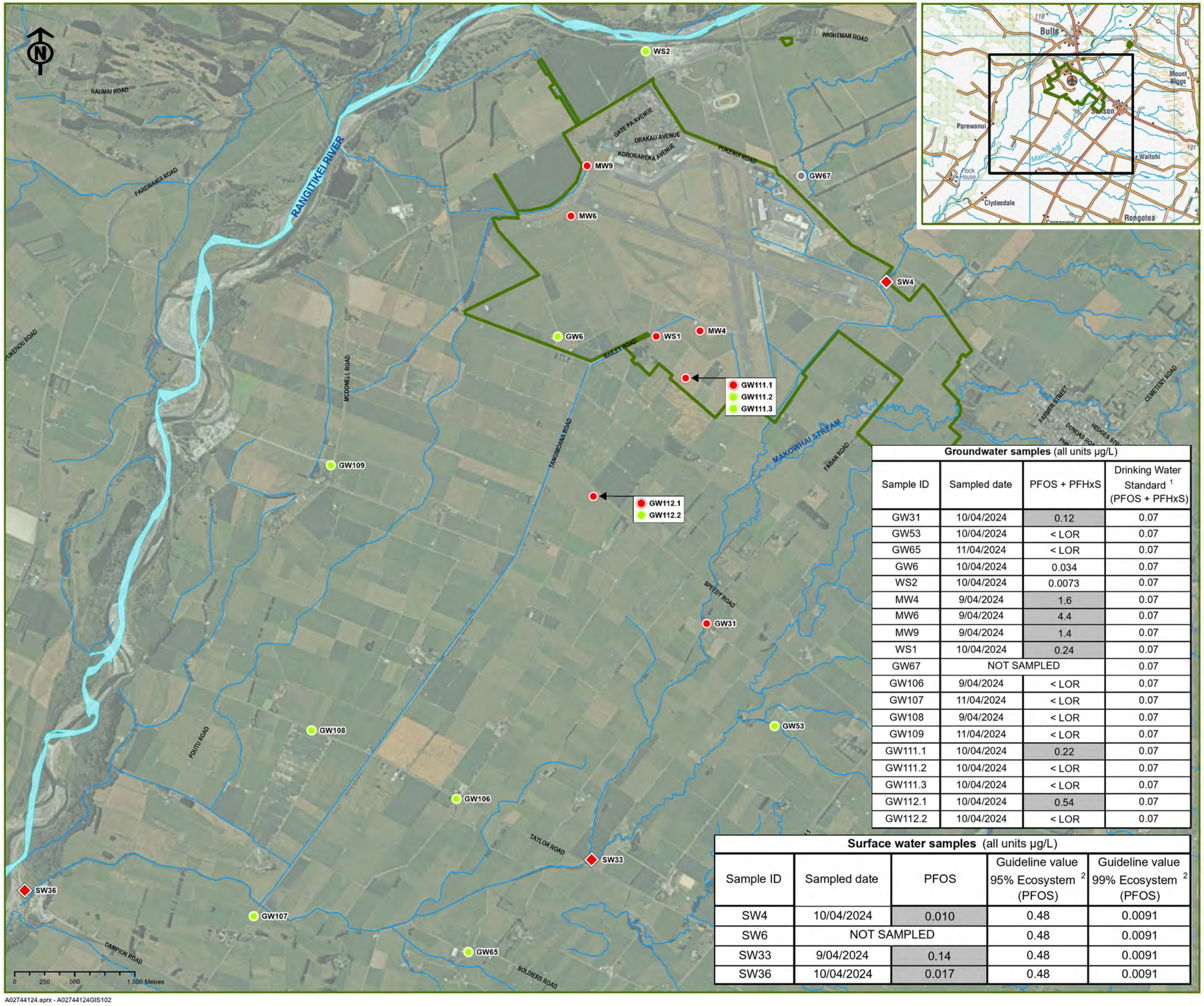

Groundwater samples (all units µg/L)

Sample ID	Sampled date	PFOS + PFHxS	Drinking Water Standard [1] (PFOS + PFHxS)
GW31	10/04/2024	0.12	0.07
GW53	10/04/2024	< LOR	0.07
GW65	11/04/2024	< LOR	0.07
GW6	10/04/2024	0.034	0.07
WS2	10/04/2024	0.0073	0.07
MW4	9/04/2024	1.6	0.07
MW6	9/04/2024	4.4	0.07
MW9	9/04/2024	1.4	0.07
WS1	10/04/2024	0.24	0.07
GW67	NOT SAMPLED		0.07
GW106	9/04/2024	< LOR	0.07
GW107	11/04/2024	< LOR	0.07
GW108	9/04/2024	< LOR	0.07
GW109	11/04/2024	< LOR	0.07
GW111.1	10/04/2024	0.22	0.07
GW111.2	10/04/2024	< LOR	0.07
GW111.3	10/04/2024	< LOR	0.07
GW112.1	10/04/2024	0.54	0.07
GW112.2	10/04/2024	< LOR	0.07

Surface water samples (all units µg/L)

Sample ID	Sampled date	PFOS	Guideline value 95% Ecosystem [2] (PFOS)	Guideline value 99% Ecosystem [2] (PFOS)
SW4	10/04/2024	0.010	0.48	0.0091
SW6	NOT SAMPLED		0.48	0.0091
SW33	9/04/2024	0.14	0.48	0.0091
SW36	10/04/2024	0.017	0.48	0.0091

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horizons REGIONAL COUNCIL

MAP KEY:

Above relevant guidelines:
- Groundwater
- Surface water

Below relevant guidelines:
- Groundwater

Not sampled
- Groundwater well destroyed/decommissioned
- RNZAF Base Ohakea Boundary
- River/Stream/Drain

TABLE KEY:
- <LOR — Below laboratory limit of reporting
- Concentration exceeds relevant Guideline/Standard

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 2021-2022) 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.

NO	REVISION HISTORY	DATE
A	FINAL	JUN24

pdp

PROJECT NAME:

RNZAF BASE OHAKEA PFAS INVESTIGATION: LONG TERM MONITORING PLAN

FIGURE TITLE:

SAMPLE EXCEEDANCES APRIL 2024

SCALE:	FIGURE NO.:	ISSUE NO.:
1:30,000 (A3)	2	A

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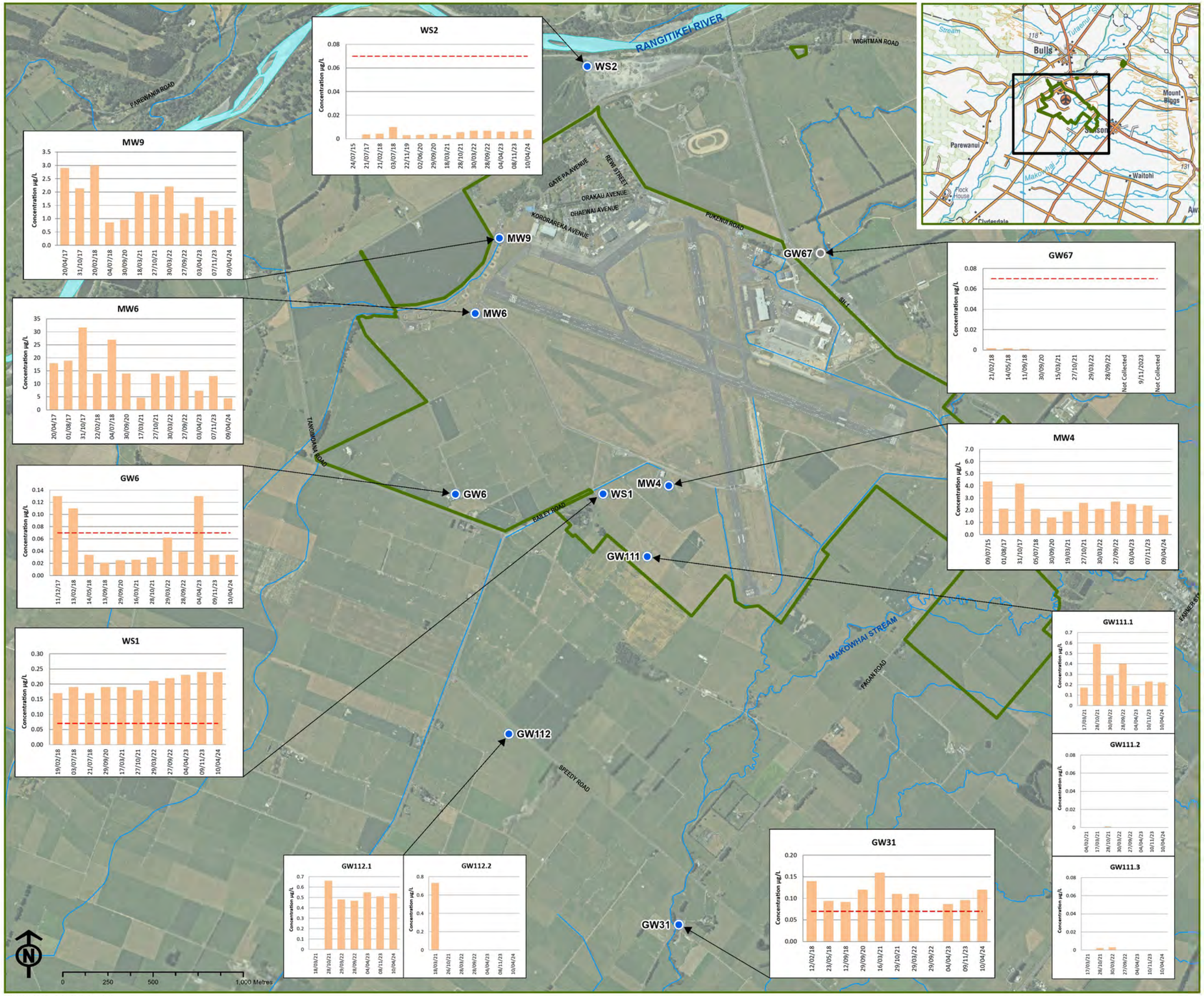

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DEFENCE FORCE

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REGIONAL COUNCIL

MAP KEY:

Sample Type:

- Groundwater
- Groundwater well destroyed/decommissioned
- RNZAF Base Ohakea Boundary
- River/Stream/Drain

CHART KEY:

- Sum of PFOS+PFHxS (µg/L)
- NZ Drinking Water Standards (2022) for the sum of PFOS+PFHxS (µg/L)

NOTE:
1. Only sample locations where Sum of PFOS+PFHxS (µg/L) were above the Limit of Reporting (LOR) and 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.

3. Monitoring well GW67 has been destroyed/decommissioned as of March 2024 monitoring round

SOURCE:
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Cadastral and Topographic information supplied by LINZ.

NO	REVISION HISTORY	DATE
A	FINAL	JUN24

pdp

PROJECT NAME:

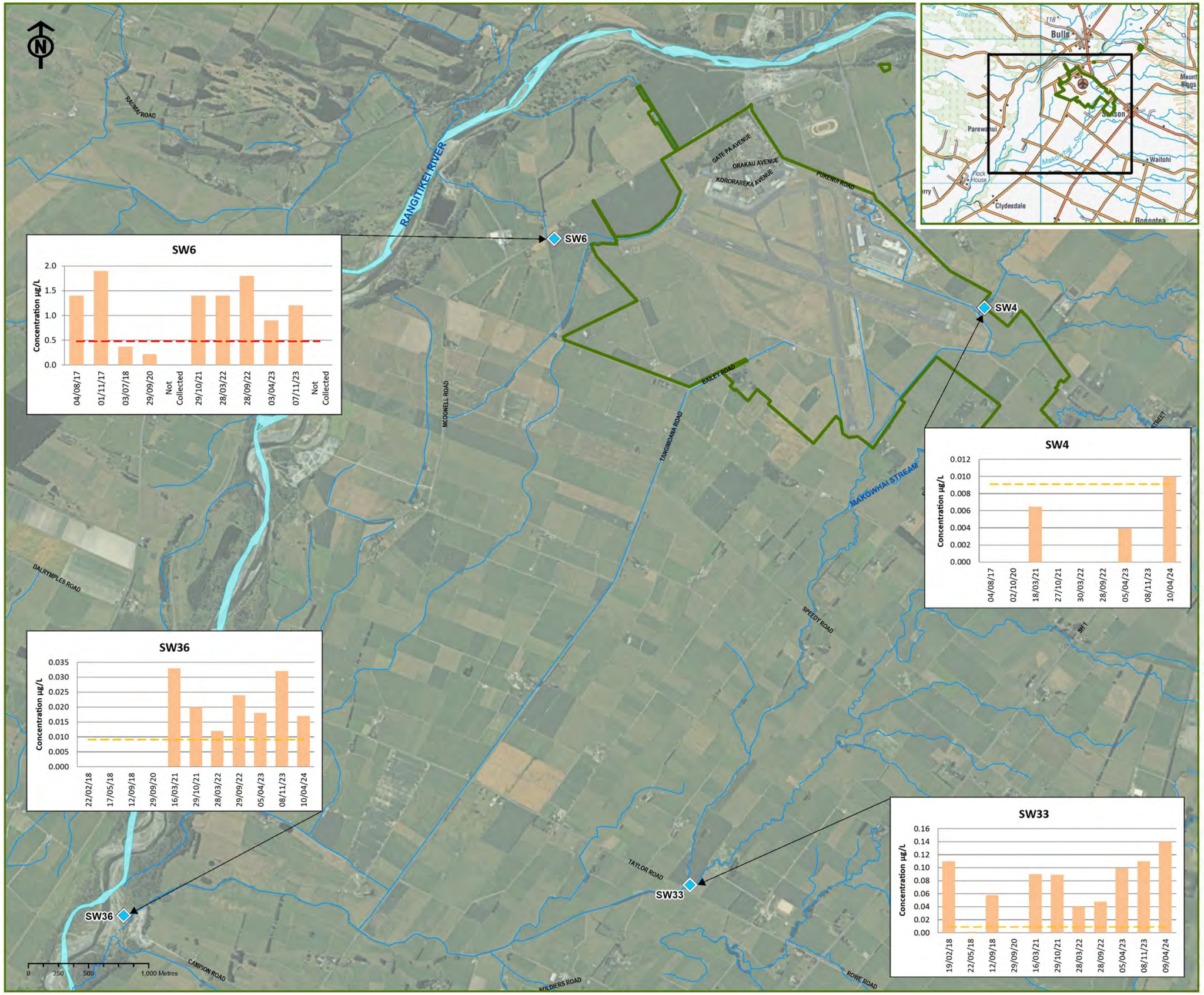
RNZAF BASE OHAKEA PFAS INVESTIGATION: LONG TERM MONITORING PLAN

FIGURE TITLE:

GROUNDWATER CONCENTRATIONS OF PFOS+PFHxS OVER TIME FOR SELECT LOCATIONS APRIL 2024

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

A02744124.aprx - A02744124GIS103



TE OPE KĀTUA O AOTEAROA
DEFENCE FORCE

horizons
REGIONAL COUNCIL

MAP KEY:

Sample Type:

- Surface water
- RNZAF Base Ohakea Boundary
- River/Stream/Drain

CHART KEY:

- PFOS (µg/L)
- ANZG 95% Draft default guideline value for total PFOS (µg/L)
- ANZG 99% Draft default guideline value for total PFOS (µg/L)

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

SOURCE:
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Cadastral and Topographic information supplied by LINZ.

NO	REVISION HISTORY	DATE
A	FINAL	JUN24

pdp

PROJECT NAME:

RNZAF BASE OHAKEA
PFAS INVESTIGATION:
LONG TERM
MONITORING PLAN

FIGURE TITLE:

SURFACE WATER
CONCENTRATIONS OF
PFOS OVER TIME
FOR SELECT LOCATIONS
APRIL 2024

SCALE:	FIGURE NO.:	ISSUE NO.:
1:30,000 (A3)	3B	A

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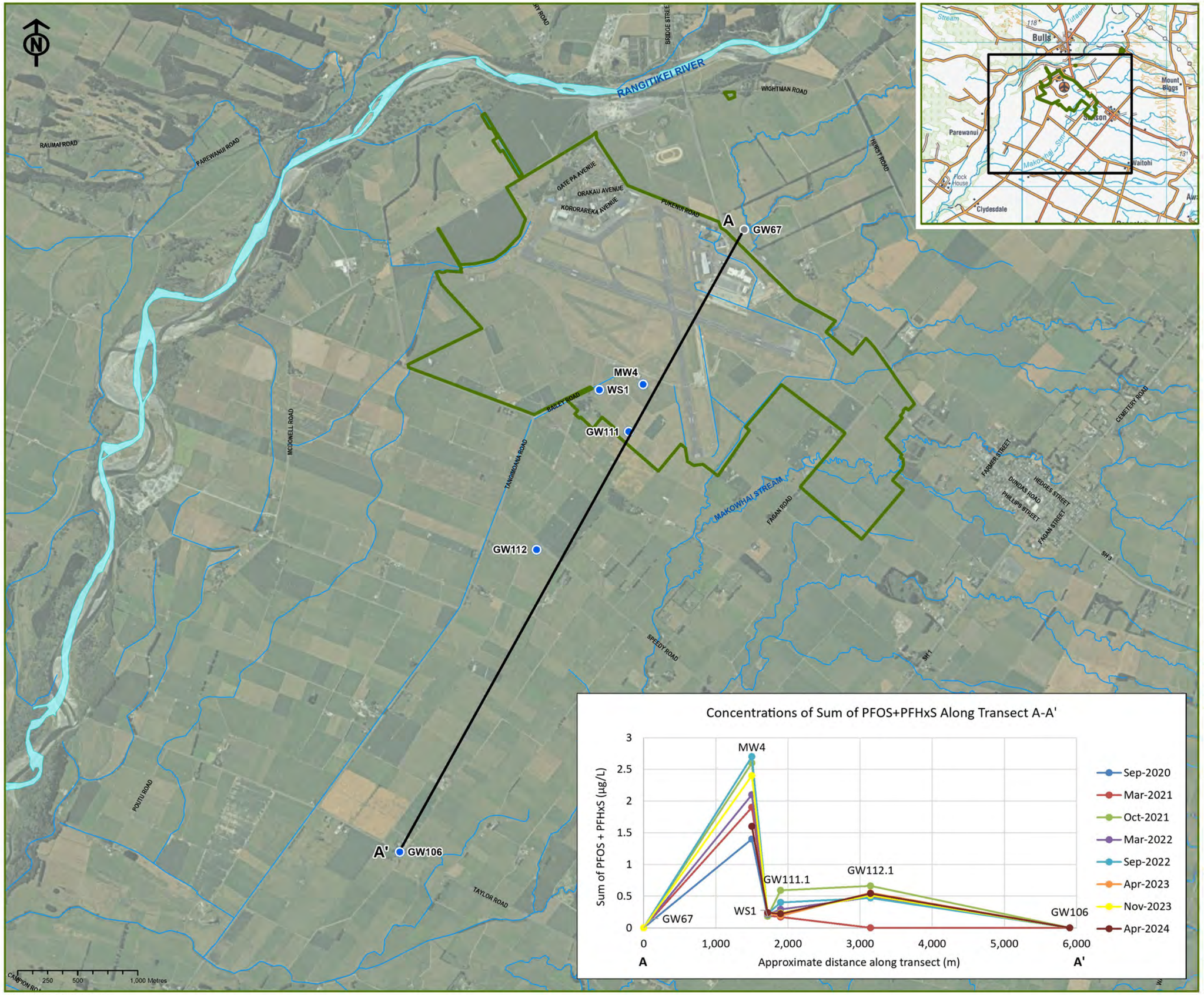

TE OPE KĀTUA O AOTEAROA
DEFENCE FORCE

horizons
REGIONAL COUNCIL

MAP KEY:

Sample Type:

- Groundwater
- Groundwater well destroyed/decommissioned
- RNZAF Base Ohakea Boundary
- River/Stream/Drain

SOURCE:
Aerial imagery (flown 2021-2022) 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.

NO	REVISION HISTORY	DATE
A	FINAL	JUN24

pdp

PROJECT NAME:

RNZAF BASE OHAKEA
PFAS INVESTIGATION:
LONG TERM
MONITORING PLAN

FIGURE TITLE:

GROUNDWATER
TRANSECT LINE

SCALE:	FIGURE NO.:	ISSUE NO.:
1:30,000 (A3)	4	A

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Appendix A: Laboratory Results

AsureQuality Limited | 1C Quadrant Drive | Waiwhetu | Lower Hutt 5010 | Wellington | New Zealand
PO Box 31242 | Lower Hutt 5040 | Wellington | New Zealand
t. +64 4 570 8800 | e. cswellington@asurequality.com | w. www.asurequality.com

Certificate of Analysis

Submission Reference: A02744124
Final Report

NZDF ESDAT
Pattle Delamore Partners Limited
P O Box 9528
Auckland 1149
New Zealand

PO Number: OHA_PFAS

Report Issued: 09-May-2024 **AsureQuality Reference: 24-103826** **Sample(s) Received:** 12-Apr-2024 08:15

Testing Period: 15-Apr-2024 to 09-May-2024
Date of analysis is available on request.

Results

The tests were performed on the samples as received.

Customer Sample Name: OHA_GW6_100424 **Lab ID:** 24-103826-1

Sample Condition: Acceptable **Sampled Date**: 10-Apr-2024

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	0.0020	µg/L	AsureQuality Method (LC-MS/MS)
PFPeS	0.0017	µg/L	AsureQuality Method (LC-MS/MS)
di-PFHxS (1)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
mono-PFHxS (1)	0.0029	µg/L	AsureQuality Method (LC-MS/MS)
L-PFHxS (1)	0.017	µg/L	AsureQuality Method (LC-MS/MS)
Total PFHxS (3)	0.020	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)	0.0077	µg/L	AsureQuality Method (LC-MS/MS)
L-PFOS (5)	0.0066	µg/L	AsureQuality Method (LC-MS/MS)
Total PFOS (7)	0.014	µg/L	AsureQuality Method (LC-MS/MS)
Sum PFHxS+PFOS (1)	0.034	µg/L	AsureQuality Method (LC-MS/MS)
PFNS	<0.0020	µg/L	AsureQuality Method (LC-MS/MS)
PFDS	NR	µg/L	AsureQuality Method (LC-MS/MS)
PFECHS	<0.0020	µg/L	AsureQuality Method (LC-MS/MS)
Perfluoroalkylcarboxylic acids			
PFBA	0.011	µg/L	AsureQuality Method (LC-MS/MS)
PFPeA	0.0078	µg/L	AsureQuality Method (LC-MS/MS)
PFHxA	0.030	µg/L	AsureQuality Method (LC-MS/MS)
PFHpA	0.0041	µg/L	AsureQuality Method (LC-MS/MS)
PFOA	0.0036	µg/L	AsureQuality Method (LC-MS/MS)
PFNA	0.0013	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)

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	NR	µg/L	AsureQuality Method (LC-MS/MS)
Perfluorooctanesulfonamides			
PFOSA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
NEtFOSA-M	NR	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)
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	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)	0.038	µg/L	AsureQuality Method (LC-MS/MS)
FHpPA (7:3FTA)	NR	µg/L	AsureQuality Method (LC-MS/MS)
Miscellaneous			
F-53B (major)	<0.0020	µg/L	AsureQuality Method (LC-MS/MS)
F-53B (minor)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Sum F-53B	<0.0020	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	127	%	AsureQuality Method (LC-MS/MS)
M3PFHxS	93	%	AsureQuality Method (LC-MS/MS)
M8PFOS	103	%	AsureQuality Method (LC-MS/MS)
M4PFBA	62	%	AsureQuality Method (LC-MS/MS)
M5PFPeA	61	%	AsureQuality Method (LC-MS/MS)
M5PFHxA	87	%	AsureQuality Method (LC-MS/MS)
MPFHpA	78	%	AsureQuality Method (LC-MS/MS)
M8PFOA	81	%	AsureQuality Method (LC-MS/MS)
M9PFNA	68	%	AsureQuality Method (LC-MS/MS)
M6PFDA	87	%	AsureQuality Method (LC-MS/MS)
M7PFUnDA	103	%	AsureQuality Method (LC-MS/MS)
MPFDoDA	325 (R)	%	AsureQuality Method (LC-MS/MS)
MPFTeDA	1965 (R)	%	AsureQuality Method (LC-MS/MS)
MPFOSA	97	%	AsureQuality Method (LC-MS/MS)
DNEtFOSA	147	%	AsureQuality Method (LC-MS/MS)
DNMeFOSA	292 (R)	%	AsureQuality Method (LC-MS/MS)
DNEtFOSAA	102	%	AsureQuality Method (LC-MS/MS)
DNMeFOSAA	84	%	AsureQuality Method (LC-MS/MS)
DNEtFOSE	196 (R)	%	AsureQuality Method (LC-MS/MS)
DNMeFOSE	137	%	AsureQuality Method (LC-MS/MS)

Test	Result	Unit	Method Reference
M4:2FTS	286 (R)	%	AsureQuality Method (LC-MS/MS)
M6:2FTS	255 (R)	%	AsureQuality Method (LC-MS/MS)
M8:2FTS	134	%	AsureQuality Method (LC-MS/MS)
M3HFPO-DA	87	%	AsureQuality Method (LC-MS/MS)

R = Recovery outside method limits

Customer Sample Name: OHA_GW6A_100424 **Lab ID:** 24-103826-2

Sample Condition: Acceptable **Sampled Date**: 10-Apr-2024

Test	Result	Unit	Method Reference
Poly- and Perfluorinated Alkyl Substances (PFAS) in Potable Water			
Perfluoroalkylsulfonic acids			
PFPrS	0.0093	µg/L	AsureQuality Method (LC-MS/MS)
PFBS	0.026	µg/L	AsureQuality Method (LC-MS/MS)
PFPeS	0.022	µg/L	AsureQuality Method (LC-MS/MS)
di-PFHxS (1)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
mono-PFHxS (1)	0.035	µg/L	AsureQuality Method (LC-MS/MS)
L-PFHxS (1)	0.15	µg/L	AsureQuality Method (LC-MS/MS)
Total PFHxS (3)	0.18	µg/L	AsureQuality Method (LC-MS/MS)
PFHpS	0.0027	µg/L	AsureQuality Method (LC-MS/MS)
di-PFOS (5)	0.0035	µg/L	AsureQuality Method (LC-MS/MS)
mono-PFOS (5)	0.025	µg/L	AsureQuality Method (LC-MS/MS)
L-PFOS (5)	0.011	µg/L	AsureQuality Method (LC-MS/MS)
Total PFOS (7)	0.040	µg/L	AsureQuality Method (LC-MS/MS)
Sum PFHxS+PFOS (1)	0.22	µg/L	AsureQuality Method (LC-MS/MS)
PFNS	<0.0020	µg/L	AsureQuality Method (LC-MS/MS)
PFDS	NR	µg/L	AsureQuality Method (LC-MS/MS)
PFECHS	<0.0020	µg/L	AsureQuality Method (LC-MS/MS)
Perfluoroalkylcarboxylic acids			
PFBA	0.024	µg/L	AsureQuality Method (LC-MS/MS)
PFPeA	0.11	µg/L	AsureQuality Method (LC-MS/MS)
PFHxA	0.087	µg/L	AsureQuality Method (LC-MS/MS)
PFHpA	0.036	µg/L	AsureQuality Method (LC-MS/MS)
PFOA	0.027	µg/L	AsureQuality Method (LC-MS/MS)
PFNA	0.0048	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	NR	µg/L	AsureQuality Method (LC-MS/MS)
Perfluorooctanesulfonamides			
PFOSA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
NEtFOSA-M	NR	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)
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)

Test	Result	Unit	Method Reference
Telomere Sulfonic acids			
4:2 FTS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
6:2 FTS	0.031	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)	NR	µg/L	AsureQuality Method (LC-MS/MS)
Miscellaneous			
F-53B (major)	<0.0020	µg/L	AsureQuality Method (LC-MS/MS)
F-53B (minor)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Sum F-53B	<0.0020	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	115	%	AsureQuality Method (LC-MS/MS)
M3PFHxS	95	%	AsureQuality Method (LC-MS/MS)
M8PFOS	101	%	AsureQuality Method (LC-MS/MS)
M4PFBA	97	%	AsureQuality Method (LC-MS/MS)
M5PFPeA	97	%	AsureQuality Method (LC-MS/MS)
M5PFHxA	103	%	AsureQuality Method (LC-MS/MS)
MPFHpA	95	%	AsureQuality Method (LC-MS/MS)
M8PFOA	100	%	AsureQuality Method (LC-MS/MS)
M9PFNA	79	%	AsureQuality Method (LC-MS/MS)
M6PFDA	99	%	AsureQuality Method (LC-MS/MS)
M7PFUnDA	103	%	AsureQuality Method (LC-MS/MS)
MPFDoDA	335 (R)	%	AsureQuality Method (LC-MS/MS)
MPFTeDA	558 (R)	%	AsureQuality Method (LC-MS/MS)
MPFOSA	121	%	AsureQuality Method (LC-MS/MS)
DNEtFOSA	176 (R)	%	AsureQuality Method (LC-MS/MS)
DNMeFOSA	333 (R)	%	AsureQuality Method (LC-MS/MS)
DNEtFOSAA	99	%	AsureQuality Method (LC-MS/MS)
DNMeFOSAA	84	%	AsureQuality Method (LC-MS/MS)
DNEtFOSE	233 (R)	%	AsureQuality Method (LC-MS/MS)
DNMeFOSE	198 (R)	%	AsureQuality Method (LC-MS/MS)
M4:2FTS	99	%	AsureQuality Method (LC-MS/MS)
M6:2FTS	118	%	AsureQuality Method (LC-MS/MS)
M8:2FTS	73	%	AsureQuality Method (LC-MS/MS)
M3HFPO-DA	103	%	AsureQuality Method (LC-MS/MS)

R = Recovery outside method limits

Customer Sample Name: Duplicate of 24-103826-2A **Lab ID:** 24-103826-3

Sample Description: OHA_GW6A_100424 Duplicate

Sample Condition: Acceptable **Sampled Date**: 10-Apr-2024

Test	Result	Unit	Method Reference
Poly- and Perfluorinated Alkyl Substances (PFAS) in Potable Water			
Perfluoroalkylsulfonic acids			
PFPrS	0.0095	µg/L	AsureQuality Method (LC-MS/MS)
PFBS	0.024	µg/L	AsureQuality Method (LC-MS/MS)

Test	Result	Unit	Method Reference
PFPeS	0.022	µg/L	AsureQuality Method (LC-MS/MS)
di-PFHxS (1)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
mono-PFHxS (1)	0.036	µg/L	AsureQuality Method (LC-MS/MS)
L-PFHxS (1)	0.15	µg/L	AsureQuality Method (LC-MS/MS)
Total PFHxS (3)	0.19	µg/L	AsureQuality Method (LC-MS/MS)
PFHpS	0.0027	µg/L	AsureQuality Method (LC-MS/MS)
di-PFOS (5)	0.0031	µg/L	AsureQuality Method (LC-MS/MS)
mono-PFOS (5)	0.020	µg/L	AsureQuality Method (LC-MS/MS)
L-PFOS (5)	0.0084	µg/L	AsureQuality Method (LC-MS/MS)
Total PFOS (7)	0.032	µg/L	AsureQuality Method (LC-MS/MS)
Sum PFHxS+PFOS (1)	0.22	µg/L	AsureQuality Method (LC-MS/MS)
PFNS	<0.0020	µg/L	AsureQuality Method (LC-MS/MS)
PFDS	NR	µg/L	AsureQuality Method (LC-MS/MS)
PFECHS	<0.0020	µg/L	AsureQuality Method (LC-MS/MS)
Perfluoroalkylcarboxylic acids			
PFBA	0.024	µg/L	AsureQuality Method (LC-MS/MS)
PFPeA	0.11	µg/L	AsureQuality Method (LC-MS/MS)
PFHxA	0.087	µg/L	AsureQuality Method (LC-MS/MS)
PFHpA	0.037	µg/L	AsureQuality Method (LC-MS/MS)
PFOA	0.028	µg/L	AsureQuality Method (LC-MS/MS)
PFNA	0.0045	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	NR	µg/L	AsureQuality Method (LC-MS/MS)
Perfluorooctanesulfonamides			
PFOSA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
NEtFOSA-M	NR	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)
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	0.032	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)	NR	µg/L	AsureQuality Method (LC-MS/MS)
Miscellaneous			
F-53B (major)	<0.0020	µg/L	AsureQuality Method (LC-MS/MS)
F-53B (minor)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Sum F-53B	<0.0020	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	119	%	AsureQuality Method (LC-MS/MS)
M3PFHxS	94	%	AsureQuality Method (LC-MS/MS)
M8PFOS	110	%	AsureQuality Method (LC-MS/MS)
M4PFBA	96	%	AsureQuality Method (LC-MS/MS)
M5PFPeA	101	%	AsureQuality Method (LC-MS/MS)
M5PFHxA	101	%	AsureQuality Method (LC-MS/MS)
MPFHpA	94	%	AsureQuality Method (LC-MS/MS)
M8PFOA	98	%	AsureQuality Method (LC-MS/MS)
M9PFNA	80	%	AsureQuality Method (LC-MS/MS)
M6PFDA	106	%	AsureQuality Method (LC-MS/MS)
M7PFUnDA	110	%	AsureQuality Method (LC-MS/MS)
MPFDoDA	293 (R)	%	AsureQuality Method (LC-MS/MS)
MPFTeDA	867 (R)	%	AsureQuality Method (LC-MS/MS)
MPFOSA	146	%	AsureQuality Method (LC-MS/MS)
DNEtFOSA	169 (R)	%	AsureQuality Method (LC-MS/MS)
DNMeFOSA	224 (R)	%	AsureQuality Method (LC-MS/MS)
DNEtFOSAA	100	%	AsureQuality Method (LC-MS/MS)
DNMeFOSAA	78	%	AsureQuality Method (LC-MS/MS)
DNEtFOSE	362 (R)	%	AsureQuality Method (LC-MS/MS)
DNMeFOSE	247 (R)	%	AsureQuality Method (LC-MS/MS)
M4:2FTS	94	%	AsureQuality Method (LC-MS/MS)
M6:2FTS	112	%	AsureQuality Method (LC-MS/MS)
M8:2FTS	75	%	AsureQuality Method (LC-MS/MS)
M3HFPO-DA	100	%	AsureQuality Method (LC-MS/MS)

R = Recovery outside method limits

QC Results

Blank

Relates to sample(s) 24-103826-1, 24-103826-2, 24-103826-3

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)
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)

Test	Result	Unit	Method Reference
PFNS	<0.0020	µg/L	AsureQuality Method (LC-MS/MS)
PFDS	NR	µg/L	AsureQuality Method (LC-MS/MS)
PFECHS	<0.0020	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	NR	µg/L	AsureQuality Method (LC-MS/MS)
Perfluorooctanesulfonamides			
PFOSA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
NEtFOSA-M	NR	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)
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	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)	NR	µg/L	AsureQuality Method (LC-MS/MS)
Miscellaneous			
F-53B (major)	<0.0020	µg/L	AsureQuality Method (LC-MS/MS)
F-53B (minor)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Sum F-53B	<0.0020	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	100	%	AsureQuality Method (LC-MS/MS)
M8PFOS	100	%	AsureQuality Method (LC-MS/MS)
M4PFBA	100	%	AsureQuality Method (LC-MS/MS)
M5PFPeA	100	%	AsureQuality Method (LC-MS/MS)

Test	Result	Unit	Method Reference
M5PFHxA	100	%	AsureQuality Method (LC-MS/MS)
MPFHpA	100	%	AsureQuality Method (LC-MS/MS)
M8PFOA	100	%	AsureQuality Method (LC-MS/MS)
M9PFNA	100	%	AsureQuality Method (LC-MS/MS)
M6PFDA	100	%	AsureQuality Method (LC-MS/MS)
M7PFUnDA	100	%	AsureQuality Method (LC-MS/MS)
MPFDoDA	100	%	AsureQuality Method (LC-MS/MS)
MPFTeDA	100	%	AsureQuality Method (LC-MS/MS)
MPFOSA	100	%	AsureQuality Method (LC-MS/MS)
DNEtFOSA	100	%	AsureQuality Method (LC-MS/MS)
DNMeFOSA	100	%	AsureQuality Method (LC-MS/MS)
DNEtFOSAA	100	%	AsureQuality Method (LC-MS/MS)
DNMeFOSAA	100	%	AsureQuality Method (LC-MS/MS)
DNEtFOSE	100	%	AsureQuality Method (LC-MS/MS)
DNMeFOSE	100	%	AsureQuality Method (LC-MS/MS)
M4:2FTS	100	%	AsureQuality Method (LC-MS/MS)
M6:2FTS	100	%	AsureQuality Method (LC-MS/MS)
M8:2FTS	100	%	AsureQuality Method (LC-MS/MS)
M3HFPO-DA	100	%	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
PFPeS	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
PFPeA	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	NR µg/L
Perfluorooctanesulfonamides	
PFOSA	0.0010 µg/L
NEtFOSA-M	NR 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	NR µg/L
Telomere Carboxylic acids	
FPrPA (3:3FTA)	0.0010 µg/L
FPePA (5:3FTA)	0.0010 µg/L

FHpPA (7:3FTA)	NR 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	
PFPrS	Perfluoro-1-propanesulfonic acid
PFBS	Perfluoro-1-butanesulfonic acid
PFPeS	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 Perfluorooctanesulfonic acid
PFNS	Perfluoro-1-nonanesulfonic acid
PFDS	Perfluoro-1-decanesulfonic acid
PFECHS	Perfluoro-4-ethylcyclohexanesulfonic acid
Perfluoroalkylcarboxylic acids	
PFBA	Perfluoro-n-butanoic acid
PFPeA	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
Perfluorooctanesulfonamides	
PFOSA	Perfluoro-1-octanesulfonamide
NEtFOSA-M	N-ethylperfluoro-1-octanesulfonamide
NMeFOSA-M	N-methylperfluoro-1-octanesulfonamide
Perfluorooctanesulfonamidoacetic acids	
NEtFOSAA	N-ethylperfluoro-1-octanesulfonamidoacetic acid
NMeFOSAA	N-methylperfluoro-1-octanesulfonamidoacetic acid
Perfluorooctanesulfonamidoethanols	
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-chloroeicosafluoro-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

AsureQuality Limited | 1C Quadrant Drive | Waiwhetu | Lower Hutt 5010 | Wellington | New Zealand
PO Box 31242 | Lower Hutt 5040 | Wellington | New Zealand
t. +64 4 570 8800 | e. cswellington@asurequality.com | w. www.asurequality.com

Certificate of Analysis

Submission Reference: A02744125
Final Report

NZDF ESDAT
Pattle Delamore Partners Limited
P O Box 9528
Auckland 1149
New Zealand

PO Number: OHA_PFAS

Report Issued: 09-May-2024 **AsureQuality Reference: 24-103818** **Sample(s) Received:** 12-Apr-2024 08:15

Testing Period: 15-Apr-2024 to 09-May-2024
Date of analysis is available on request.

Results

The tests were performed on the samples as received.

Customer Sample Name: OHA_GW31_100424 **Lab ID:** 24-103818-1

Sample Condition: Acceptable **Sampled Date**: 10-Apr-2024

Test	Result	Unit	Method Reference
Poly- and Perfluorinated Alkyl Substances (PFAS) in Potable Water			
Perfluoroalkylsulfonic acids			
PFPrS	0.0037	µg/L	AsureQuality Method (LC-MS/MS)
PFBS	0.0099	µg/L	AsureQuality Method (LC-MS/MS)
PFPeS	0.0077	µg/L	AsureQuality Method (LC-MS/MS)
di-PFHxS (1)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
mono-PFHxS (1)	0.015	µg/L	AsureQuality Method (LC-MS/MS)
L-PFHxS (1)	0.062	µg/L	AsureQuality Method (LC-MS/MS)
Total PFHxS (3)	0.077	µg/L	AsureQuality Method (LC-MS/MS)
PFHpS	0.0013	µg/L	AsureQuality Method (LC-MS/MS)
di-PFOS (5)	0.0031	µg/L	AsureQuality Method (LC-MS/MS)
mono-PFOS (5)	0.028	µg/L	AsureQuality Method (LC-MS/MS)
L-PFOS (5)	0.014	µg/L	AsureQuality Method (LC-MS/MS)
Total PFOS (7)	0.045	µg/L	AsureQuality Method (LC-MS/MS)
Sum PFHxS+PFOS (1)	0.12	µg/L	AsureQuality Method (LC-MS/MS)
PFNS	<0.0020	µg/L	AsureQuality Method (LC-MS/MS)
PFDS	NR	µg/L	AsureQuality Method (LC-MS/MS)
PFECHS	<0.0020	µg/L	AsureQuality Method (LC-MS/MS)
Perfluoroalkylcarboxylic acids			
PFBA	0.052	µg/L	AsureQuality Method (LC-MS/MS)
PFPeA	0.17	µg/L	AsureQuality Method (LC-MS/MS)
PFHxA	0.11	µg/L	AsureQuality Method (LC-MS/MS)
PFHpA	0.038	µg/L	AsureQuality Method (LC-MS/MS)
PFOA	0.019	µg/L	AsureQuality Method (LC-MS/MS)
PFNA	0.0052	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)

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	NR	µg/L	AsureQuality Method (LC-MS/MS)
Perfluorooctanesulfonamides			
PFOSA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
NEtFOSA-M	NR	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)
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	0.0042	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)	NR	µg/L	AsureQuality Method (LC-MS/MS)
Miscellaneous			
F-53B (major)	<0.0020	µg/L	AsureQuality Method (LC-MS/MS)
F-53B (minor)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Sum F-53B	<0.0020	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	80	%	AsureQuality Method (LC-MS/MS)
M8PFOS	95	%	AsureQuality Method (LC-MS/MS)
M4PFBA	79	%	AsureQuality Method (LC-MS/MS)
M5PFPeA	78	%	AsureQuality Method (LC-MS/MS)
M5PFHxA	84	%	AsureQuality Method (LC-MS/MS)
MPFHpA	85	%	AsureQuality Method (LC-MS/MS)
M8PFOA	77	%	AsureQuality Method (LC-MS/MS)
M9PFNA	81	%	AsureQuality Method (LC-MS/MS)
M6PFDA	92	%	AsureQuality Method (LC-MS/MS)
M7PFUnDA	99	%	AsureQuality Method (LC-MS/MS)
MPFDoDA	237 (R)	%	AsureQuality Method (LC-MS/MS)
MPFTeDA	561 (R)	%	AsureQuality Method (LC-MS/MS)
MPFOSA	130	%	AsureQuality Method (LC-MS/MS)
DNEtFOSA	304 (R)	%	AsureQuality Method (LC-MS/MS)
DNMeFOSA	457 (R)	%	AsureQuality Method (LC-MS/MS)
DNEtFOSAA	104	%	AsureQuality Method (LC-MS/MS)
DNMeFOSAA	87	%	AsureQuality Method (LC-MS/MS)
DNEtFOSE	276 (R)	%	AsureQuality Method (LC-MS/MS)
DNMeFOSE	228 (R)	%	AsureQuality Method (LC-MS/MS)

Test	Result	Unit	Method Reference
M4:2FTS	91	%	AsureQuality Method (LC-MS/MS)
M6:2FTS	81	%	AsureQuality Method (LC-MS/MS)
M8:2FTS	76	%	AsureQuality Method (LC-MS/MS)
M3HFPO-DA	84	%	AsureQuality Method (LC-MS/MS)

R = Recovery outside method limits

QC Results

Blank

Relates to sample(s) 24-103818-1

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	<0.0020	µg/L	AsureQuality Method (LC-MS/MS)
PFDS	NR	µg/L	AsureQuality Method (LC-MS/MS)
PFECHS	<0.0020	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	NR	µg/L	AsureQuality Method (LC-MS/MS)
Perfluorooctanesulfonamides			
PFOSA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
NEtFOSA-M	NR	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)
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	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)	NR	µg/L	AsureQuality Method (LC-MS/MS)
Miscellaneous			
F-53B (major)	<0.0020	µg/L	AsureQuality Method (LC-MS/MS)
F-53B (minor)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Sum F-53B	<0.0020	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	100	%	AsureQuality Method (LC-MS/MS)
M8PFOS	100	%	AsureQuality Method (LC-MS/MS)
M4PFBA	100	%	AsureQuality Method (LC-MS/MS)
M5PFPeA	100	%	AsureQuality Method (LC-MS/MS)
M5PFHxA	100	%	AsureQuality Method (LC-MS/MS)
MPFHpA	100	%	AsureQuality Method (LC-MS/MS)
M8PFOA	100	%	AsureQuality Method (LC-MS/MS)
M9PFNA	100	%	AsureQuality Method (LC-MS/MS)
M6PFDA	100	%	AsureQuality Method (LC-MS/MS)
M7PFUnDA	100	%	AsureQuality Method (LC-MS/MS)
MPFDoDA	100	%	AsureQuality Method (LC-MS/MS)
MPFTeDA	100	%	AsureQuality Method (LC-MS/MS)
MPFOSA	100	%	AsureQuality Method (LC-MS/MS)
DNEtFOSA	100	%	AsureQuality Method (LC-MS/MS)
DNMeFOSA	100	%	AsureQuality Method (LC-MS/MS)
DNEtFOSAA	100	%	AsureQuality Method (LC-MS/MS)
DNMeFOSAA	100	%	AsureQuality Method (LC-MS/MS)
DNEtFOSE	100	%	AsureQuality Method (LC-MS/MS)
DNMeFOSE	100	%	AsureQuality Method (LC-MS/MS)
M4:2FTS	100	%	AsureQuality Method (LC-MS/MS)
M6:2FTS	100	%	AsureQuality Method (LC-MS/MS)
M8:2FTS	100	%	AsureQuality Method (LC-MS/MS)
M3HFPO-DA	100	%	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
PFPeS	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
PFPeA	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	NR µg/L
Perfluorooctanesulfonamides	
PFOSA	0.0010 µg/L
NEtFOSA-M	NR 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	NR µg/L
Telomere Carboxylic acids	
FPrPA (3:3FTA)	0.0010 µg/L
FPePA (5:3FTA)	0.0010 µg/L

FHpPA (7:3FTA)	NR 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	
PFPrS	Perfluoro-1-propanesulfonic acid
PFBS	Perfluoro-1-butanesulfonic acid
PFPeS	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 Perfluorooctanesulfonic acid
PFNS	Perfluoro-1-nonanesulfonic acid
PFDS	Perfluoro-1-decanesulfonic acid
PFECHS	Perfluoro-4-ethylcyclohexanesulfonic acid
Perfluoroalkylcarboxylic acids	
PFBA	Perfluoro-n-butanoic acid
PFPeA	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
Perfluorooctanesulfonamides	
PFOSA	Perfluoro-1-octanesulfonamide
NEtFOSA-M	N-ethylperfluoro-1-octanesulfonamide
NMeFOSA-M	N-methylperfluoro-1-octanesulfonamide
Perfluorooctanesulfonamidoacetic acids	
NEtFOSAA	N-ethylperfluoro-1-octanesulfonamidoacetic acid
NMeFOSAA	N-methylperfluoro-1-octanesulfonamidoacetic acid
Perfluorooctanesulfonamidoethanols	
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-chloroeicosafluoro-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

AsureQuality Limited | 1C Quadrant Drive | Waiwhetu | Lower Hutt 5010 | Wellington | New Zealand
PO Box 31242 | Lower Hutt 5040 | Wellington | New Zealand
t. +64 4 570 8800 | e. cswellington@asurequality.com | w. www.asurequality.com

Certificate of Analysis

Submission Reference: A02744125
Final Report

NZDF ESDAT
Pattle Delamore Partners Limited
P O Box 9528
Auckland 1149
New Zealand

PO Number: OHA_PFAS

Report Issued: 09-May-2024 **AsureQuality Reference: 24-103815** **Sample(s) Received:** 12-Apr-2024 08:15

Testing Period: 15-Apr-2024 to 09-May-2024
Date of analysis is available on request.

Results

The tests were performed on the samples as received.

Customer Sample Name: OHA_GW53_100424 **Lab ID:** 24-103815-1

Sample Condition: Acceptable **Sampled Date**: 10-Apr-2024

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	<0.0020	µg/L	AsureQuality Method (LC-MS/MS)
PFDS	NR	µg/L	AsureQuality Method (LC-MS/MS)
PFECHS	<0.0020	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)

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	NR	µg/L	AsureQuality Method (LC-MS/MS)
Perfluorooctanesulfonamides			
PFOSA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
NEtFOSA-M	NR	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)
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	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)	NR	µg/L	AsureQuality Method (LC-MS/MS)
Miscellaneous			
F-53B (major)	<0.0020	µg/L	AsureQuality Method (LC-MS/MS)
F-53B (minor)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Sum F-53B	<0.0020	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	99	%	AsureQuality Method (LC-MS/MS)
M3PFHxS	88	%	AsureQuality Method (LC-MS/MS)
M8PFOS	97	%	AsureQuality Method (LC-MS/MS)
M4PFBA	92	%	AsureQuality Method (LC-MS/MS)
M5PFPeA	88	%	AsureQuality Method (LC-MS/MS)
M5PFHxA	85	%	AsureQuality Method (LC-MS/MS)
MPFHpA	86	%	AsureQuality Method (LC-MS/MS)
M8PFOA	83	%	AsureQuality Method (LC-MS/MS)
M9PFNA	91	%	AsureQuality Method (LC-MS/MS)
M6PFDA	100	%	AsureQuality Method (LC-MS/MS)
M7PFUnDA	98	%	AsureQuality Method (LC-MS/MS)
MPFDoDA	123	%	AsureQuality Method (LC-MS/MS)
MPFTeDA	51	%	AsureQuality Method (LC-MS/MS)
MPFOSA	123	%	AsureQuality Method (LC-MS/MS)
DNEtFOSA	62	%	AsureQuality Method (LC-MS/MS)
DNMeFOSA	124	%	AsureQuality Method (LC-MS/MS)
DNEtFOSAA	66	%	AsureQuality Method (LC-MS/MS)
DNMeFOSAA	72	%	AsureQuality Method (LC-MS/MS)
DNEtFOSE	161 (R)	%	AsureQuality Method (LC-MS/MS)
DNMeFOSE	152 (R)	%	AsureQuality Method (LC-MS/MS)

Test	Result	Unit	Method Reference
M4:2FTS	98	%	AsureQuality Method (LC-MS/MS)
M6:2FTS	98	%	AsureQuality Method (LC-MS/MS)
M8:2FTS	86	%	AsureQuality Method (LC-MS/MS)
M3HFPO-DA	92	%	AsureQuality Method (LC-MS/MS)

R = Recovery outside method limits

QC Results

Blank

Relates to sample(s) 24-103815-1

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	<0.0020	µg/L	AsureQuality Method (LC-MS/MS)
PFDS	NR	µg/L	AsureQuality Method (LC-MS/MS)
PFECHS	<0.0020	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	NR	µg/L	AsureQuality Method (LC-MS/MS)
Perfluorooctanesulfonamides			
PFOSA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
NEtFOSA-M	NR	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)
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	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)	NR	µg/L	AsureQuality Method (LC-MS/MS)
Miscellaneous			
F-53B (major)	<0.0020	µg/L	AsureQuality Method (LC-MS/MS)
F-53B (minor)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Sum F-53B	<0.0020	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	100	%	AsureQuality Method (LC-MS/MS)
M8PFOS	100	%	AsureQuality Method (LC-MS/MS)
M4PFBA	100	%	AsureQuality Method (LC-MS/MS)
M5PFPeA	100	%	AsureQuality Method (LC-MS/MS)
M5PFHxA	100	%	AsureQuality Method (LC-MS/MS)
MPFHpA	100	%	AsureQuality Method (LC-MS/MS)
M8PFOA	100	%	AsureQuality Method (LC-MS/MS)
M9PFNA	100	%	AsureQuality Method (LC-MS/MS)
M6PFDA	100	%	AsureQuality Method (LC-MS/MS)
M7PFUnDA	100	%	AsureQuality Method (LC-MS/MS)
MPFDoDA	100	%	AsureQuality Method (LC-MS/MS)
MPFTeDA	100	%	AsureQuality Method (LC-MS/MS)
MPFOSA	100	%	AsureQuality Method (LC-MS/MS)
DNEtFOSA	100	%	AsureQuality Method (LC-MS/MS)
DNMeFOSA	100	%	AsureQuality Method (LC-MS/MS)
DNEtFOSAA	100	%	AsureQuality Method (LC-MS/MS)
DNMeFOSAA	100	%	AsureQuality Method (LC-MS/MS)
DNEtFOSE	100	%	AsureQuality Method (LC-MS/MS)
DNMeFOSE	100	%	AsureQuality Method (LC-MS/MS)
M4:2FTS	100	%	AsureQuality Method (LC-MS/MS)
M6:2FTS	100	%	AsureQuality Method (LC-MS/MS)
M8:2FTS	100	%	AsureQuality Method (LC-MS/MS)
M3HFPO-DA	100	%	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
PFPeS	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
PFPeA	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	NR µg/L
Perfluorooctanesulfonamides	
PFOSA	0.0010 µg/L
NEtFOSA-M	NR 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	NR µg/L
Telomere Carboxylic acids	
FPrPA (3:3FTA)	0.0010 µg/L
FPePA (5:3FTA)	0.0010 µg/L

FHpPA (7:3FTA)	NR 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	
PFPrS	Perfluoro-1-propanesulfonic acid
PFBS	Perfluoro-1-butanesulfonic acid
PFPeS	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 Perfluorooctanesulfonic acid
PFNS	Perfluoro-1-nonanesulfonic acid
PFDS	Perfluoro-1-decanesulfonic acid
PFECHS	Perfluoro-4-ethylcyclohexanesulfonic acid
Perfluoroalkylcarboxylic acids	
PFBA	Perfluoro-n-butanoic acid
PFPeA	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
Perfluorooctanesulfonamides	
PFOSA	Perfluoro-1-octanesulfonamide
NEtFOSA-M	N-ethylperfluoro-1-octanesulfonamide
NMeFOSA-M	N-methylperfluoro-1-octanesulfonamide
Perfluorooctanesulfonamidoacetic acids	
NEtFOSAA	N-ethylperfluoro-1-octanesulfonamidoacetic acid
NMeFOSAA	N-methylperfluoro-1-octanesulfonamidoacetic acid
Perfluorooctanesulfonamidoethanols	
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-chloroeicosafluoro-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

AsureQuality Limited | 1C Quadrant Drive | Waiwhetu | Lower Hutt 5010 | Wellington | New Zealand
PO Box 31242 | Lower Hutt 5040 | Wellington | New Zealand
t. +64 4 570 8800 | e. cswellington@asurequality.com | w. www.asurequality.com

Certificate of Analysis

Submission Reference: A02744125
Final Report

NZDF ESDAT
Pattle Delamore Partners Limited
P O Box 9528
Auckland 1149
New Zealand

PO Number: OHA_PFAS

Report Issued: 09-May-2024 **AsureQuality Reference: 24-103802** **Sample(s) Received:** 12-Apr-2024 08:15

Testing Period: 15-Apr-2024 to 09-May-2024
Date of analysis is available on request.

Results

The tests were performed on the samples as received.

Customer Sample Name: OHA_GW65_110424 **Lab ID:** 24-103802-1

Sample Condition: Acceptable **Sampled Date**: 11-Apr-2024

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	<0.0020	µg/L	AsureQuality Method (LC-MS/MS)
PFDS	NR	µg/L	AsureQuality Method (LC-MS/MS)
PFECHS	<0.0020	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)

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	NR	µg/L	AsureQuality Method (LC-MS/MS)
Perfluorooctanesulfonamides			
PFOSA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
NEtFOSA-M	NR	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)
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	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)	NR	µg/L	AsureQuality Method (LC-MS/MS)
Miscellaneous			
F-53B (major)	<0.0020	µg/L	AsureQuality Method (LC-MS/MS)
F-53B (minor)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Sum F-53B	<0.0020	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	99	%	AsureQuality Method (LC-MS/MS)
M3PFHxS	84	%	AsureQuality Method (LC-MS/MS)
M8PFOS	96	%	AsureQuality Method (LC-MS/MS)
M4PFBA	93	%	AsureQuality Method (LC-MS/MS)
M5PFPeA	86	%	AsureQuality Method (LC-MS/MS)
M5PFHxA	87	%	AsureQuality Method (LC-MS/MS)
MPFHpA	94	%	AsureQuality Method (LC-MS/MS)
M8PFOA	90	%	AsureQuality Method (LC-MS/MS)
M9PFNA	93	%	AsureQuality Method (LC-MS/MS)
M6PFDA	98	%	AsureQuality Method (LC-MS/MS)
M7PFUnDA	128	%	AsureQuality Method (LC-MS/MS)
MPFDoDA	188 (R)	%	AsureQuality Method (LC-MS/MS)
MPFTeDA	254 (R)	%	AsureQuality Method (LC-MS/MS)
MPFOSA	157 (R)	%	AsureQuality Method (LC-MS/MS)
DNEtFOSA	104	%	AsureQuality Method (LC-MS/MS)
DNMeFOSA	181 (R)	%	AsureQuality Method (LC-MS/MS)
DNEtFOSAA	76	%	AsureQuality Method (LC-MS/MS)
DNMeFOSAA	84	%	AsureQuality Method (LC-MS/MS)
DNEtFOSE	244 (R)	%	AsureQuality Method (LC-MS/MS)
DNMeFOSE	201 (R)	%	AsureQuality Method (LC-MS/MS)

Test	Result	Unit	Method Reference
M4:2FTS	103	%	AsureQuality Method (LC-MS/MS)
M6:2FTS	103	%	AsureQuality Method (LC-MS/MS)
M8:2FTS	78	%	AsureQuality Method (LC-MS/MS)
M3HFPO-DA	97	%	AsureQuality Method (LC-MS/MS)

R = Recovery outside method limits

QC Results

Blank

Relates to sample(s) 24-103802-1

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	<0.0020	µg/L	AsureQuality Method (LC-MS/MS)
PFDS	NR	µg/L	AsureQuality Method (LC-MS/MS)
PFECHS	<0.0020	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	NR	µg/L	AsureQuality Method (LC-MS/MS)
Perfluorooctanesulfonamides			
PFOSA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
NEtFOSA-M	NR	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)
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	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)	NR	µg/L	AsureQuality Method (LC-MS/MS)
Miscellaneous			
F-53B (major)	<0.0020	µg/L	AsureQuality Method (LC-MS/MS)
F-53B (minor)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Sum F-53B	<0.0020	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	100	%	AsureQuality Method (LC-MS/MS)
M8PFOS	100	%	AsureQuality Method (LC-MS/MS)
M4PFBA	100	%	AsureQuality Method (LC-MS/MS)
M5PFPeA	100	%	AsureQuality Method (LC-MS/MS)
M5PFHxA	100	%	AsureQuality Method (LC-MS/MS)
MPFHpA	100	%	AsureQuality Method (LC-MS/MS)
M8PFOA	100	%	AsureQuality Method (LC-MS/MS)
M9PFNA	100	%	AsureQuality Method (LC-MS/MS)
M6PFDA	100	%	AsureQuality Method (LC-MS/MS)
M7PFUnDA	100	%	AsureQuality Method (LC-MS/MS)
MPFDoDA	100	%	AsureQuality Method (LC-MS/MS)
MPFTeDA	100	%	AsureQuality Method (LC-MS/MS)
MPFOSA	100	%	AsureQuality Method (LC-MS/MS)
DNEtFOSA	100	%	AsureQuality Method (LC-MS/MS)
DNMeFOSA	100	%	AsureQuality Method (LC-MS/MS)
DNEtFOSAA	100	%	AsureQuality Method (LC-MS/MS)
DNMeFOSAA	100	%	AsureQuality Method (LC-MS/MS)
DNEtFOSE	100	%	AsureQuality Method (LC-MS/MS)
DNMeFOSE	100	%	AsureQuality Method (LC-MS/MS)
M4:2FTS	100	%	AsureQuality Method (LC-MS/MS)
M6:2FTS	100	%	AsureQuality Method (LC-MS/MS)
M8:2FTS	100	%	AsureQuality Method (LC-MS/MS)
M3HFPO-DA	100	%	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
PFPeS	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
PFPeA	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	NR µg/L
Perfluorooctanesulfonamides	
PFOSA	0.0010 µg/L
NEtFOSA-M	NR 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	NR µg/L
Telomere Carboxylic acids	
FPrPA (3:3FTA)	0.0010 µg/L
FPePA (5:3FTA)	0.0010 µg/L

FHpPA (7:3FTA)	NR 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	
PFPrS	Perfluoro-1-propanesulfonic acid
PFBS	Perfluoro-1-butanesulfonic acid
PFPeS	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 Perfluorooctanesulfonic acid
PFNS	Perfluoro-1-nonanesulfonic acid
PFDS	Perfluoro-1-decanesulfonic acid
PFECHS	Perfluoro-4-ethylcyclohexanesulfonic acid
Perfluoroalkylcarboxylic acids	
PFBA	Perfluoro-n-butanoic acid
PFPeA	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
Perfluorooctanesulfonamides	
PFOSA	Perfluoro-1-octanesulfonamide
NEtFOSA-M	N-ethylperfluoro-1-octanesulfonamide
NMeFOSA-M	N-methylperfluoro-1-octanesulfonamide
Perfluorooctanesulfonamidoacetic acids	
NEtFOSAA	N-ethylperfluoro-1-octanesulfonamidoacetic acid
NMeFOSAA	N-methylperfluoro-1-octanesulfonamidoacetic acid
Perfluorooctanesulfonamidoethanols	
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-chloroeicosafluoro-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

AsureQuality Limited | 1C Quadrant Drive | Waiwhetu | Lower Hutt 5010 | Wellington | New Zealand
PO Box 31242 | Lower Hutt 5040 | Wellington | New Zealand
t. +64 4 570 8800 | e. cswellington@asurequality.com | w. www.asurequality.com

Certificate of Analysis

Submission Reference: A02744125
Final Report

NZDF ESDAT
Pattle Delamore Partners Limited
P O Box 9528
Auckland 1149
New Zealand

PO Number: OHA_PFAS

Report Issued: 23-Apr-2024 **AsureQuality Reference: 24-100766** **Sample(s) Received:** 10-Apr-2024 08:30

Testing Period: 10-Apr-2024 to 23-Apr-2024
Date of analysis is available on request.

Results

The tests were performed on the samples as received.

Customer Sample Name: OHA_GW106_090424 **Lab ID:** 24-100766-1

Sample Condition: Acceptable **Sampled Date**: 09-Apr-2024

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	<0.0050	µg/L	AsureQuality Method (LC-MS/MS)
PFECHS	<0.0050	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)

Test	Result	Unit	Method Reference
PFDoDA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFTrDA	<0.0010	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)
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	101	%	AsureQuality Method (LC-MS/MS)
M8PFOS	110	%	AsureQuality Method (LC-MS/MS)
M4PFBA	73	%	AsureQuality Method (LC-MS/MS)
M5PFPeA	92	%	AsureQuality Method (LC-MS/MS)
M5PFHxA	94	%	AsureQuality Method (LC-MS/MS)
MPFHpA	105	%	AsureQuality Method (LC-MS/MS)
M8PFOA	95	%	AsureQuality Method (LC-MS/MS)
M9PFNA	106	%	AsureQuality Method (LC-MS/MS)
M6PFDA	114	%	AsureQuality Method (LC-MS/MS)
M7PFUnDA	107	%	AsureQuality Method (LC-MS/MS)
MPFDoDA	108	%	AsureQuality Method (LC-MS/MS)
MPFTeDA	104	%	AsureQuality Method (LC-MS/MS)
MPFOSA	107	%	AsureQuality Method (LC-MS/MS)
DNEtFOSA	108	%	AsureQuality Method (LC-MS/MS)
DNMeFOSA	104	%	AsureQuality Method (LC-MS/MS)
DNEtFOSAA	98	%	AsureQuality Method (LC-MS/MS)
DNMeFOSAA	99	%	AsureQuality Method (LC-MS/MS)
DNEtFOSE	93	%	AsureQuality Method (LC-MS/MS)
DNMeFOSE	79	%	AsureQuality Method (LC-MS/MS)

Test	Result	Unit	Method Reference
M4:2FTS	176 (R)	%	AsureQuality Method (LC-MS/MS)
M6:2FTS	118	%	AsureQuality Method (LC-MS/MS)
M8:2FTS	108	%	AsureQuality Method (LC-MS/MS)
M3HFPO-DA	115	%	AsureQuality Method (LC-MS/MS)

R = Recovery outside method limits

QC Results

Blank

Relates to sample(s) 24-100766-1

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	<0.0050	µg/L	AsureQuality Method (LC-MS/MS)
PFECHS	<0.0050	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	<0.0010	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)
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	97	%	AsureQuality Method (LC-MS/MS)
M3PFHxS	88	%	AsureQuality Method (LC-MS/MS)
M8PFOS	93	%	AsureQuality Method (LC-MS/MS)
M4PFBA	100	%	AsureQuality Method (LC-MS/MS)
M5PFPeA	101	%	AsureQuality Method (LC-MS/MS)
M5PFHxA	96	%	AsureQuality Method (LC-MS/MS)
MPFHpA	100	%	AsureQuality Method (LC-MS/MS)
M8PFOA	95	%	AsureQuality Method (LC-MS/MS)
M9PFNA	93	%	AsureQuality Method (LC-MS/MS)
M6PFDA	105	%	AsureQuality Method (LC-MS/MS)
M7PFUnDA	91	%	AsureQuality Method (LC-MS/MS)
MPFDoDA	98	%	AsureQuality Method (LC-MS/MS)
MPFTeDA	89	%	AsureQuality Method (LC-MS/MS)
MPFOSA	103	%	AsureQuality Method (LC-MS/MS)
DNEtFOSA	117	%	AsureQuality Method (LC-MS/MS)
DNMeFOSA	117	%	AsureQuality Method (LC-MS/MS)
DNEtFOSAA	94	%	AsureQuality Method (LC-MS/MS)
DNMeFOSAA	94	%	AsureQuality Method (LC-MS/MS)
DNEtFOSE	124	%	AsureQuality Method (LC-MS/MS)
DNMeFOSE	111	%	AsureQuality Method (LC-MS/MS)
M4:2FTS	94	%	AsureQuality Method (LC-MS/MS)
M6:2FTS	95	%	AsureQuality Method (LC-MS/MS)
M8:2FTS	102	%	AsureQuality Method (LC-MS/MS)
M3HFPO-DA	133	%	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	Christopher Sampson

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.

Christopher Sampson

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
PFPeS	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	0.0010 µg/L
PFECHS	0.0010 µg/L
Perfluoroalkylcarboxylic acids	
PFBA	0.0010 µg/L
PFPeA	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	0.0010 µg/L
PFTeDA	0.0010 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
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	
PFPrS	Perfluoro-1-propanesulfonic acid
PFBS	Perfluoro-1-butanesulfonic acid
PFPeS	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 Perfluorooctanesulfonic acid
PFNS	Perfluoro-1-nonanesulfonic acid
PFDS	Perfluoro-1-decanesulfonic acid
PFECHS	Perfluoro-4-ethylcyclohexanesulfonic acid
Perfluoroalkylcarboxylic acids	
PFBA	Perfluoro-n-butanoic acid
PFPeA	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
Perfluorooctanesulfonamides	
PFOSA	Perfluoro-1-octanesulfonamide
NEtFOSA-M	N-ethylperfluoro-1-octanesulfonamide
NMeFOSA-M	N-methylperfluoro-1-octanesulfonamide
Perfluorooctanesulfonamidoacetic acids	
NEtFOSAA	N-ethylperfluoro-1-octanesulfonamidoacetic acid
NMeFOSAA	N-methylperfluoro-1-octanesulfonamidoacetic acid
Perfluorooctanesulfonamidoethanols	
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-chloroeicosafluoro-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

AsureQuality Limited | 1C Quadrant Drive | Waiwhetu | Lower Hutt 5010 | Wellington | New Zealand
PO Box 31242 | Lower Hutt 5040 | Wellington | New Zealand
t. +64 4 570 8800 | e. cswellington@asurequality.com | w. www.asurequality.com

Certificate of Analysis

Submission Reference: A02744125
Final Report

NZDF ESDAT
Pattle Delamore Partners Limited
P O Box 9528
Auckland 1149
New Zealand

PO Number: OHA_PFAS

Report Issued: 09-May-2024 **AsureQuality Reference: 24-103820** **Sample(s) Received:** 12-Apr-2024 08:15

Testing Period: 15-Apr-2024 to 09-May-2024
Date of analysis is available on request.

Results

The tests were performed on the samples as received.

Customer Sample Name: OHA_GW107_110424 **Lab ID:** 24-103820-1

Sample Condition: Acceptable **Sampled Date**: 11-Apr-2024

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	<0.0020	µg/L	AsureQuality Method (LC-MS/MS)
PFDS	NR	µg/L	AsureQuality Method (LC-MS/MS)
PFECHS	<0.0020	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)

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	NR	µg/L	AsureQuality Method (LC-MS/MS)
Perfluorooctanesulfonamides			
PFOSA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
NEtFOSA-M	NR	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)
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	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)	NR	µg/L	AsureQuality Method (LC-MS/MS)
Miscellaneous			
F-53B (major)	<0.0020	µg/L	AsureQuality Method (LC-MS/MS)
F-53B (minor)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Sum F-53B	<0.0020	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	81	%	AsureQuality Method (LC-MS/MS)
M8PFOS	100	%	AsureQuality Method (LC-MS/MS)
M4PFBA	82	%	AsureQuality Method (LC-MS/MS)
M5PFPeA	88	%	AsureQuality Method (LC-MS/MS)
M5PFHxA	97	%	AsureQuality Method (LC-MS/MS)
MPFHpA	85	%	AsureQuality Method (LC-MS/MS)
M8PFOA	92	%	AsureQuality Method (LC-MS/MS)
M9PFNA	82	%	AsureQuality Method (LC-MS/MS)
M6PFDA	103	%	AsureQuality Method (LC-MS/MS)
M7PFUnDA	123	%	AsureQuality Method (LC-MS/MS)
MPFDoDA	363 (R)	%	AsureQuality Method (LC-MS/MS)
MPFTeDA	2237 (R)	%	AsureQuality Method (LC-MS/MS)
MPFOSA	133	%	AsureQuality Method (LC-MS/MS)
DNEtFOSA	685 (R)	%	AsureQuality Method (LC-MS/MS)
DNMeFOSA	733 (R)	%	AsureQuality Method (LC-MS/MS)
DNEtFOSAA	126	%	AsureQuality Method (LC-MS/MS)
DNMeFOSAA	91	%	AsureQuality Method (LC-MS/MS)
DNEtFOSE	421 (R)	%	AsureQuality Method (LC-MS/MS)
DNMeFOSE	275 (R)	%	AsureQuality Method (LC-MS/MS)

Test	Result	Unit	Method Reference
M4:2FTS	107	%	AsureQuality Method (LC-MS/MS)
M6:2FTS	121	%	AsureQuality Method (LC-MS/MS)
M8:2FTS	78	%	AsureQuality Method (LC-MS/MS)
M3HFPO-DA	92	%	AsureQuality Method (LC-MS/MS)

R = Recovery outside method limits

QC Results

Blank

Relates to sample(s) 24-103820-1

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	<0.0020	µg/L	AsureQuality Method (LC-MS/MS)
PFDS	NR	µg/L	AsureQuality Method (LC-MS/MS)
PFECHS	<0.0020	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	NR	µg/L	AsureQuality Method (LC-MS/MS)
Perfluorooctanesulfonamides			
PFOSA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
NEtFOSA-M	NR	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)
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	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)	NR	µg/L	AsureQuality Method (LC-MS/MS)
Miscellaneous			
F-53B (major)	<0.0020	µg/L	AsureQuality Method (LC-MS/MS)
F-53B (minor)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Sum F-53B	<0.0020	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	100	%	AsureQuality Method (LC-MS/MS)
M8PFOS	100	%	AsureQuality Method (LC-MS/MS)
M4PFBA	100	%	AsureQuality Method (LC-MS/MS)
M5PFPeA	100	%	AsureQuality Method (LC-MS/MS)
M5PFHxA	100	%	AsureQuality Method (LC-MS/MS)
MPFHpA	100	%	AsureQuality Method (LC-MS/MS)
M8PFOA	100	%	AsureQuality Method (LC-MS/MS)
M9PFNA	100	%	AsureQuality Method (LC-MS/MS)
M6PFDA	100	%	AsureQuality Method (LC-MS/MS)
M7PFUnDA	100	%	AsureQuality Method (LC-MS/MS)
MPFDoDA	100	%	AsureQuality Method (LC-MS/MS)
MPFTeDA	100	%	AsureQuality Method (LC-MS/MS)
MPFOSA	100	%	AsureQuality Method (LC-MS/MS)
DNEtFOSA	100	%	AsureQuality Method (LC-MS/MS)
DNMeFOSA	100	%	AsureQuality Method (LC-MS/MS)
DNEtFOSAA	100	%	AsureQuality Method (LC-MS/MS)
DNMeFOSAA	100	%	AsureQuality Method (LC-MS/MS)
DNEtFOSE	100	%	AsureQuality Method (LC-MS/MS)
DNMeFOSE	100	%	AsureQuality Method (LC-MS/MS)
M4:2FTS	100	%	AsureQuality Method (LC-MS/MS)
M6:2FTS	100	%	AsureQuality Method (LC-MS/MS)
M8:2FTS	100	%	AsureQuality Method (LC-MS/MS)
M3HFPO-DA	100	%	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
PFPeS	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
PFPeA	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	NR µg/L
Perfluorooctanesulfonamides	
PFOSA	0.0010 µg/L
NEtFOSA-M	NR 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	NR µg/L
Telomere Carboxylic acids	
FPrPA (3:3FTA)	0.0010 µg/L
FPePA (5:3FTA)	0.0010 µg/L

FHpPA (7:3FTA)	NR 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	
PFPrS	Perfluoro-1-propanesulfonic acid
PFBS	Perfluoro-1-butanesulfonic acid
PFPeS	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 Perfluorooctanesulfonic acid
PFNS	Perfluoro-1-nonanesulfonic acid
PFDS	Perfluoro-1-decanesulfonic acid
PFECHS	Perfluoro-4-ethylcyclohexanesulfonic acid
Perfluoroalkylcarboxylic acids	
PFBA	Perfluoro-n-butanoic acid
PFPeA	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
Perfluorooctanesulfonamides	
PFOSA	Perfluoro-1-octanesulfonamide
NEtFOSA-M	N-ethylperfluoro-1-octanesulfonamide
NMeFOSA-M	N-methylperfluoro-1-octanesulfonamide
Perfluorooctanesulfonamidoacetic acids	
NEtFOSAA	N-ethylperfluoro-1-octanesulfonamidoacetic acid
NMeFOSAA	N-methylperfluoro-1-octanesulfonamidoacetic acid
Perfluorooctanesulfonamidoethanols	
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-chloroeicosafluoro-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

AsureQuality Limited | 1C Quadrant Drive | Waiwhetu | Lower Hutt 5010 | Wellington | New Zealand
PO Box 31242 | Lower Hutt 5040 | Wellington | New Zealand
t. +64 4 570 8800 | e. cswellington@asurequality.com | w. www.asurequality.com

Certificate of Analysis

Submission Reference: A02744125
Final Report

Nerena Rhodes
Pattle Delamore Partners Limited
P O Box 9528
Auckland 1149
New Zealand

PO Number: OHA_PFAS

Report Issued: 24-Apr-2024 **AsureQuality Reference: 24-100810** **Sample(s) Received:** 10-Apr-2024 08:30

Testing Period: 10-Apr-2024 to 23-Apr-2024
Date of analysis is available on request.

Results

The tests were performed on the samples as received.

Customer Sample Name: OHA_GW108__090424 **Lab ID:** 24-100810-1

Sample Condition: Acceptable **Sampled Date**: 09-Apr-2024

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	<0.0050	µg/L	AsureQuality Method (LC-MS/MS)
PFECHS	<0.0050	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)

Test	Result	Unit	Method Reference
PFDoDA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFTrDA	<0.0010	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)
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	92	%	AsureQuality Method (LC-MS/MS)
M3PFHxS	87	%	AsureQuality Method (LC-MS/MS)
M8PFOS	95	%	AsureQuality Method (LC-MS/MS)
M4PFBA	83	%	AsureQuality Method (LC-MS/MS)
M5PFPeA	91	%	AsureQuality Method (LC-MS/MS)
M5PFHxA	87	%	AsureQuality Method (LC-MS/MS)
MPFHpA	98	%	AsureQuality Method (LC-MS/MS)
M8PFOA	88	%	AsureQuality Method (LC-MS/MS)
M9PFNA	88	%	AsureQuality Method (LC-MS/MS)
M6PFDA	91	%	AsureQuality Method (LC-MS/MS)
M7PFUnDA	85	%	AsureQuality Method (LC-MS/MS)
MPFDoDA	62	%	AsureQuality Method (LC-MS/MS)
MPFTeDA	66	%	AsureQuality Method (LC-MS/MS)
MPFOSA	79	%	AsureQuality Method (LC-MS/MS)
DNEtFOSA	60	%	AsureQuality Method (LC-MS/MS)
DNMeFOSA	68	%	AsureQuality Method (LC-MS/MS)
DNEtFOSAA	66	%	AsureQuality Method (LC-MS/MS)
DNMeFOSAA	78	%	AsureQuality Method (LC-MS/MS)
DNEtFOSE	62	%	AsureQuality Method (LC-MS/MS)
DNMeFOSE	67	%	AsureQuality Method (LC-MS/MS)

Test	Result	Unit	Method Reference
M4:2FTS	121	%	AsureQuality Method (LC-MS/MS)
M6:2FTS	109	%	AsureQuality Method (LC-MS/MS)
M8:2FTS	94	%	AsureQuality Method (LC-MS/MS)
M3HFPO-DA	86	%	AsureQuality Method (LC-MS/MS)

QC Results

Blank

Relates to sample(s) 24-100810-1

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	<0.0050	µg/L	AsureQuality Method (LC-MS/MS)
PFECHS	<0.0050	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	<0.0010	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)
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	97	%	AsureQuality Method (LC-MS/MS)
M3PFHxS	88	%	AsureQuality Method (LC-MS/MS)
M8PFOS	93	%	AsureQuality Method (LC-MS/MS)
M4PFBA	100	%	AsureQuality Method (LC-MS/MS)
M5PFPeA	101	%	AsureQuality Method (LC-MS/MS)
M5PFHxA	96	%	AsureQuality Method (LC-MS/MS)
MPFHpA	100	%	AsureQuality Method (LC-MS/MS)
M8PFOA	95	%	AsureQuality Method (LC-MS/MS)
M9PFNA	93	%	AsureQuality Method (LC-MS/MS)
M6PFDA	105	%	AsureQuality Method (LC-MS/MS)
M7PFUnDA	91	%	AsureQuality Method (LC-MS/MS)
MPFDoDA	98	%	AsureQuality Method (LC-MS/MS)
MPFTeDA	89	%	AsureQuality Method (LC-MS/MS)
MPFOSA	103	%	AsureQuality Method (LC-MS/MS)
DNEtFOSA	117	%	AsureQuality Method (LC-MS/MS)
DNMeFOSA	117	%	AsureQuality Method (LC-MS/MS)
DNEtFOSAA	94	%	AsureQuality Method (LC-MS/MS)
DNMeFOSAA	94	%	AsureQuality Method (LC-MS/MS)
DNEtFOSE	124	%	AsureQuality Method (LC-MS/MS)
DNMeFOSE	111	%	AsureQuality Method (LC-MS/MS)
M4:2FTS	94	%	AsureQuality Method (LC-MS/MS)
M6:2FTS	95	%	AsureQuality Method (LC-MS/MS)
M8:2FTS	102	%	AsureQuality Method (LC-MS/MS)
M3HFPO-DA	133	%	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	Christopher Sampson

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.

Christopher Sampson

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
PFPeS	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	0.0010 µg/L
PFECHS	0.0010 µg/L
Perfluoroalkylcarboxylic acids	
PFBA	0.0010 µg/L
PFPeA	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	0.0010 µg/L
PFTeDA	0.0010 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
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	
PFPrS	Perfluoro-1-propanesulfonic acid
PFBS	Perfluoro-1-butanesulfonic acid
PFPeS	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 Perfluorooctanesulfonic acid
PFNS	Perfluoro-1-nonanesulfonic acid
PFDS	Perfluoro-1-decanesulfonic acid
PFECHS	Perfluoro-4-ethylcyclohexanesulfonic acid
Perfluoroalkylcarboxylic acids	
PFBA	Perfluoro-n-butanoic acid
PFPeA	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
Perfluorooctanesulfonamides	
PFOSA	Perfluoro-1-octanesulfonamide
NEtFOSA-M	N-ethylperfluoro-1-octanesulfonamide
NMeFOSA-M	N-methylperfluoro-1-octanesulfonamide
Perfluorooctanesulfonamidoacetic acids	
NEtFOSAA	N-ethylperfluoro-1-octanesulfonamidoacetic acid
NMeFOSAA	N-methylperfluoro-1-octanesulfonamidoacetic acid
Perfluorooctanesulfonamidoethanols	
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-chloroeicosafluoro-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

AsureQuality Limited | 1C Quadrant Drive | Waiwhetu | Lower Hutt 5010 | Wellington | New Zealand
PO Box 31242 | Lower Hutt 5040 | Wellington | New Zealand
t. +64 4 570 8800 | e. cswellington@asurequality.com | w. www.asurequality.com

Certificate of Analysis

Submission Reference: A02744125
Final Report

NZDF ESDAT
Pattle Delamore Partners Limited
P O Box 9528
Auckland 1149
New Zealand

PO Number: OHA_PFAS

Report Issued: 09-May-2024 **AsureQuality Reference: 24-103810** **Sample(s) Received:** 12-Apr-2024 08:15

Testing Period: 15-Apr-2024 to 09-May-2024
Date of analysis is available on request.

Results

The tests were performed on the samples as received.

Customer Sample Name: OHA_GW109_110424 **Lab ID:** 24-103810-1

Sample Condition: Acceptable **Sampled Date**: 11-Apr-2024

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	<0.0020	µg/L	AsureQuality Method (LC-MS/MS)
PFDS	NR	µg/L	AsureQuality Method (LC-MS/MS)
PFECHS	<0.0020	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)

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	NR	µg/L	AsureQuality Method (LC-MS/MS)
Perfluorooctanesulfonamides			
PFOSA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
NEtFOSA-M	NR	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)
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	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)	NR	µg/L	AsureQuality Method (LC-MS/MS)
Miscellaneous			
F-53B (major)	<0.0020	µg/L	AsureQuality Method (LC-MS/MS)
F-53B (minor)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Sum F-53B	<0.0020	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	87	%	AsureQuality Method (LC-MS/MS)
M8PFOS	110	%	AsureQuality Method (LC-MS/MS)
M4PFBA	88	%	AsureQuality Method (LC-MS/MS)
M5PFPeA	89	%	AsureQuality Method (LC-MS/MS)
M5PFHxA	89	%	AsureQuality Method (LC-MS/MS)
MPFHpA	87	%	AsureQuality Method (LC-MS/MS)
M8PFOA	88	%	AsureQuality Method (LC-MS/MS)
M9PFNA	104	%	AsureQuality Method (LC-MS/MS)
M6PFDA	107	%	AsureQuality Method (LC-MS/MS)
M7PFUnDA	133	%	AsureQuality Method (LC-MS/MS)
MPFDoDA	242 (R)	%	AsureQuality Method (LC-MS/MS)
MPFTeDA	740 (R)	%	AsureQuality Method (LC-MS/MS)
MPFOSA	109	%	AsureQuality Method (LC-MS/MS)
DNEtFOSA	92	%	AsureQuality Method (LC-MS/MS)
DNMeFOSA	102	%	AsureQuality Method (LC-MS/MS)
DNEtFOSAA	114	%	AsureQuality Method (LC-MS/MS)
DNMeFOSAA	95	%	AsureQuality Method (LC-MS/MS)
DNEtFOSE	139	%	AsureQuality Method (LC-MS/MS)
DNMeFOSE	133	%	AsureQuality Method (LC-MS/MS)

Test	Result	Unit	Method Reference
M4:2FTS	103	%	AsureQuality Method (LC-MS/MS)
M6:2FTS	100	%	AsureQuality Method (LC-MS/MS)
M8:2FTS	97	%	AsureQuality Method (LC-MS/MS)
M3HFPO-DA	91	%	AsureQuality Method (LC-MS/MS)

R = Recovery outside method limits

QC Results

Blank

Relates to sample(s) 24-103810-1

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	<0.0020	µg/L	AsureQuality Method (LC-MS/MS)
PFDS	NR	µg/L	AsureQuality Method (LC-MS/MS)
PFECHS	<0.0020	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	NR	µg/L	AsureQuality Method (LC-MS/MS)
Perfluorooctanesulfonamides			
PFOSA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
NEtFOSA-M	NR	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)
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	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)	NR	µg/L	AsureQuality Method (LC-MS/MS)
Miscellaneous			
F-53B (major)	<0.0020	µg/L	AsureQuality Method (LC-MS/MS)
F-53B (minor)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Sum F-53B	<0.0020	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	100	%	AsureQuality Method (LC-MS/MS)
M8PFOS	100	%	AsureQuality Method (LC-MS/MS)
M4PFBA	100	%	AsureQuality Method (LC-MS/MS)
M5PFPeA	100	%	AsureQuality Method (LC-MS/MS)
M5PFHxA	100	%	AsureQuality Method (LC-MS/MS)
MPFHpA	100	%	AsureQuality Method (LC-MS/MS)
M8PFOA	100	%	AsureQuality Method (LC-MS/MS)
M9PFNA	100	%	AsureQuality Method (LC-MS/MS)
M6PFDA	100	%	AsureQuality Method (LC-MS/MS)
M7PFUnDA	100	%	AsureQuality Method (LC-MS/MS)
MPFDoDA	100	%	AsureQuality Method (LC-MS/MS)
MPFTeDA	100	%	AsureQuality Method (LC-MS/MS)
MPFOSA	100	%	AsureQuality Method (LC-MS/MS)
DNEtFOSA	100	%	AsureQuality Method (LC-MS/MS)
DNMeFOSA	100	%	AsureQuality Method (LC-MS/MS)
DNEtFOSAA	100	%	AsureQuality Method (LC-MS/MS)
DNMeFOSAA	100	%	AsureQuality Method (LC-MS/MS)
DNEtFOSE	100	%	AsureQuality Method (LC-MS/MS)
DNMeFOSE	100	%	AsureQuality Method (LC-MS/MS)
M4:2FTS	100	%	AsureQuality Method (LC-MS/MS)
M6:2FTS	100	%	AsureQuality Method (LC-MS/MS)
M8:2FTS	100	%	AsureQuality Method (LC-MS/MS)
M3HFPO-DA	100	%	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
PFPeS	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
PFPeA	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	NR µg/L
Perfluorooctanesulfonamides	
PFOSA	0.0010 µg/L
NEtFOSA-M	NR 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	NR µg/L
Telomere Carboxylic acids	
FPrPA (3:3FTA)	0.0010 µg/L
FPePA (5:3FTA)	0.0010 µg/L

FHpPA (7:3FTA)	NR 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	
PFPrS	Perfluoro-1-propanesulfonic acid
PFBS	Perfluoro-1-butanesulfonic acid
PFPeS	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 Perfluorooctanesulfonic acid
PFNS	Perfluoro-1-nonanesulfonic acid
PFDS	Perfluoro-1-decanesulfonic acid
PFECHS	Perfluoro-4-ethylcyclohexanesulfonic acid
Perfluoroalkylcarboxylic acids	
PFBA	Perfluoro-n-butanoic acid
PFPeA	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
Perfluorooctanesulfonamides	
PFOSA	Perfluoro-1-octanesulfonamide
NEtFOSA-M	N-ethylperfluoro-1-octanesulfonamide
NMeFOSA-M	N-methylperfluoro-1-octanesulfonamide
Perfluorooctanesulfonamidoacetic acids	
NEtFOSAA	N-ethylperfluoro-1-octanesulfonamidoacetic acid
NMeFOSAA	N-methylperfluoro-1-octanesulfonamidoacetic acid
Perfluorooctanesulfonamidoethanols	
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-chloroeicosafluoro-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

AsureQuality Limited | 1C Quadrant Drive | Waiwhetu | Lower Hutt 5010 | Wellington | New Zealand
PO Box 31242 | Lower Hutt 5040 | Wellington | New Zealand
t. +64 4 570 8800 | e. cswellington@asurequality.com | w. www.asurequality.com

Certificate of Analysis

Submission Reference: A02744124
Final Report

NZDF ESDAT
Pattle Delamore Partners Limited
P O Box 9528
Auckland 1149
New Zealand

PO Number: OHA_PFAS

Report Issued: 09-May-2024 **AsureQuality Reference: 24-102486** **Sample(s) Received:** 12-Apr-2024 08:15

Testing Period: 15-Apr-2024 to 09-May-2024
Date of analysis is available on request.

Results

The tests were performed on the samples as received.

Customer Sample Name: OHA_GW111.1_100424 **Lab ID:** 24-102486-1

Sample Condition: Acceptable **Sampled Date**: 10-Apr-2024

Test	Result	Unit	Method Reference
Poly- and Perfluorinated Alkyl Substances (PFAS) in Potable Water			
Perfluoroalkylsulfonic acids			
PFPrS	0.0017	µg/L	AsureQuality Method (LC-MS/MS)
PFBS	0.0064	µg/L	AsureQuality Method (LC-MS/MS)
PFPeS	0.0065	µg/L	AsureQuality Method (LC-MS/MS)
di-PFHxS (1)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
mono-PFHxS (1)	0.011	µg/L	AsureQuality Method (LC-MS/MS)
L-PFHxS (1)	0.068	µg/L	AsureQuality Method (LC-MS/MS)
Total PFHxS (3)	0.079	µg/L	AsureQuality Method (LC-MS/MS)
PFHpS	0.0018	µg/L	AsureQuality Method (LC-MS/MS)
di-PFOS (5)	0.0037	µg/L	AsureQuality Method (LC-MS/MS)
mono-PFOS (5)	0.053	µg/L	AsureQuality Method (LC-MS/MS)
L-PFOS (5)	0.080	µg/L	AsureQuality Method (LC-MS/MS)
Total PFOS (7)	0.14	µg/L	AsureQuality Method (LC-MS/MS)
Sum PFHxS+PFOS (1)	0.22	µg/L	AsureQuality Method (LC-MS/MS)
PFNS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFDS	<0.0050	µg/L	AsureQuality Method (LC-MS/MS)
PFECHS	<0.0050	µg/L	AsureQuality Method (LC-MS/MS)
Perfluoroalkylcarboxylic acids			
PFBA	0.087	µg/L	AsureQuality Method (LC-MS/MS)
PFPeA	0.29	µg/L	AsureQuality Method (LC-MS/MS)
PFHxA	0.19	µg/L	AsureQuality Method (LC-MS/MS)
PFHpA	0.10	µg/L	AsureQuality Method (LC-MS/MS)
PFOA	0.070	µg/L	AsureQuality Method (LC-MS/MS)
PFNA	0.015	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)

Test	Result	Unit	Method Reference
PFDoDA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFTrDA	<0.0010	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)
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	0.0023	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	103	%	AsureQuality Method (LC-MS/MS)
M3PFHxS	107	%	AsureQuality Method (LC-MS/MS)
M8PFOS	124	%	AsureQuality Method (LC-MS/MS)
M4PFBA	100	%	AsureQuality Method (LC-MS/MS)
M5PFPeA	97	%	AsureQuality Method (LC-MS/MS)
M5PFHxA	92	%	AsureQuality Method (LC-MS/MS)
MPFHpA	102	%	AsureQuality Method (LC-MS/MS)
M8PFOA	95	%	AsureQuality Method (LC-MS/MS)
M9PFNA	101	%	AsureQuality Method (LC-MS/MS)
M6PFDA	126	%	AsureQuality Method (LC-MS/MS)
M7PFUnDA	117	%	AsureQuality Method (LC-MS/MS)
MPFDoDA	121	%	AsureQuality Method (LC-MS/MS)
MPFTeDA	82	%	AsureQuality Method (LC-MS/MS)
MPFOSA	104	%	AsureQuality Method (LC-MS/MS)
DNEtFOSA	70	%	AsureQuality Method (LC-MS/MS)
DNMeFOSA	83	%	AsureQuality Method (LC-MS/MS)
DNEtFOSAA	111	%	AsureQuality Method (LC-MS/MS)
DNMeFOSAA	112	%	AsureQuality Method (LC-MS/MS)
DNEtFOSE	82	%	AsureQuality Method (LC-MS/MS)
DNMeFOSE	82	%	AsureQuality Method (LC-MS/MS)

Test	Result	Unit	Method Reference
M4:2FTS	108	%	AsureQuality Method (LC-MS/MS)
M6:2FTS	107	%	AsureQuality Method (LC-MS/MS)
M8:2FTS	103	%	AsureQuality Method (LC-MS/MS)
M3HFPO-DA	150	%	AsureQuality Method (LC-MS/MS)

Customer Sample Name: OHA_GW111.2_100424 **Lab ID:** 24-102486-2

Sample Condition: Acceptable **Sampled Date**: 10-Apr-2024

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	<0.0020	µg/L	AsureQuality Method (LC-MS/MS)
PFDS	NR	µg/L	AsureQuality Method (LC-MS/MS)
PFECHS	<0.0020	µg/L	AsureQuality Method (LC-MS/MS)
Perfluoroalkylcarboxylic acids			
PFBA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFPeA	0.0016	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	<0.0010	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	NR	µg/L	AsureQuality Method (LC-MS/MS)
NMeFOSA-M	NR	µg/L	AsureQuality Method (LC-MS/MS)
Perfluorooctanesulfonamidoacetic acids			
NEtFOSAA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
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)

Test	Result	Unit	Method Reference
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)	<0.0020	µg/L	AsureQuality Method (LC-MS/MS)
F-53B (minor)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Sum F-53B	<0.0020	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	121	%	AsureQuality Method (LC-MS/MS)
M3PFHxS	129	%	AsureQuality Method (LC-MS/MS)
M8PFOS	162 (R)	%	AsureQuality Method (LC-MS/MS)
M4PFBA	106	%	AsureQuality Method (LC-MS/MS)
M5PFPeA	93	%	AsureQuality Method (LC-MS/MS)
M5PFHxA	109	%	AsureQuality Method (LC-MS/MS)
MPFHpA	114	%	AsureQuality Method (LC-MS/MS)
M8PFOA	110	%	AsureQuality Method (LC-MS/MS)
M9PFNA	110	%	AsureQuality Method (LC-MS/MS)
M6PFDA	126	%	AsureQuality Method (LC-MS/MS)
M7PFUnDA	131	%	AsureQuality Method (LC-MS/MS)
MPFDoDA	102	%	AsureQuality Method (LC-MS/MS)
MPFTeDA	135	%	AsureQuality Method (LC-MS/MS)
MPFOSA	38	%	AsureQuality Method (LC-MS/MS)
DNEtFOSA	19 (R)	%	AsureQuality Method (LC-MS/MS)
DNMeFOSA	55	%	AsureQuality Method (LC-MS/MS)
DNEtFOSAA	50	%	AsureQuality Method (LC-MS/MS)
DNMeFOSAA	76	%	AsureQuality Method (LC-MS/MS)
DNEtFOSE	16 (R)	%	AsureQuality Method (LC-MS/MS)
DNMeFOSE	12 (R)	%	AsureQuality Method (LC-MS/MS)
M4:2FTS	111	%	AsureQuality Method (LC-MS/MS)
M6:2FTS	123	%	AsureQuality Method (LC-MS/MS)
M8:2FTS	144	%	AsureQuality Method (LC-MS/MS)
M3HFPO-DA	105	%	AsureQuality Method (LC-MS/MS)

R = Recovery outside method limits

Customer Sample Name: OHA_GW111.3_100424 **Lab ID:** 24-102486-3

Sample Condition: Acceptable **Sampled Date**: 10-Apr-2024

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)

Test	Result	Unit	Method Reference
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	<0.0020	µg/L	AsureQuality Method (LC-MS/MS)
PFDS	NR	µg/L	AsureQuality Method (LC-MS/MS)
PFECHS	<0.0020	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	<0.0010	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	NR	µg/L	AsureQuality Method (LC-MS/MS)
NMeFOSA-M	NR	µg/L	AsureQuality Method (LC-MS/MS)
Perfluorooctanesulfonamidoacetic acids			
NEtFOSAA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
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)	<0.0020	µg/L	AsureQuality Method (LC-MS/MS)
F-53B (minor)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Sum F-53B	<0.0020	µg/L	AsureQuality Method (LC-MS/MS)
ADONA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)

Test	Result	Unit	Method Reference
HFPO-DA (GenX)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Internal Standards			
M3PFBS	117	%	AsureQuality Method (LC-MS/MS)
M3PFHxS	118	%	AsureQuality Method (LC-MS/MS)
M8PFOS	172 (R)	%	AsureQuality Method (LC-MS/MS)
M4PFBA	107	%	AsureQuality Method (LC-MS/MS)
M5PFPeA	96	%	AsureQuality Method (LC-MS/MS)
M5PFHxA	101	%	AsureQuality Method (LC-MS/MS)
MPFHpA	110	%	AsureQuality Method (LC-MS/MS)
M8PFOA	108	%	AsureQuality Method (LC-MS/MS)
M9PFNA	119	%	AsureQuality Method (LC-MS/MS)
M6PFDA	123	%	AsureQuality Method (LC-MS/MS)
M7PFUnDA	157 (R)	%	AsureQuality Method (LC-MS/MS)
MPFDoDA	194 (R)	%	AsureQuality Method (LC-MS/MS)
MPFTeDA	62	%	AsureQuality Method (LC-MS/MS)
MPFOSA	60	%	AsureQuality Method (LC-MS/MS)
DNEtFOSA	55	%	AsureQuality Method (LC-MS/MS)
DNMeFOSA	52	%	AsureQuality Method (LC-MS/MS)
DNEtFOSAA	128	%	AsureQuality Method (LC-MS/MS)
DNMeFOSAA	121	%	AsureQuality Method (LC-MS/MS)
DNEtFOSE	30	%	AsureQuality Method (LC-MS/MS)
DNMeFOSE	32	%	AsureQuality Method (LC-MS/MS)
M4:2FTS	104	%	AsureQuality Method (LC-MS/MS)
M6:2FTS	108	%	AsureQuality Method (LC-MS/MS)
M8:2FTS	111	%	AsureQuality Method (LC-MS/MS)
M3HFPO-DA	106	%	AsureQuality Method (LC-MS/MS)

R = Recovery outside method limits

Customer Sample Name: Duplicate.of 24-102486-1A **Lab ID:** 24-102486-4

Sample Description: 24337662_Duplicate

Sample Condition: Acceptable **Sampled Date**: 10-Apr-2024

Test	Result	Unit	Method Reference
Poly- and Perfluorinated Alkyl Substances (PFAS) in Potable Water			
Perfluoroalkylsulfonic acids			
PFPrS	0.0018	µg/L	AsureQuality Method (LC-MS/MS)
PFBS	0.0067	µg/L	AsureQuality Method (LC-MS/MS)
PFPeS	0.0060	µg/L	AsureQuality Method (LC-MS/MS)
di-PFHxS (1)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
mono-PFHxS (1)	0.011	µg/L	AsureQuality Method (LC-MS/MS)
L-PFHxS (1)	0.063	µg/L	AsureQuality Method (LC-MS/MS)
Total PFHxS (3)	0.074	µg/L	AsureQuality Method (LC-MS/MS)
PFHpS	0.0015	µg/L	AsureQuality Method (LC-MS/MS)
di-PFOS (5)	0.0041	µg/L	AsureQuality Method (LC-MS/MS)
mono-PFOS (5)	0.056	µg/L	AsureQuality Method (LC-MS/MS)
L-PFOS (5)	0.078	µg/L	AsureQuality Method (LC-MS/MS)
Total PFOS (7)	0.14	µg/L	AsureQuality Method (LC-MS/MS)
Sum PFHxS+PFOS (1)	0.21	µg/L	AsureQuality Method (LC-MS/MS)
PFNS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFDS	<0.0050	µg/L	AsureQuality Method (LC-MS/MS)
PFECHS	<0.0050	µg/L	AsureQuality Method (LC-MS/MS)

Test	Result	Unit	Method Reference
Perfluoroalkylcarboxylic acids			
PFBA	0.088	µg/L	AsureQuality Method (LC-MS/MS)
PFPeA	0.29	µg/L	AsureQuality Method (LC-MS/MS)
PFHxA	0.18	µg/L	AsureQuality Method (LC-MS/MS)
PFHpA	0.099	µg/L	AsureQuality Method (LC-MS/MS)
PFOA	0.068	µg/L	AsureQuality Method (LC-MS/MS)
PFNA	0.014	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	<0.0010	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)
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	0.0022	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	95	%	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	95	%	AsureQuality Method (LC-MS/MS)
M5PFHxA	91	%	AsureQuality Method (LC-MS/MS)
MPFHpA	100	%	AsureQuality Method (LC-MS/MS)
M8PFOA	89	%	AsureQuality Method (LC-MS/MS)
M9PFNA	92	%	AsureQuality Method (LC-MS/MS)
M6PFDA	100	%	AsureQuality Method (LC-MS/MS)
M7PFUnDA	89	%	AsureQuality Method (LC-MS/MS)

Test	Result	Unit	Method Reference
MPFDoDA	64	%	AsureQuality Method (LC-MS/MS)
MPFTeDA	38	%	AsureQuality Method (LC-MS/MS)
MPFOSA	78	%	AsureQuality Method (LC-MS/MS)
DNEtFOSA	47	%	AsureQuality Method (LC-MS/MS)
DNMeFOSA	53	%	AsureQuality Method (LC-MS/MS)
DNEtFOSAA	82	%	AsureQuality Method (LC-MS/MS)
DNMeFOSAA	85	%	AsureQuality Method (LC-MS/MS)
DNEtFOSE	53	%	AsureQuality Method (LC-MS/MS)
DNMeFOSE	57	%	AsureQuality Method (LC-MS/MS)
M4:2FTS	102	%	AsureQuality Method (LC-MS/MS)
M6:2FTS	88	%	AsureQuality Method (LC-MS/MS)
M8:2FTS	87	%	AsureQuality Method (LC-MS/MS)
M3HFPO-DA	120	%	AsureQuality Method (LC-MS/MS)

QC Results

Blank

Relates to sample(s) 24-102486-1, 24-102486-4

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	<0.0050	µg/L	AsureQuality Method (LC-MS/MS)
PFECHS	<0.0050	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	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)

Test	Result	Unit	Method Reference
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)
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	97	%	AsureQuality Method (LC-MS/MS)
M3PFHxS	88	%	AsureQuality Method (LC-MS/MS)
M8PFOS	93	%	AsureQuality Method (LC-MS/MS)
M4PFBA	100	%	AsureQuality Method (LC-MS/MS)
M5PFPeA	101	%	AsureQuality Method (LC-MS/MS)
M5PFHxA	96	%	AsureQuality Method (LC-MS/MS)
MPFHpA	100	%	AsureQuality Method (LC-MS/MS)
M8PFOA	95	%	AsureQuality Method (LC-MS/MS)
M9PFNA	93	%	AsureQuality Method (LC-MS/MS)
M6PFDA	105	%	AsureQuality Method (LC-MS/MS)
M7PFUnDA	91	%	AsureQuality Method (LC-MS/MS)
MPFDoDA	98	%	AsureQuality Method (LC-MS/MS)
MPFTeDA	89	%	AsureQuality Method (LC-MS/MS)
MPFOSA	103	%	AsureQuality Method (LC-MS/MS)
DNEtFOSA	117	%	AsureQuality Method (LC-MS/MS)
DNMeFOSA	117	%	AsureQuality Method (LC-MS/MS)
DNEtFOSAA	94	%	AsureQuality Method (LC-MS/MS)
DNMeFOSAA	94	%	AsureQuality Method (LC-MS/MS)
DNEtFOSE	124	%	AsureQuality Method (LC-MS/MS)

Test	Result	Unit	Method Reference
DNMeFOSE	111	%	AsureQuality Method (LC-MS/MS)
M4:2FTS	94	%	AsureQuality Method (LC-MS/MS)
M6:2FTS	95	%	AsureQuality Method (LC-MS/MS)
M8:2FTS	102	%	AsureQuality Method (LC-MS/MS)
M3HFPO-DA	133	%	AsureQuality Method (LC-MS/MS)

Blank

Relates to sample(s) 24-102486-2, 24-102486-3

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)
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	<0.0020	µg/L	AsureQuality Method (LC-MS/MS)
PFDS	NR	µg/L	AsureQuality Method (LC-MS/MS)
PFECHS	<0.0020	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	<0.0010	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	NR	µg/L	AsureQuality Method (LC-MS/MS)
NMeFOSA-M	NR	µg/L	AsureQuality Method (LC-MS/MS)
Perfluorooctanesulfonamidoacetic acids			
NEtFOSAA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
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)	<0.0020	µg/L	AsureQuality Method (LC-MS/MS)
F-53B (minor)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Sum F-53B	<0.0020	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	74	%	AsureQuality Method (LC-MS/MS)
M8PFOS	44	%	AsureQuality Method (LC-MS/MS)
M4PFBA	107	%	AsureQuality Method (LC-MS/MS)
M5PFPeA	102	%	AsureQuality Method (LC-MS/MS)
M5PFHxA	101	%	AsureQuality Method (LC-MS/MS)
MPFHpA	101	%	AsureQuality Method (LC-MS/MS)
M8PFOA	83	%	AsureQuality Method (LC-MS/MS)
M9PFNA	68	%	AsureQuality Method (LC-MS/MS)
M6PFDA	53	%	AsureQuality Method (LC-MS/MS)
M7PFUnDA	28 (R)	%	AsureQuality Method (LC-MS/MS)
MPFDoDA	18 (R)	%	AsureQuality Method (LC-MS/MS)
MPFTeDA	15 (R)	%	AsureQuality Method (LC-MS/MS)
MPFOSA	58	%	AsureQuality Method (LC-MS/MS)
DNEtFOSA	21 (R)	%	AsureQuality Method (LC-MS/MS)
DNMeFOSA	29 (R)	%	AsureQuality Method (LC-MS/MS)
DNEtFOSAA	33	%	AsureQuality Method (LC-MS/MS)
DNMeFOSAA	49	%	AsureQuality Method (LC-MS/MS)
DNEtFOSE	45	%	AsureQuality Method (LC-MS/MS)
DNMeFOSE	46	%	AsureQuality Method (LC-MS/MS)
M4:2FTS	106	%	AsureQuality Method (LC-MS/MS)
M6:2FTS	96	%	AsureQuality Method (LC-MS/MS)
M8:2FTS	104	%	AsureQuality Method (LC-MS/MS)
M3HFPO-DA	99	%	AsureQuality Method (LC-MS/MS)

R = Recovery outside method limits

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, Christopher Sampson

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

Christopher Sampson
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
PFPeS	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	0.0010 µg/L
PFECHS	0.0010 µg/L
Perfluoroalkylcarboxylic acids	
PFBA	0.0010 µg/L
PFPeA	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	0.0010 µg/L
PFTeDA	0.0010 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
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	
PFPrS	Perfluoro-1-propanesulfonic acid
PFBS	Perfluoro-1-butanesulfonic acid
PFPeS	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 Perfluorooctanesulfonic acid
PFNS	Perfluoro-1-nonanesulfonic acid
PFDS	Perfluoro-1-decanesulfonic acid
PFECHS	Perfluoro-4-ethylcyclohexanesulfonic acid
Perfluoroalkylcarboxylic acids	
PFBA	Perfluoro-n-butanoic acid
PFPeA	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
Perfluorooctanesulfonamides	
PFOSA	Perfluoro-1-octanesulfonamide
NEtFOSA-M	N-ethylperfluoro-1-octanesulfonamide
NMeFOSA-M	N-methylperfluoro-1-octanesulfonamide
Perfluorooctanesulfonamidoacetic acids	
NEtFOSAA	N-ethylperfluoro-1-octanesulfonamidoacetic acid
NMeFOSAA	N-methylperfluoro-1-octanesulfonamidoacetic acid
Perfluorooctanesulfonamidoethanols	
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-chloroeicosafluoro-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

AsureQuality Limited | 1C Quadrant Drive | Waiwhetu | Lower Hutt 5010 | Wellington | New Zealand
PO Box 31242 | Lower Hutt 5040 | Wellington | New Zealand
t. +64 4 570 8800 | e. cswellington@asurequality.com | w. www.asurequality.com

Certificate of Analysis

Submission Reference: A02744125
Final Report

NZDF ESDAT
Pattle Delamore Partners Limited
P O Box 9528
Auckland 1149
New Zealand

PO Number: OHA_PFAS

Report Issued: 09-May-2024 **AsureQuality Reference: 24-102552** **Sample(s) Received:** 12-Apr-2024 08:15

Testing Period: 12-Apr-2024 to 09-May-2024
Date of analysis is available on request.

Results

The tests were performed on the samples as received.

Customer Sample Name: OHA_GW112.1_100424 **Lab ID:** 24-102552-1

Sample Condition: Acceptable **Sampled Date**: 10-Apr-2024

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	0.026	µg/L	AsureQuality Method (LC-MS/MS)
PFPeS	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)	0.26	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)	0.092	µg/L	AsureQuality Method (LC-MS/MS)
L-PFOS (5)	0.15	µg/L	AsureQuality Method (LC-MS/MS)
Total PFOS (7)	0.24	µg/L	AsureQuality Method (LC-MS/MS)
Sum PFHxS+PFOS (1)	0.54	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	0.13	µg/L	AsureQuality Method (LC-MS/MS)
PFPeA	0.42	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	0.079	µg/L	AsureQuality Method (LC-MS/MS)
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)

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)
Perfluorooctanesulfonamides			
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)
Perfluorooctanesulfonamidoacetic acids			
NEtFOSAA	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
NMeFOSAA	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
Perfluorooctanesulfonamidoethanols			
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	114	%	AsureQuality Method (LC-MS/MS)
M3PFHxS	112	%	AsureQuality Method (LC-MS/MS)
M8PFOS	117	%	AsureQuality Method (LC-MS/MS)
M4PFBA	111	%	AsureQuality Method (LC-MS/MS)
M5PFPeA	114	%	AsureQuality Method (LC-MS/MS)
M5PFHxA	114	%	AsureQuality Method (LC-MS/MS)
MPFHpA	112	%	AsureQuality Method (LC-MS/MS)
M8PFOA	108	%	AsureQuality Method (LC-MS/MS)
M9PFNA	112	%	AsureQuality Method (LC-MS/MS)
M6PFDA	122	%	AsureQuality Method (LC-MS/MS)
M7PFUnDA	121	%	AsureQuality Method (LC-MS/MS)
MPFDoDA	116	%	AsureQuality Method (LC-MS/MS)
MPFTeDA	129	%	AsureQuality Method (LC-MS/MS)
MPFOSA	109	%	AsureQuality Method (LC-MS/MS)
DNEtFOSA	111	%	AsureQuality Method (LC-MS/MS)
DNMeFOSA	113	%	AsureQuality Method (LC-MS/MS)
DNEtFOSAA	117	%	AsureQuality Method (LC-MS/MS)
DNMeFOSAA	118	%	AsureQuality Method (LC-MS/MS)
DNEtFOSE	110	%	AsureQuality Method (LC-MS/MS)
DNMeFOSE	112	%	AsureQuality Method (LC-MS/MS)

Test	Result	Unit	Method Reference
M4:2FTS	107	%	AsureQuality Method (LC-MS/MS)
M6:2FTS	100	%	AsureQuality Method (LC-MS/MS)
M8:2FTS	108	%	AsureQuality Method (LC-MS/MS)
M3HFPO-DA	90	%	AsureQuality Method (LC-MS/MS)

Customer Sample Name: OHA_GW112.2_100424 **Lab ID:** 24-102552-2

Sample Condition: Acceptable **Sampled Date**: 10-Apr-2024

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	<0.0020	µg/L	AsureQuality Method (LC-MS/MS)
PFDS	NR	µg/L	AsureQuality Method (LC-MS/MS)
PFECHS	<0.0020	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	<0.0010	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	NR	µg/L	AsureQuality Method (LC-MS/MS)
NMeFOSA-M	NR	µg/L	AsureQuality Method (LC-MS/MS)
Perfluorooctanesulfonamidoacetic acids			
NEtFOSAA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
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)

Test	Result	Unit	Method Reference
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)	<0.0020	µg/L	AsureQuality Method (LC-MS/MS)
F-53B (minor)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Sum F-53B	<0.0020	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	125	%	AsureQuality Method (LC-MS/MS)
M3PFHxS	126	%	AsureQuality Method (LC-MS/MS)
M8PFOS	165 (R)	%	AsureQuality Method (LC-MS/MS)
M4PFBA	115	%	AsureQuality Method (LC-MS/MS)
M5PFPeA	103	%	AsureQuality Method (LC-MS/MS)
M5PFHxA	112	%	AsureQuality Method (LC-MS/MS)
MPFHpA	116	%	AsureQuality Method (LC-MS/MS)
M8PFOA	119	%	AsureQuality Method (LC-MS/MS)
M9PFNA	117	%	AsureQuality Method (LC-MS/MS)
M6PFDA	130	%	AsureQuality Method (LC-MS/MS)
M7PFUnDA	182 (R)	%	AsureQuality Method (LC-MS/MS)
MPFDoDA	235 (R)	%	AsureQuality Method (LC-MS/MS)
MPFTeDA	44	%	AsureQuality Method (LC-MS/MS)
MPFOSA	88	%	AsureQuality Method (LC-MS/MS)
DNEtFOSA	39	%	AsureQuality Method (LC-MS/MS)
DNMeFOSA	27 (R)	%	AsureQuality Method (LC-MS/MS)
DNEtFOSAA	87	%	AsureQuality Method (LC-MS/MS)
DNMeFOSAA	95	%	AsureQuality Method (LC-MS/MS)
DNEtFOSE	45	%	AsureQuality Method (LC-MS/MS)
DNMeFOSE	40	%	AsureQuality Method (LC-MS/MS)
M4:2FTS	127	%	AsureQuality Method (LC-MS/MS)
M6:2FTS	122	%	AsureQuality Method (LC-MS/MS)
M8:2FTS	156 (R)	%	AsureQuality Method (LC-MS/MS)
M3HFPO-DA	117	%	AsureQuality Method (LC-MS/MS)

R = Recovery outside method limits

QC Results

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Relates to sample(s) 24-102552-1

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)

Test	Result	Unit	Method Reference
PFBS	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
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)
Perfluorooctanesulfonamides			
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)
Perfluorooctanesulfonamidoacetic acids			
NEtFOSAA	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
NMeFOSAA	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
Perfluorooctanesulfonamidoethanols			
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	111	%	AsureQuality Method (LC-MS/MS)
M3PFHxS	102	%	AsureQuality Method (LC-MS/MS)
M8PFOS	105	%	AsureQuality Method (LC-MS/MS)
M4PFBA	109	%	AsureQuality Method (LC-MS/MS)
M5PFPeA	109	%	AsureQuality Method (LC-MS/MS)
M5PFHxA	111	%	AsureQuality Method (LC-MS/MS)
MPFHpA	108	%	AsureQuality Method (LC-MS/MS)
M8PFOA	111	%	AsureQuality Method (LC-MS/MS)
M9PFNA	108	%	AsureQuality Method (LC-MS/MS)
M6PFDA	102	%	AsureQuality Method (LC-MS/MS)
M7PFUnDA	110	%	AsureQuality Method (LC-MS/MS)
MPFDoDA	103	%	AsureQuality Method (LC-MS/MS)
MPFTeDA	99	%	AsureQuality Method (LC-MS/MS)
MPFOSA	102	%	AsureQuality Method (LC-MS/MS)
DNEtFOSA	102	%	AsureQuality Method (LC-MS/MS)
DNMeFOSA	104	%	AsureQuality Method (LC-MS/MS)
DNEtFOSAA	110	%	AsureQuality Method (LC-MS/MS)
DNMeFOSAA	103	%	AsureQuality Method (LC-MS/MS)
DNEtFOSE	104	%	AsureQuality Method (LC-MS/MS)
DNMeFOSE	101	%	AsureQuality Method (LC-MS/MS)
M4:2FTS	108	%	AsureQuality Method (LC-MS/MS)
M6:2FTS	102	%	AsureQuality Method (LC-MS/MS)
M8:2FTS	118	%	AsureQuality Method (LC-MS/MS)
M3HFPO-DA	87	%	AsureQuality Method (LC-MS/MS)

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Relates to sample(s) 24-102552-2

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)
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)

Test	Result	Unit	Method Reference
Sum PFHxS+PFOS (1)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFNS	<0.0020	µg/L	AsureQuality Method (LC-MS/MS)
PFDS	NR	µg/L	AsureQuality Method (LC-MS/MS)
PFECHS	<0.0020	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	<0.0010	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	NR	µg/L	AsureQuality Method (LC-MS/MS)
NMeFOSA-M	NR	µg/L	AsureQuality Method (LC-MS/MS)
Perfluorooctanesulfonamidoacetic acids			
NEtFOSAA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
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)	<0.0020	µg/L	AsureQuality Method (LC-MS/MS)
F-53B (minor)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Sum F-53B	<0.0020	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	74	%	AsureQuality Method (LC-MS/MS)
M8PFOS	44	%	AsureQuality Method (LC-MS/MS)
M4PFBA	107	%	AsureQuality Method (LC-MS/MS)

Test	Result	Unit	Method Reference
M5PFPeA	102	%	AsureQuality Method (LC-MS/MS)
M5PFHxA	101	%	AsureQuality Method (LC-MS/MS)
MPFHpA	101	%	AsureQuality Method (LC-MS/MS)
M8PFOA	83	%	AsureQuality Method (LC-MS/MS)
M9PFNA	68	%	AsureQuality Method (LC-MS/MS)
M6PFDA	53	%	AsureQuality Method (LC-MS/MS)
M7PFUnDA	28 (R)	%	AsureQuality Method (LC-MS/MS)
MPFDoDA	18 (R)	%	AsureQuality Method (LC-MS/MS)
MPFTeDA	15 (R)	%	AsureQuality Method (LC-MS/MS)
MPFOSA	58	%	AsureQuality Method (LC-MS/MS)
DNEtFOSA	21 (R)	%	AsureQuality Method (LC-MS/MS)
DNMeFOSA	29 (R)	%	AsureQuality Method (LC-MS/MS)
DNEtFOSAA	33	%	AsureQuality Method (LC-MS/MS)
DNMeFOSAA	49	%	AsureQuality Method (LC-MS/MS)
DNEtFOSE	45	%	AsureQuality Method (LC-MS/MS)
DNMeFOSE	46	%	AsureQuality Method (LC-MS/MS)
M4:2FTS	106	%	AsureQuality Method (LC-MS/MS)
M6:2FTS	96	%	AsureQuality Method (LC-MS/MS)
M8:2FTS	104	%	AsureQuality Method (LC-MS/MS)
M3HFPO-DA	99	%	AsureQuality Method (LC-MS/MS)

R = Recovery outside method limits

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

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: 24-102552-2	
Perfluoroalkylsulfonic acids	
PFPrS	0.0010 µg/L
PFBS	0.0010 µg/L
PFPeS	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
PFPeA	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	0.0010 µg/L
PFTeDA	NR µg/L
P37DMOA	0.0010 µg/L
Perfluorooctanesulfonamides	
PFOSA	0.0010 µg/L
NEtFOSA-M	NR µg/L
NMeFOSA-M	NR 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

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: 24-102552-1	
Perfluoroalkylsulfonic acids	
PFPrS	0.025 µg/L
PFBS	0.025 µg/L
PFPeS	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
PFPeA	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
Perfluorooctanesulfonamides	
PFOSA	0.025 µg/L
NEtFOSA-M	0.10 µg/L
NMeFOSA-M	0.10 µg/L
Perfluorooctanesulfonamidoacetic acids	
NEtFOSAA	0.025 µg/L
NMeFOSAA	0.025 µg/L
Perfluorooctanesulfonamidoethanols	
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
Listing applies to samples: 24-102552-2	
Perfluoroalkylsulfonic acids	
PFPrS	Perfluoro-1-propanesulfonic acid
PFBS	Perfluoro-1-butanesulfonic acid
PFPeS	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 Perfluorooctanesulfonic acid
PFNS	Perfluoro-1-nonanesulfonic acid
PFDS	Perfluoro-1-decanesulfonic acid
PFECHS	Perfluoro-4-ethylcyclohexanesulfonic acid
Perfluoroalkylcarboxylic acids	
PFBA	Perfluoro-n-butanoic acid
PFPeA	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
Perfluorooctanesulfonamides	
PFOSA	Perfluoro-1-octanesulfonamide
NEtFOSA-M	N-ethylperfluoro-1-octanesulfonamide
NMeFOSA-M	N-methylperfluoro-1-octanesulfonamide
Perfluorooctanesulfonamidoacetic acids	
NEtFOSAA	N-ethylperfluoro-1-octanesulfonamidoacetic acid
NMeFOSAA	N-methylperfluoro-1-octanesulfonamidoacetic acid
Perfluorooctanesulfonamidoethanols	

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-chloroeicosafluoro-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
Listing applies to samples: 24-102552-1	
Perfluoroalkylsulfonic acids	
PFPrS	Perfluoro-1-propanesulfonic acid
PFBS	Perfluoro-1-butanesulfonic acid
PFPeS	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
PFPeA	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
Perfluorooctanesulfonamides	
PFOSA	Perfluoro-1-octanesulfonamide
NEtFOSA-M	N-ethylperfluoro-1-octanesulfonamide
NMeFOSA-M	N-methylperfluoro-1-octanesulfonamide
Perfluorooctanesulfonamidoacetic acids	
NEtFOSAA	N-ethylperfluoro-1-octanesulfonamidoacetic acid
NMeFOSAA	N-methylperfluoro-1-octanesulfonamidoacetic acid
Perfluorooctanesulfonamidoethanols	
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-chloroeicosafluoro-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

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

AsureQuality Limited | 1C Quadrant Drive | Waiwhetu | Lower Hutt 5010 | Wellington | New Zealand
PO Box 31242 | Lower Hutt 5040 | Wellington | New Zealand
t. +64 4 570 8800 | e. cswellington@asurequality.com | w. www.asurequality.com

Certificate of Analysis

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Final Report

Nerena Rhodes
Pattle Delamore Partners Limited
P O Box 9528
Auckland 1149
New Zealand

PO Number: OHA_PFAS

Report Issued: 24-Apr-2024 **AsureQuality Reference: 24-100824** **Sample(s) Received:** 10-Apr-2024 08:30

Testing Period: 10-Apr-2024 to 24-Apr-2024
Date of analysis is available on request.

Results

The tests were performed on the samples as received.

Customer Sample Name: OHA_MW4_090424 **Lab ID:** 24-100824-1

Sample Condition: Acceptable **Sampled Date**: 09-Apr-2024

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	0.027	µg/L	AsureQuality Method (LC-MS/MS)
PFPeS	0.031	µg/L	AsureQuality Method (LC-MS/MS)
di-PFHxS (1)	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
mono-PFHxS (1)	0.060	µg/L	AsureQuality Method (LC-MS/MS)
L-PFHxS (1)	0.37	µg/L	AsureQuality Method (LC-MS/MS)
Total PFHxS (3)	0.43	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)	0.37	µg/L	AsureQuality Method (LC-MS/MS)
L-PFOS (5)	0.79	µg/L	AsureQuality Method (LC-MS/MS)
Total PFOS (7)	1.2	µg/L	AsureQuality Method (LC-MS/MS)
Sum PFHxS+PFOS (1)	1.6	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	0.14	µg/L	AsureQuality Method (LC-MS/MS)
PFPeA	0.50	µg/L	AsureQuality Method (LC-MS/MS)
PFHxA	0.35	µg/L	AsureQuality Method (LC-MS/MS)
PFHpA	0.17	µg/L	AsureQuality Method (LC-MS/MS)
PFOA	0.16	µg/L	AsureQuality Method (LC-MS/MS)
PFNA	0.098	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)

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)
Perfluorooctanesulfonamides			
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)
Perfluorooctanesulfonamidoacetic acids			
NEtFOSAA	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
NMeFOSAA	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
Perfluorooctanesulfonamidoethanols			
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	0.29	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	113	%	AsureQuality Method (LC-MS/MS)
M8PFOS	109	%	AsureQuality Method (LC-MS/MS)
M4PFBA	110	%	AsureQuality Method (LC-MS/MS)
M5PFPeA	111	%	AsureQuality Method (LC-MS/MS)
M5PFHxA	112	%	AsureQuality Method (LC-MS/MS)
MPFHpA	110	%	AsureQuality Method (LC-MS/MS)
M8PFOA	110	%	AsureQuality Method (LC-MS/MS)
M9PFNA	111	%	AsureQuality Method (LC-MS/MS)
M6PFDA	112	%	AsureQuality Method (LC-MS/MS)
M7PFUnDA	120	%	AsureQuality Method (LC-MS/MS)
MPFDoDA	109	%	AsureQuality Method (LC-MS/MS)
MPFTeDA	114	%	AsureQuality Method (LC-MS/MS)
MPFOSA	104	%	AsureQuality Method (LC-MS/MS)
DNEtFOSA	105	%	AsureQuality Method (LC-MS/MS)
DNMeFOSA	108	%	AsureQuality Method (LC-MS/MS)
DNEtFOSAA	115	%	AsureQuality Method (LC-MS/MS)
DNMeFOSAA	105	%	AsureQuality Method (LC-MS/MS)
DNEtFOSE	108	%	AsureQuality Method (LC-MS/MS)
DNMeFOSE	107	%	AsureQuality Method (LC-MS/MS)

Test	Result	Unit	Method Reference
M4:2FTS	107	%	AsureQuality Method (LC-MS/MS)
M6:2FTS	104	%	AsureQuality Method (LC-MS/MS)
M8:2FTS	116	%	AsureQuality Method (LC-MS/MS)
M3HFPO-DA	102	%	AsureQuality Method (LC-MS/MS)

Customer Sample Name: OHA_AAV_090424 **Lab ID:** 24-100824-2

Sample Condition: Acceptable **Sampled Date**: 09-Apr-2024

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)
PFPeS	0.030	µg/L	AsureQuality Method (LC-MS/MS)
di-PFHxS (1)	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
mono-PFHxS (1)	0.061	µg/L	AsureQuality Method (LC-MS/MS)
L-PFHxS (1)	0.41	µg/L	AsureQuality Method (LC-MS/MS)
Total PFHxS (3)	0.47	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)	0.39	µg/L	AsureQuality Method (LC-MS/MS)
L-PFOS (5)	0.95	µg/L	AsureQuality Method (LC-MS/MS)
Total PFOS (7)	1.3	µg/L	AsureQuality Method (LC-MS/MS)
Sum PFHxS+PFOS (1)	1.8	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)
PFPeA	0.49	µg/L	AsureQuality Method (LC-MS/MS)
PFHxA	0.34	µg/L	AsureQuality Method (LC-MS/MS)
PFHpA	0.17	µg/L	AsureQuality Method (LC-MS/MS)
PFOA	0.17	µg/L	AsureQuality Method (LC-MS/MS)
PFNA	0.096	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)
Perfluorooctanesulfonamides			
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)
Perfluorooctanesulfonamidoacetic acids			
NEtFOSAA	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
NMeFOSAA	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
Perfluorooctanesulfonamidoethanols			
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	0.26	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	116	%	AsureQuality Method (LC-MS/MS)
M3PFHxS	107	%	AsureQuality Method (LC-MS/MS)
M8PFOS	109	%	AsureQuality Method (LC-MS/MS)
M4PFBA	111	%	AsureQuality Method (LC-MS/MS)
M5PFPeA	111	%	AsureQuality Method (LC-MS/MS)
M5PFHxA	114	%	AsureQuality Method (LC-MS/MS)
MPFHpA	108	%	AsureQuality Method (LC-MS/MS)
M8PFOA	109	%	AsureQuality Method (LC-MS/MS)
M9PFNA	114	%	AsureQuality Method (LC-MS/MS)
M6PFDA	116	%	AsureQuality Method (LC-MS/MS)
M7PFUnDA	114	%	AsureQuality Method (LC-MS/MS)
MPFDoDA	115	%	AsureQuality Method (LC-MS/MS)
MPFTeDA	118	%	AsureQuality Method (LC-MS/MS)
MPFOSA	108	%	AsureQuality Method (LC-MS/MS)
DNEtFOSA	108	%	AsureQuality Method (LC-MS/MS)
DNMeFOSA	111	%	AsureQuality Method (LC-MS/MS)
DNEtFOSAA	115	%	AsureQuality Method (LC-MS/MS)
DNMeFOSAA	110	%	AsureQuality Method (LC-MS/MS)
DNEtFOSE	109	%	AsureQuality Method (LC-MS/MS)
DNMeFOSE	106	%	AsureQuality Method (LC-MS/MS)
M4:2FTS	106	%	AsureQuality Method (LC-MS/MS)
M6:2FTS	105	%	AsureQuality Method (LC-MS/MS)
M8:2FTS	107	%	AsureQuality Method (LC-MS/MS)
M3HFPO-DA	90	%	AsureQuality Method (LC-MS/MS)

Customer Sample Name: OHA_AAW_090424 **Lab ID:** 24-100824-3

Sample Condition: Acceptable **Sampled Date**: 09-Apr-2024

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)

Test	Result	Unit	Method Reference
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	<0.0050	µg/L	AsureQuality Method (LC-MS/MS)
PFECHS	<0.0050	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	<0.0010	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)
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)

Test	Result	Unit	Method Reference
Internal Standards			
M3PFBS	80	%	AsureQuality Method (LC-MS/MS)
M3PFHxS	83	%	AsureQuality Method (LC-MS/MS)
M8PFOS	95	%	AsureQuality Method (LC-MS/MS)
M4PFBA	81	%	AsureQuality Method (LC-MS/MS)
M5PFPeA	84	%	AsureQuality Method (LC-MS/MS)
M5PFHxA	82	%	AsureQuality Method (LC-MS/MS)
MPFHpA	90	%	AsureQuality Method (LC-MS/MS)
M8PFOA	84	%	AsureQuality Method (LC-MS/MS)
M9PFNA	85	%	AsureQuality Method (LC-MS/MS)
M6PFDA	99	%	AsureQuality Method (LC-MS/MS)
M7PFUnDA	99	%	AsureQuality Method (LC-MS/MS)
MPFDoDA	98	%	AsureQuality Method (LC-MS/MS)
MPFTeDA	80	%	AsureQuality Method (LC-MS/MS)
MPFOSA	109	%	AsureQuality Method (LC-MS/MS)
DNEtFOSA	86	%	AsureQuality Method (LC-MS/MS)
DNMeFOSA	103	%	AsureQuality Method (LC-MS/MS)
DNEtFOSAA	94	%	AsureQuality Method (LC-MS/MS)
DNMeFOSAA	90	%	AsureQuality Method (LC-MS/MS)
DNEtFOSE	85	%	AsureQuality Method (LC-MS/MS)
DNMeFOSE	84	%	AsureQuality Method (LC-MS/MS)
M4:2FTS	84	%	AsureQuality Method (LC-MS/MS)
M6:2FTS	80	%	AsureQuality Method (LC-MS/MS)
M8:2FTS	82	%	AsureQuality Method (LC-MS/MS)
M3HFPO-DA	122	%	AsureQuality Method (LC-MS/MS)

Customer Sample Name: OHA_AAX_090424 **Lab ID:** 24-100824-4

Sample Condition: Acceptable **Sampled Date**: 09-Apr-2024

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	<0.0050	µg/L	AsureQuality Method (LC-MS/MS)
PFECHS	<0.0050	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)

Test	Result	Unit	Method Reference
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	<0.0010	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)
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	88	%	AsureQuality Method (LC-MS/MS)
M3PFHxS	94	%	AsureQuality Method (LC-MS/MS)
M8PFOS	117	%	AsureQuality Method (LC-MS/MS)
M4PFBA	94	%	AsureQuality Method (LC-MS/MS)
M5PFPeA	95	%	AsureQuality Method (LC-MS/MS)
M5PFHxA	91	%	AsureQuality Method (LC-MS/MS)
MPFHpA	102	%	AsureQuality Method (LC-MS/MS)
M8PFOA	97	%	AsureQuality Method (LC-MS/MS)
M9PFNA	101	%	AsureQuality Method (LC-MS/MS)
M6PFDA	120	%	AsureQuality Method (LC-MS/MS)
M7PFUnDA	133	%	AsureQuality Method (LC-MS/MS)
MPFDoDA	117	%	AsureQuality Method (LC-MS/MS)
MPFTeDA	66	%	AsureQuality Method (LC-MS/MS)
MPFOSA	107	%	AsureQuality Method (LC-MS/MS)

Test	Result	Unit	Method Reference
DNEtFOSA	75	%	AsureQuality Method (LC-MS/MS)
DNMeFOSA	90	%	AsureQuality Method (LC-MS/MS)
DNEtFOSAA	119	%	AsureQuality Method (LC-MS/MS)
DNMeFOSAA	111	%	AsureQuality Method (LC-MS/MS)
DNEtFOSE	84	%	AsureQuality Method (LC-MS/MS)
DNMeFOSE	84	%	AsureQuality Method (LC-MS/MS)
M4:2FTS	103	%	AsureQuality Method (LC-MS/MS)
M6:2FTS	110	%	AsureQuality Method (LC-MS/MS)
M8:2FTS	122	%	AsureQuality Method (LC-MS/MS)
M3HFPO-DA	125	%	AsureQuality Method (LC-MS/MS)

Customer Sample Name: OHA_AAY_090424 **Lab ID:** 24-100824-5

Sample Condition: Acceptable **Sampled Date**: 09-Apr-2024

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	<0.0050	µg/L	AsureQuality Method (LC-MS/MS)
PFECHS	<0.0050	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	<0.0010	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)

Test	Result	Unit	Method Reference
Perfluorooctanesulfonamidoacetic acids			
NEtFOSAA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
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	97	%	AsureQuality Method (LC-MS/MS)
M3PFHxS	96	%	AsureQuality Method (LC-MS/MS)
M8PFOS	103	%	AsureQuality Method (LC-MS/MS)
M4PFBA	101	%	AsureQuality Method (LC-MS/MS)
M5PFPeA	99	%	AsureQuality Method (LC-MS/MS)
M5PFHxA	93	%	AsureQuality Method (LC-MS/MS)
MPFHpA	101	%	AsureQuality Method (LC-MS/MS)
M8PFOA	96	%	AsureQuality Method (LC-MS/MS)
M9PFNA	97	%	AsureQuality Method (LC-MS/MS)
M6PFDA	109	%	AsureQuality Method (LC-MS/MS)
M7PFUnDA	92	%	AsureQuality Method (LC-MS/MS)
MPFDoDA	92	%	AsureQuality Method (LC-MS/MS)
MPFTeDA	74	%	AsureQuality Method (LC-MS/MS)
MPFOSA	102	%	AsureQuality Method (LC-MS/MS)
DNEtFOSA	74	%	AsureQuality Method (LC-MS/MS)
DNMeFOSA	87	%	AsureQuality Method (LC-MS/MS)
DNEtFOSAA	91	%	AsureQuality Method (LC-MS/MS)
DNMeFOSAA	97	%	AsureQuality Method (LC-MS/MS)
DNEtFOSE	92	%	AsureQuality Method (LC-MS/MS)
DNMeFOSE	83	%	AsureQuality Method (LC-MS/MS)
M4:2FTS	100	%	AsureQuality Method (LC-MS/MS)
M6:2FTS	94	%	AsureQuality Method (LC-MS/MS)
M8:2FTS	93	%	AsureQuality Method (LC-MS/MS)
M3HFPO-DA	102	%	AsureQuality Method (LC-MS/MS)

QC Results

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Relates to sample(s) 24-100824-1, 24-100824-2

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)
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)
Perfluorooctanesulfonamides			
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)
Perfluorooctanesulfonamidoacetic acids			
NEtFOSAA	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
NMeFOSAA	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
Perfluorooctanesulfonamidoethanols			
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	111	%	AsureQuality Method (LC-MS/MS)
M3PFHxS	102	%	AsureQuality Method (LC-MS/MS)
M8PFOS	105	%	AsureQuality Method (LC-MS/MS)
M4PFBA	109	%	AsureQuality Method (LC-MS/MS)
M5PFPeA	109	%	AsureQuality Method (LC-MS/MS)
M5PFHxA	111	%	AsureQuality Method (LC-MS/MS)
MPFHpA	108	%	AsureQuality Method (LC-MS/MS)
M8PFOA	111	%	AsureQuality Method (LC-MS/MS)
M9PFNA	108	%	AsureQuality Method (LC-MS/MS)
M6PFDA	102	%	AsureQuality Method (LC-MS/MS)
M7PFUnDA	110	%	AsureQuality Method (LC-MS/MS)
MPFDoDA	103	%	AsureQuality Method (LC-MS/MS)
MPFTeDA	99	%	AsureQuality Method (LC-MS/MS)
MPFOSA	102	%	AsureQuality Method (LC-MS/MS)
DNEtFOSA	102	%	AsureQuality Method (LC-MS/MS)
DNMeFOSA	104	%	AsureQuality Method (LC-MS/MS)
DNEtFOSAA	110	%	AsureQuality Method (LC-MS/MS)
DNMeFOSAA	103	%	AsureQuality Method (LC-MS/MS)
DNEtFOSE	104	%	AsureQuality Method (LC-MS/MS)
DNMeFOSE	101	%	AsureQuality Method (LC-MS/MS)
M4:2FTS	108	%	AsureQuality Method (LC-MS/MS)
M6:2FTS	102	%	AsureQuality Method (LC-MS/MS)
M8:2FTS	118	%	AsureQuality Method (LC-MS/MS)
M3HFPO-DA	87	%	AsureQuality Method (LC-MS/MS)

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Relates to sample(s) 24-100824-3, 24-100824-4, 24-100824-5

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	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFDS	<0.0050	µg/L	AsureQuality Method (LC-MS/MS)
PFECHS	<0.0050	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	<0.0010	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)
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)

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	97	%	AsureQuality Method (LC-MS/MS)
M3PFHxS	88	%	AsureQuality Method (LC-MS/MS)
M8PFOS	93	%	AsureQuality Method (LC-MS/MS)
M4PFBA	100	%	AsureQuality Method (LC-MS/MS)
M5PFPeA	101	%	AsureQuality Method (LC-MS/MS)
M5PFHxA	96	%	AsureQuality Method (LC-MS/MS)
MPFHpA	100	%	AsureQuality Method (LC-MS/MS)
M8PFOA	95	%	AsureQuality Method (LC-MS/MS)
M9PFNA	93	%	AsureQuality Method (LC-MS/MS)
M6PFDA	105	%	AsureQuality Method (LC-MS/MS)
M7PFUnDA	91	%	AsureQuality Method (LC-MS/MS)
MPFDoDA	98	%	AsureQuality Method (LC-MS/MS)
MPFTeDA	89	%	AsureQuality Method (LC-MS/MS)
MPFOSA	103	%	AsureQuality Method (LC-MS/MS)
DNEtFOSA	117	%	AsureQuality Method (LC-MS/MS)
DNMeFOSA	117	%	AsureQuality Method (LC-MS/MS)
DNEtFOSAA	94	%	AsureQuality Method (LC-MS/MS)
DNMeFOSAA	94	%	AsureQuality Method (LC-MS/MS)
DNEtFOSE	124	%	AsureQuality Method (LC-MS/MS)
DNMeFOSE	111	%	AsureQuality Method (LC-MS/MS)
M4:2FTS	94	%	AsureQuality Method (LC-MS/MS)
M6:2FTS	95	%	AsureQuality Method (LC-MS/MS)
M8:2FTS	102	%	AsureQuality Method (LC-MS/MS)
M3HFPO-DA	133	%	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	Christopher Sampson

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.

Amelie Sellier
Scientist

Christopher Sampson
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: 24-100824-3, 24-100824-4, 24-100824-5	
Perfluoroalkylsulfonic acids	
PFPrS	0.0010 µg/L
PFBS	0.0010 µg/L
PFPeS	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	0.0010 µg/L
PFECHS	0.0010 µg/L
Perfluoroalkylcarboxylic acids	
PFBA	0.0010 µg/L
PFPeA	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	0.0010 µg/L
PFTeDA	0.0010 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

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: 24-100824-1, 24-100824-2	
Perfluoroalkylsulfonic acids	
PFPrS	0.025 µg/L
PFBS	0.025 µg/L
PFPeS	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
PFPeA	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
Perfluorooctanesulfonamides	
PFOSA	0.025 µg/L
NEtFOSA-M	0.10 µg/L
NMeFOSA-M	0.10 µg/L
Perfluorooctanesulfonamidoacetic acids	
NEtFOSAA	0.025 µg/L
NMeFOSAA	0.025 µg/L
Perfluorooctanesulfonamidoethanols	
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
Listing applies to samples: 24-100824-3, 24-100824-4, 24-100824-5	
Perfluoroalkylsulfonic acids	
PFPrS	Perfluoro-1-propanesulfonic acid
PFBS	Perfluoro-1-butanesulfonic acid
PFPeS	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 Perfluorooctanesulfonic acid
PFNS	Perfluoro-1-nonanesulfonic acid
PFDS	Perfluoro-1-decanesulfonic acid
PFECHS	Perfluoro-4-ethylcyclohexanesulfonic acid
Perfluoroalkylcarboxylic acids	
PFBA	Perfluoro-n-butanoic acid
PFPeA	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
Perfluorooctanesulfonamides	
PFOSA	Perfluoro-1-octanesulfonamide
NEtFOSA-M	N-ethylperfluoro-1-octanesulfonamide
NMeFOSA-M	N-methylperfluoro-1-octanesulfonamide
Perfluorooctanesulfonamidoacetic acids	
NEtFOSAA	N-ethylperfluoro-1-octanesulfonamidoacetic acid
NMeFOSAA	N-methylperfluoro-1-octanesulfonamidoacetic acid
Perfluorooctanesulfonamidoethanols	

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-chloroeicosafluoro-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
Listing applies to samples: 24-100824-1, 24-100824-2	
Perfluoroalkylsulfonic acids	
PFPrS	Perfluoro-1-propanesulfonic acid
PFBS	Perfluoro-1-butanesulfonic acid
PFPeS	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
PFPeA	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
Perfluorooctanesulfonamides	
PFOSA	Perfluoro-1-octanesulfonamide
NEtFOSA-M	N-ethylperfluoro-1-octanesulfonamide
NMeFOSA-M	N-methylperfluoro-1-octanesulfonamide
Perfluorooctanesulfonamidoacetic acids	
NEtFOSAA	N-ethylperfluoro-1-octanesulfonamidoacetic acid
NMeFOSAA	N-methylperfluoro-1-octanesulfonamidoacetic acid
Perfluorooctanesulfonamidoethanols	
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-chloroeicosafluoro-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

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

AsureQuality Limited | 1C Quadrant Drive | Waiwhetu | Lower Hutt 5010 | Wellington | New Zealand
PO Box 31242 | Lower Hutt 5040 | Wellington | New Zealand
t. +64 4 570 8800 | e. cswellington@asurequality.com | w. www.asurequality.com

Certificate of Analysis

Submission Reference: A02744124
Final Report

Nerena Rhodes
Pattle Delamore Partners Limited
P O Box 9528
Auckland 1149
New Zealand

PO Number: OHA_PFAS

Report Issued: 24-Apr-2024 **AsureQuality Reference: 24-100834** **Sample(s) Received:** 10-Apr-2024 08:30

Testing Period: 10-Apr-2024 to 24-Apr-2024
Date of analysis is available on request.

Results

The tests were performed on the samples as received.

Customer Sample Name: OHA_MW6_090424 **Lab ID:** 24-100834-1

Sample Condition: Acceptable **Sampled Date**: 09-Apr-2024

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	0.075	µg/L	AsureQuality Method (LC-MS/MS)
PFPeS	0.095	µg/L	AsureQuality Method (LC-MS/MS)
di-PFHxS (1)	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
mono-PFHxS (1)	0.22	µg/L	AsureQuality Method (LC-MS/MS)
L-PFHxS (1)	1.5	µg/L	AsureQuality Method (LC-MS/MS)
Total PFHxS (3)	1.7	µg/L	AsureQuality Method (LC-MS/MS)
PFHpS	0.066	µg/L	AsureQuality Method (LC-MS/MS)
di-PFOS (5)	0.056	µg/L	AsureQuality Method (LC-MS/MS)
mono-PFOS (5)	0.88	µg/L	AsureQuality Method (LC-MS/MS)
L-PFOS (5)	1.8	µg/L	AsureQuality Method (LC-MS/MS)
Total PFOS (7)	2.7	µg/L	AsureQuality Method (LC-MS/MS)
Sum PFHxS+PFOS (1)	4.4	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	0.32	µg/L	AsureQuality Method (LC-MS/MS)
PFPeA	1.0	µg/L	AsureQuality Method (LC-MS/MS)
PFHxA	0.64	µg/L	AsureQuality Method (LC-MS/MS)
PFHpA	0.27	µg/L	AsureQuality Method (LC-MS/MS)
PFOA	0.27	µg/L	AsureQuality Method (LC-MS/MS)
PFNA	0.21	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)

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)
Perfluorooctanesulfonamides			
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)
Perfluorooctanesulfonamidoacetic acids			
NEtFOSAA	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
NMeFOSAA	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
Perfluorooctanesulfonamidoethanols			
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	0.46	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	106	%	AsureQuality Method (LC-MS/MS)
M8PFOS	105	%	AsureQuality Method (LC-MS/MS)
M4PFBA	108	%	AsureQuality Method (LC-MS/MS)
M5PFPeA	112	%	AsureQuality Method (LC-MS/MS)
M5PFHxA	110	%	AsureQuality Method (LC-MS/MS)
MPFHpA	106	%	AsureQuality Method (LC-MS/MS)
M8PFOA	107	%	AsureQuality Method (LC-MS/MS)
M9PFNA	109	%	AsureQuality Method (LC-MS/MS)
M6PFDA	119	%	AsureQuality Method (LC-MS/MS)
M7PFUnDA	108	%	AsureQuality Method (LC-MS/MS)
MPFDoDA	111	%	AsureQuality Method (LC-MS/MS)
MPFTeDA	101	%	AsureQuality Method (LC-MS/MS)
MPFOSA	101	%	AsureQuality Method (LC-MS/MS)
DNEtFOSA	107	%	AsureQuality Method (LC-MS/MS)
DNMeFOSA	110	%	AsureQuality Method (LC-MS/MS)
DNEtFOSAA	108	%	AsureQuality Method (LC-MS/MS)
DNMeFOSAA	110	%	AsureQuality Method (LC-MS/MS)
DNEtFOSE	100	%	AsureQuality Method (LC-MS/MS)
DNMeFOSE	102	%	AsureQuality Method (LC-MS/MS)

Test	Result	Unit	Method Reference
M4:2FTS	107	%	AsureQuality Method (LC-MS/MS)
M6:2FTS	106	%	AsureQuality Method (LC-MS/MS)
M8:2FTS	110	%	AsureQuality Method (LC-MS/MS)
M3HFPO-DA	86	%	AsureQuality Method (LC-MS/MS)

QC Results

Blank

Relates to sample(s) 24-100834-1

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)
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)
Perfluorooctanesulfonamides			
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)
Perfluorooctanesulfonamidoacetic acids			
NEtFOSAA	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
NMeFOSAA	<0.025	µg/L	AsureQuality Method (LC-MS/MS)

Perfluorooctanesulfonamidoethanols			
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	111	%	AsureQuality Method (LC-MS/MS)
M3PFHxS	102	%	AsureQuality Method (LC-MS/MS)
M8PFOS	105	%	AsureQuality Method (LC-MS/MS)
M4PFBA	109	%	AsureQuality Method (LC-MS/MS)
M5PFPeA	109	%	AsureQuality Method (LC-MS/MS)
M5PFHxA	111	%	AsureQuality Method (LC-MS/MS)
MPFHpA	108	%	AsureQuality Method (LC-MS/MS)
M8PFOA	111	%	AsureQuality Method (LC-MS/MS)
M9PFNA	108	%	AsureQuality Method (LC-MS/MS)
M6PFDA	102	%	AsureQuality Method (LC-MS/MS)
M7PFUnDA	110	%	AsureQuality Method (LC-MS/MS)
MPFDoDA	103	%	AsureQuality Method (LC-MS/MS)
MPFTeDA	99	%	AsureQuality Method (LC-MS/MS)
MPFOSA	102	%	AsureQuality Method (LC-MS/MS)
DNEtFOSA	102	%	AsureQuality Method (LC-MS/MS)
DNMeFOSA	104	%	AsureQuality Method (LC-MS/MS)
DNEtFOSAA	110	%	AsureQuality Method (LC-MS/MS)
DNMeFOSAA	103	%	AsureQuality Method (LC-MS/MS)
DNEtFOSE	104	%	AsureQuality Method (LC-MS/MS)
DNMeFOSE	101	%	AsureQuality Method (LC-MS/MS)
M4:2FTS	108	%	AsureQuality Method (LC-MS/MS)
M6:2FTS	102	%	AsureQuality Method (LC-MS/MS)
M8:2FTS	118	%	AsureQuality Method (LC-MS/MS)
M3HFPO-DA	87	%	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	
PFPrS	0.025 µg/L
PFBS	0.025 µg/L
PFPeS	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
PFPeA	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
Perfluorooctanesulfonamides	
PFOSA	0.025 µg/L
NEtFOSA-M	0.10 µg/L
NMeFOSA-M	0.10 µg/L
Perfluorooctanesulfonamidoacetic acids	
NEtFOSAA	0.025 µg/L
NMeFOSAA	0.025 µg/L
Perfluorooctanesulfonamidoethanols	
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	
PFPrS	Perfluoro-1-propanesulfonic acid
PFBS	Perfluoro-1-butanesulfonic acid
PFPeS	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 Perfluorooctanesulfonic acid
PFNS	Perfluoro-1-nonanesulfonic acid
PFDS	Perfluoro-1-decanesulfonic acid
PFECHS	Perfluoro-4-ethylcyclohexanesulfonic acid
Perfluoroalkylcarboxylic acids	
PFBA	Perfluoro-n-butanoic acid
PFPeA	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
Perfluorooctanesulfonamides	
PFOSA	Perfluoro-1-octanesulfonamide
NEtFOSA-M	N-ethylperfluoro-1-octanesulfonamide
NMeFOSA-M	N-methylperfluoro-1-octanesulfonamide
Perfluorooctanesulfonamidoacetic acids	
NEtFOSAA	N-ethylperfluoro-1-octanesulfonamidoacetic acid
NMeFOSAA	N-methylperfluoro-1-octanesulfonamidoacetic acid
Perfluorooctanesulfonamidoethanols	
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-chloroeicosafluoro-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

AsureQuality Limited | 1C Quadrant Drive | Waiwhetu | Lower Hutt 5010 | Wellington | New Zealand
PO Box 31242 | Lower Hutt 5040 | Wellington | New Zealand
t. +64 4 570 8800 | e. cswellington@asurequality.com | w. www.asurequality.com

Certificate of Analysis

Submission Reference: A02744124
Final Report

Nerena Rhodes
Pattle Delamore Partners Limited
P O Box 9528
Auckland 1149
New Zealand

PO Number: OHA_PFAS

Report Issued: 24-Apr-2024 **AsureQuality Reference: 24-100846** **Sample(s) Received:** 10-Apr-2024 08:30

Testing Period: 10-Apr-2024 to 24-Apr-2024
Date of analysis is available on request.

Results

The tests were performed on the samples as received.

Customer Sample Name: OHA_MW9_090424 **Lab ID:** 24-100846-1

Sample Condition: Acceptable **Sampled Date**: 09-Apr-2024

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	0.035	µg/L	AsureQuality Method (LC-MS/MS)
PFPeS	0.044	µg/L	AsureQuality Method (LC-MS/MS)
di-PFHxS (1)	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
mono-PFHxS (1)	0.087	µg/L	AsureQuality Method (LC-MS/MS)
L-PFHxS (1)	0.63	µg/L	AsureQuality Method (LC-MS/MS)
Total PFHxS (3)	0.72	µg/L	AsureQuality Method (LC-MS/MS)
PFHpS	0.034	µg/L	AsureQuality Method (LC-MS/MS)
di-PFOS (5)	0.034	µg/L	AsureQuality Method (LC-MS/MS)
mono-PFOS (5)	0.36	µg/L	AsureQuality Method (LC-MS/MS)
L-PFOS (5)	0.32	µg/L	AsureQuality Method (LC-MS/MS)
Total PFOS (7)	0.71	µg/L	AsureQuality Method (LC-MS/MS)
Sum PFHxS+PFOS (1)	1.4	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	0.45	µg/L	AsureQuality Method (LC-MS/MS)
PFPeA	1.5	µg/L	AsureQuality Method (LC-MS/MS)
PFHxA	0.80	µg/L	AsureQuality Method (LC-MS/MS)
PFHpA	0.39	µg/L	AsureQuality Method (LC-MS/MS)
PFOA	0.33	µg/L	AsureQuality Method (LC-MS/MS)
PFNA	0.19	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)

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)
Perfluorooctanesulfonamides			
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)
Perfluorooctanesulfonamidoacetic acids			
NEtFOSAA	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
NMeFOSAA	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
Perfluorooctanesulfonamidoethanols			
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	1.6	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	115	%	AsureQuality Method (LC-MS/MS)
M3PFHxS	107	%	AsureQuality Method (LC-MS/MS)
M8PFOS	103	%	AsureQuality Method (LC-MS/MS)
M4PFBA	108	%	AsureQuality Method (LC-MS/MS)
M5PFPeA	114	%	AsureQuality Method (LC-MS/MS)
M5PFHxA	112	%	AsureQuality Method (LC-MS/MS)
MPFHpA	107	%	AsureQuality Method (LC-MS/MS)
M8PFOA	108	%	AsureQuality Method (LC-MS/MS)
M9PFNA	109	%	AsureQuality Method (LC-MS/MS)
M6PFDA	109	%	AsureQuality Method (LC-MS/MS)
M7PFUnDA	112	%	AsureQuality Method (LC-MS/MS)
MPFDoDA	108	%	AsureQuality Method (LC-MS/MS)
MPFTeDA	101	%	AsureQuality Method (LC-MS/MS)
MPFOSA	98	%	AsureQuality Method (LC-MS/MS)
DNEtFOSA	100	%	AsureQuality Method (LC-MS/MS)
DNMeFOSA	104	%	AsureQuality Method (LC-MS/MS)
DNEtFOSAA	104	%	AsureQuality Method (LC-MS/MS)
DNMeFOSAA	108	%	AsureQuality Method (LC-MS/MS)
DNEtFOSE	100	%	AsureQuality Method (LC-MS/MS)
DNMeFOSE	94	%	AsureQuality Method (LC-MS/MS)

Test	Result	Unit	Method Reference
M4:2FTS	98	%	AsureQuality Method (LC-MS/MS)
M6:2FTS	99	%	AsureQuality Method (LC-MS/MS)
M8:2FTS	105	%	AsureQuality Method (LC-MS/MS)
M3HFPO-DA	85	%	AsureQuality Method (LC-MS/MS)

QC Results

Blank

Relates to sample(s) 24-100846-1

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)
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)
Perfluorooctanesulfonamides			
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)
Perfluorooctanesulfonamidoacetic acids			
NEtFOSAA	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
NMeFOSAA	<0.025	µg/L	AsureQuality Method (LC-MS/MS)

Perfluorooctanesulfonamidoethanols			
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	111	%	AsureQuality Method (LC-MS/MS)
M3PFHxS	102	%	AsureQuality Method (LC-MS/MS)
M8PFOS	105	%	AsureQuality Method (LC-MS/MS)
M4PFBA	109	%	AsureQuality Method (LC-MS/MS)
M5PFPeA	109	%	AsureQuality Method (LC-MS/MS)
M5PFHxA	111	%	AsureQuality Method (LC-MS/MS)
MPFHpA	108	%	AsureQuality Method (LC-MS/MS)
M8PFOA	111	%	AsureQuality Method (LC-MS/MS)
M9PFNA	108	%	AsureQuality Method (LC-MS/MS)
M6PFDA	102	%	AsureQuality Method (LC-MS/MS)
M7PFUnDA	110	%	AsureQuality Method (LC-MS/MS)
MPFDoDA	103	%	AsureQuality Method (LC-MS/MS)
MPFTeDA	99	%	AsureQuality Method (LC-MS/MS)
MPFOSA	102	%	AsureQuality Method (LC-MS/MS)
DNEtFOSA	102	%	AsureQuality Method (LC-MS/MS)
DNMeFOSA	104	%	AsureQuality Method (LC-MS/MS)
DNEtFOSAA	110	%	AsureQuality Method (LC-MS/MS)
DNMeFOSAA	103	%	AsureQuality Method (LC-MS/MS)
DNEtFOSE	104	%	AsureQuality Method (LC-MS/MS)
DNMeFOSE	101	%	AsureQuality Method (LC-MS/MS)
M4:2FTS	108	%	AsureQuality Method (LC-MS/MS)
M6:2FTS	102	%	AsureQuality Method (LC-MS/MS)
M8:2FTS	118	%	AsureQuality Method (LC-MS/MS)
M3HFPO-DA	87	%	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	
PFPrS	0.025 µg/L
PFBS	0.025 µg/L
PFPeS	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
PFPeA	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
Perfluorooctanesulfonamides	
PFOSA	0.025 µg/L
NEtFOSA-M	0.10 µg/L
NMeFOSA-M	0.10 µg/L
Perfluorooctanesulfonamidoacetic acids	
NEtFOSAA	0.025 µg/L
NMeFOSAA	0.025 µg/L
Perfluorooctanesulfonamidoethanols	
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	
PFPrS	Perfluoro-1-propanesulfonic acid
PFBS	Perfluoro-1-butanesulfonic acid
PFPeS	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 Perfluorooctanesulfonic acid
PFNS	Perfluoro-1-nonanesulfonic acid
PFDS	Perfluoro-1-decanesulfonic acid
PFECHS	Perfluoro-4-ethylcyclohexanesulfonic acid
Perfluoroalkylcarboxylic acids	
PFBA	Perfluoro-n-butanoic acid
PFPeA	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
Perfluorooctanesulfonamides	
PFOSA	Perfluoro-1-octanesulfonamide
NEtFOSA-M	N-ethylperfluoro-1-octanesulfonamide
NMeFOSA-M	N-methylperfluoro-1-octanesulfonamide
Perfluorooctanesulfonamidoacetic acids	
NEtFOSAA	N-ethylperfluoro-1-octanesulfonamidoacetic acid
NMeFOSAA	N-methylperfluoro-1-octanesulfonamidoacetic acid
Perfluorooctanesulfonamidoethanols	
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-chloroeicosafluoro-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

AsureQuality Limited | 1C Quadrant Drive | Waiwhetu | Lower Hutt 5010 | Wellington | New Zealand
PO Box 31242 | Lower Hutt 5040 | Wellington | New Zealand
t. +64 4 570 8800 | e. cswellington@asurequality.com | w. www.asurequality.com

Certificate of Analysis

Submission Reference: A02744124
Final Report

NZDF ESDAT
Pattle Delamore Partners Limited
P O Box 9528
Auckland 1149
New Zealand

PO Number: OHA_PFAS

Report Issued: 09-May-2024 **AsureQuality Reference: 24-103822** **Sample(s) Received:** 12-Apr-2024 08:15

Testing Period: 15-Apr-2024 to 09-May-2024
Date of analysis is available on request.

Results

The tests were performed on the samples as received.

Customer Sample Name: OHA_SW4_100424 **Lab ID:** 24-103822-1

Sample Condition: Acceptable **Sampled Date**: 10-Apr-2024

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)	0.0022	µg/L	AsureQuality Method (LC-MS/MS)
Total PFHxS (3)	0.0022	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)	0.0029	µg/L	AsureQuality Method (LC-MS/MS)
L-PFOS (5)	0.0072	µg/L	AsureQuality Method (LC-MS/MS)
Total PFOS (7)	0.010	µg/L	AsureQuality Method (LC-MS/MS)
Sum PFHxS+PFOS (1)	0.012	µg/L	AsureQuality Method (LC-MS/MS)
PFNS	<0.0020	µg/L	AsureQuality Method (LC-MS/MS)
PFDS	NR	µg/L	AsureQuality Method (LC-MS/MS)
PFECHS	0.0077	µg/L	AsureQuality Method (LC-MS/MS)
Perfluoroalkylcarboxylic acids			
PFBA	0.019	µg/L	AsureQuality Method (LC-MS/MS)
PFPeA	0.023	µg/L	AsureQuality Method (LC-MS/MS)
PFHxA	0.012	µg/L	AsureQuality Method (LC-MS/MS)
PFHpA	0.0063	µg/L	AsureQuality Method (LC-MS/MS)
PFOA	0.0038	µg/L	AsureQuality Method (LC-MS/MS)
PFNA	0.0029	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)

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	NR	µg/L	AsureQuality Method (LC-MS/MS)
Perfluorooctanesulfonamides			
PFOSA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
NEtFOSA-M	NR	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)
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	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)	NR	µg/L	AsureQuality Method (LC-MS/MS)
Miscellaneous			
F-53B (major)	<0.0020	µg/L	AsureQuality Method (LC-MS/MS)
F-53B (minor)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Sum F-53B	<0.0020	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	125	%	AsureQuality Method (LC-MS/MS)
M3PFHxS	101	%	AsureQuality Method (LC-MS/MS)
M8PFOS	109	%	AsureQuality Method (LC-MS/MS)
M4PFBA	90	%	AsureQuality Method (LC-MS/MS)
M5PFPeA	92	%	AsureQuality Method (LC-MS/MS)
M5PFHxA	106	%	AsureQuality Method (LC-MS/MS)
MPFHpA	99	%	AsureQuality Method (LC-MS/MS)
M8PFOA	96	%	AsureQuality Method (LC-MS/MS)
M9PFNA	80	%	AsureQuality Method (LC-MS/MS)
M6PFDA	105	%	AsureQuality Method (LC-MS/MS)
M7PFUnDA	109	%	AsureQuality Method (LC-MS/MS)
MPFDoDA	209 (R)	%	AsureQuality Method (LC-MS/MS)
MPFTeDA	1239 (R)	%	AsureQuality Method (LC-MS/MS)
MPFOSA	80	%	AsureQuality Method (LC-MS/MS)
DNEtFOSA	59	%	AsureQuality Method (LC-MS/MS)
DNMeFOSA	51	%	AsureQuality Method (LC-MS/MS)
DNEtFOSAA	101	%	AsureQuality Method (LC-MS/MS)
DNMeFOSAA	83	%	AsureQuality Method (LC-MS/MS)
DNEtFOSE	65	%	AsureQuality Method (LC-MS/MS)
DNMeFOSE	66	%	AsureQuality Method (LC-MS/MS)

Test	Result	Unit	Method Reference
M4:2FTS	165 (R)	%	AsureQuality Method (LC-MS/MS)
M6:2FTS	139	%	AsureQuality Method (LC-MS/MS)
M8:2FTS	87	%	AsureQuality Method (LC-MS/MS)
M3HFPO-DA	105	%	AsureQuality Method (LC-MS/MS)

R = Recovery outside method limits

QC Results

Blank

Relates to sample(s) 24-103822-1

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	<0.0020	µg/L	AsureQuality Method (LC-MS/MS)
PFDS	NR	µg/L	AsureQuality Method (LC-MS/MS)
PFECHS	<0.0020	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	NR	µg/L	AsureQuality Method (LC-MS/MS)
Perfluorooctanesulfonamides			
PFOSA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
NEtFOSA-M	NR	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)
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	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)	NR	µg/L	AsureQuality Method (LC-MS/MS)
Miscellaneous			
F-53B (major)	<0.0020	µg/L	AsureQuality Method (LC-MS/MS)
F-53B (minor)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Sum F-53B	<0.0020	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	100	%	AsureQuality Method (LC-MS/MS)
M8PFOS	100	%	AsureQuality Method (LC-MS/MS)
M4PFBA	100	%	AsureQuality Method (LC-MS/MS)
M5PFPeA	100	%	AsureQuality Method (LC-MS/MS)
M5PFHxA	100	%	AsureQuality Method (LC-MS/MS)
MPFHpA	100	%	AsureQuality Method (LC-MS/MS)
M8PFOA	100	%	AsureQuality Method (LC-MS/MS)
M9PFNA	100	%	AsureQuality Method (LC-MS/MS)
M6PFDA	100	%	AsureQuality Method (LC-MS/MS)
M7PFUnDA	100	%	AsureQuality Method (LC-MS/MS)
MPFDoDA	100	%	AsureQuality Method (LC-MS/MS)
MPFTeDA	100	%	AsureQuality Method (LC-MS/MS)
MPFOSA	100	%	AsureQuality Method (LC-MS/MS)
DNEtFOSA	100	%	AsureQuality Method (LC-MS/MS)
DNMeFOSA	100	%	AsureQuality Method (LC-MS/MS)
DNEtFOSAA	100	%	AsureQuality Method (LC-MS/MS)
DNMeFOSAA	100	%	AsureQuality Method (LC-MS/MS)
DNEtFOSE	100	%	AsureQuality Method (LC-MS/MS)
DNMeFOSE	100	%	AsureQuality Method (LC-MS/MS)
M4:2FTS	100	%	AsureQuality Method (LC-MS/MS)
M6:2FTS	100	%	AsureQuality Method (LC-MS/MS)
M8:2FTS	100	%	AsureQuality Method (LC-MS/MS)
M3HFPO-DA	100	%	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
PFPeS	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
PFPeA	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	NR µg/L
Perfluorooctanesulfonamides	
PFOSA	0.0010 µg/L
NEtFOSA-M	NR 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	NR µg/L
Telomere Carboxylic acids	
FPrPA (3:3FTA)	0.0010 µg/L
FPePA (5:3FTA)	0.0010 µg/L

FHpPA (7:3FTA)	NR 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	
PFPrS	Perfluoro-1-propanesulfonic acid
PFBS	Perfluoro-1-butanesulfonic acid
PFPeS	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 Perfluorooctanesulfonic acid
PFNS	Perfluoro-1-nonanesulfonic acid
PFDS	Perfluoro-1-decanesulfonic acid
PFECHS	Perfluoro-4-ethylcyclohexanesulfonic acid
Perfluoroalkylcarboxylic acids	
PFBA	Perfluoro-n-butanoic acid
PFPeA	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
Perfluorooctanesulfonamides	
PFOSA	Perfluoro-1-octanesulfonamide
NEtFOSA-M	N-ethylperfluoro-1-octanesulfonamide
NMeFOSA-M	N-methylperfluoro-1-octanesulfonamide
Perfluorooctanesulfonamidoacetic acids	
NEtFOSAA	N-ethylperfluoro-1-octanesulfonamidoacetic acid
NMeFOSAA	N-methylperfluoro-1-octanesulfonamidoacetic acid
Perfluorooctanesulfonamidoethanols	
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-chloroeicosafluoro-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

AsureQuality Limited | 1C Quadrant Drive | Waiwhetu | Lower Hutt 5010 | Wellington | New Zealand
PO Box 31242 | Lower Hutt 5040 | Wellington | New Zealand
t. +64 4 570 8800 | e. cswellington@asurequality.com | w. www.asurequality.com

Certificate of Analysis

Submission Reference: A02744125
Final Report

Nerena Rhodes
Pattle Delamore Partners Limited
P O Box 9528
Auckland 1149
New Zealand

PO Number: OHA_PFAS

Report Issued: 23-Apr-2024 **AsureQuality Reference: 24-100840** **Sample(s) Received:** 10-Apr-2024 08:30

Testing Period: 10-Apr-2024 to 23-Apr-2024
Date of analysis is available on request.

Results

The tests were performed on the samples as received.

Customer Sample Name: OHA_SW33_090424 **Lab ID:** 24-100840-1

Sample Condition: Acceptable **Sampled Date**: 09-Apr-2024

Test	Result	Unit	Method Reference
Poly- and Perfluorinated Alkyl Substances (PFAS) in Potable Water			
Perfluoroalkylsulfonic acids			
PFPrS	0.0034	µg/L	AsureQuality Method (LC-MS/MS)
PFBS	0.0085	µg/L	AsureQuality Method (LC-MS/MS)
PFPeS	0.0093	µg/L	AsureQuality Method (LC-MS/MS)
di-PFHxS (1)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
mono-PFHxS (1)	0.013	µg/L	AsureQuality Method (LC-MS/MS)
L-PFHxS (1)	0.075	µg/L	AsureQuality Method (LC-MS/MS)
Total PFHxS (3)	0.088	µg/L	AsureQuality Method (LC-MS/MS)
PFHpS	0.0029	µg/L	AsureQuality Method (LC-MS/MS)
di-PFOS (5)	0.0033	µg/L	AsureQuality Method (LC-MS/MS)
mono-PFOS (5)	0.057	µg/L	AsureQuality Method (LC-MS/MS)
L-PFOS (5)	0.078	µg/L	AsureQuality Method (LC-MS/MS)
Total PFOS (7)	0.14	µg/L	AsureQuality Method (LC-MS/MS)
Sum PFHxS+PFOS (1)	0.23	µg/L	AsureQuality Method (LC-MS/MS)
PFNS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFDS	<0.0050	µg/L	AsureQuality Method (LC-MS/MS)
PFECHS	<0.0050	µg/L	AsureQuality Method (LC-MS/MS)
Perfluoroalkylcarboxylic acids			
PFBA	0.056	µg/L	AsureQuality Method (LC-MS/MS)
PFPeA	0.23	µg/L	AsureQuality Method (LC-MS/MS)
PFHxA	0.15	µg/L	AsureQuality Method (LC-MS/MS)
PFHpA	0.070	µg/L	AsureQuality Method (LC-MS/MS)
PFOA	0.030	µg/L	AsureQuality Method (LC-MS/MS)
PFNA	0.024	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)

Test	Result	Unit	Method Reference
PFDoDA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFTrDA	<0.0010	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)
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	110	%	AsureQuality Method (LC-MS/MS)
M3PFHxS	114	%	AsureQuality Method (LC-MS/MS)
M8PFOS	132	%	AsureQuality Method (LC-MS/MS)
M4PFBA	85	%	AsureQuality Method (LC-MS/MS)
M5PFPeA	95	%	AsureQuality Method (LC-MS/MS)
M5PFHxA	92	%	AsureQuality Method (LC-MS/MS)
MPFHpA	107	%	AsureQuality Method (LC-MS/MS)
M8PFOA	99	%	AsureQuality Method (LC-MS/MS)
M9PFNA	102	%	AsureQuality Method (LC-MS/MS)
M6PFDA	114	%	AsureQuality Method (LC-MS/MS)
M7PFUnDA	143	%	AsureQuality Method (LC-MS/MS)
MPFDoDA	155 (R)	%	AsureQuality Method (LC-MS/MS)
MPFTeDA	198 (R)	%	AsureQuality Method (LC-MS/MS)
MPFOSA	103	%	AsureQuality Method (LC-MS/MS)
DNEtFOSA	81	%	AsureQuality Method (LC-MS/MS)
DNMeFOSA	80	%	AsureQuality Method (LC-MS/MS)
DNEtFOSAA	118	%	AsureQuality Method (LC-MS/MS)
DNMeFOSAA	118	%	AsureQuality Method (LC-MS/MS)
DNEtFOSE	80	%	AsureQuality Method (LC-MS/MS)
DNMeFOSE	76	%	AsureQuality Method (LC-MS/MS)

Test	Result	Unit	Method Reference
M4:2FTS	193 (R)	%	AsureQuality Method (LC-MS/MS)
M6:2FTS	138	%	AsureQuality Method (LC-MS/MS)
M8:2FTS	113	%	AsureQuality Method (LC-MS/MS)
M3HFPO-DA	106	%	AsureQuality Method (LC-MS/MS)

R = Recovery outside method limits

QC Results

Blank

Relates to sample(s) 24-100840-1

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	<0.0050	µg/L	AsureQuality Method (LC-MS/MS)
PFECHS	<0.0050	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	<0.0010	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)
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	97	%	AsureQuality Method (LC-MS/MS)
M3PFHxS	88	%	AsureQuality Method (LC-MS/MS)
M8PFOS	93	%	AsureQuality Method (LC-MS/MS)
M4PFBA	100	%	AsureQuality Method (LC-MS/MS)
M5PFPeA	101	%	AsureQuality Method (LC-MS/MS)
M5PFHxA	96	%	AsureQuality Method (LC-MS/MS)
MPFHpA	100	%	AsureQuality Method (LC-MS/MS)
M8PFOA	95	%	AsureQuality Method (LC-MS/MS)
M9PFNA	93	%	AsureQuality Method (LC-MS/MS)
M6PFDA	105	%	AsureQuality Method (LC-MS/MS)
M7PFUnDA	91	%	AsureQuality Method (LC-MS/MS)
MPFDoDA	98	%	AsureQuality Method (LC-MS/MS)
MPFTeDA	89	%	AsureQuality Method (LC-MS/MS)
MPFOSA	103	%	AsureQuality Method (LC-MS/MS)
DNEtFOSA	117	%	AsureQuality Method (LC-MS/MS)
DNMeFOSA	117	%	AsureQuality Method (LC-MS/MS)
DNEtFOSAA	94	%	AsureQuality Method (LC-MS/MS)
DNMeFOSAA	94	%	AsureQuality Method (LC-MS/MS)
DNEtFOSE	124	%	AsureQuality Method (LC-MS/MS)
DNMeFOSE	111	%	AsureQuality Method (LC-MS/MS)
M4:2FTS	94	%	AsureQuality Method (LC-MS/MS)
M6:2FTS	95	%	AsureQuality Method (LC-MS/MS)
M8:2FTS	102	%	AsureQuality Method (LC-MS/MS)
M3HFPO-DA	133	%	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	Christopher Sampson

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.

Christopher Sampson

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
PFPeS	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	0.0010 µg/L
PFECHS	0.0010 µg/L
Perfluoroalkylcarboxylic acids	
PFBA	0.0010 µg/L
PFPeA	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	0.0010 µg/L
PFTeDA	0.0010 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
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	
PFPrS	Perfluoro-1-propanesulfonic acid
PFBS	Perfluoro-1-butanesulfonic acid
PFPeS	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 Perfluorooctanesulfonic acid
PFNS	Perfluoro-1-nonanesulfonic acid
PFDS	Perfluoro-1-decanesulfonic acid
PFECHS	Perfluoro-4-ethylcyclohexanesulfonic acid
Perfluoroalkylcarboxylic acids	
PFBA	Perfluoro-n-butanoic acid
PFPeA	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
Perfluorooctanesulfonamides	
PFOSA	Perfluoro-1-octanesulfonamide
NEtFOSA-M	N-ethylperfluoro-1-octanesulfonamide
NMeFOSA-M	N-methylperfluoro-1-octanesulfonamide
Perfluorooctanesulfonamidoacetic acids	
NEtFOSAA	N-ethylperfluoro-1-octanesulfonamidoacetic acid
NMeFOSAA	N-methylperfluoro-1-octanesulfonamidoacetic acid
Perfluorooctanesulfonamidoethanols	
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-chloroeicosafluoro-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

AsureQuality Limited | 1C Quadrant Drive | Waiwhetu | Lower Hutt 5010 | Wellington | New Zealand
PO Box 31242 | Lower Hutt 5040 | Wellington | New Zealand
t. +64 4 570 8800 | e. cswellington@asurequality.com | w. www.asurequality.com

Certificate of Analysis

Submission Reference: A02744125
Final Report

NZDF ESDAT
Pattle Delamore Partners Limited
P O Box 9528
Auckland 1149
New Zealand

PO Number: OHA_PFAS

Report Issued: 09-May-2024 **AsureQuality Reference: 24-102531** **Sample(s) Received:** 12-Apr-2024 08:15

Testing Period: 15-Apr-2024 to 09-May-2024
Date of analysis is available on request.

Results

The tests were performed on the samples as received.

Customer Sample Name: OHA_SW36_100424 **Lab ID:** 24-102531-1

Sample Condition: Acceptable **Sampled Date**: 10-Apr-2024

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	0.0023	µg/L	AsureQuality Method (LC-MS/MS)
PFPeS	0.0021	µg/L	AsureQuality Method (LC-MS/MS)
di-PFHxS (1)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
mono-PFHxS (1)	0.0031	µg/L	AsureQuality Method (LC-MS/MS)
L-PFHxS (1)	0.016	µg/L	AsureQuality Method (LC-MS/MS)
Total PFHxS (3)	0.019	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)	0.0088	µg/L	AsureQuality Method (LC-MS/MS)
L-PFOS (5)	0.0084	µg/L	AsureQuality Method (LC-MS/MS)
Total PFOS (7)	0.017	µg/L	AsureQuality Method (LC-MS/MS)
Sum PFHxS+PFOS (1)	0.036	µg/L	AsureQuality Method (LC-MS/MS)
PFNS	<0.0020	µg/L	AsureQuality Method (LC-MS/MS)
PFDS	NR	µg/L	AsureQuality Method (LC-MS/MS)
PFECHS	<0.0020	µg/L	AsureQuality Method (LC-MS/MS)
Perfluoroalkylcarboxylic acids			
PFBA	0.016	µg/L	AsureQuality Method (LC-MS/MS)
PFPeA	0.052	µg/L	AsureQuality Method (LC-MS/MS)
PFHxA	0.035	µg/L	AsureQuality Method (LC-MS/MS)
PFHpA	0.015	µg/L	AsureQuality Method (LC-MS/MS)
PFOA	0.0067	µg/L	AsureQuality Method (LC-MS/MS)
PFNA	0.0015	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)

Test	Result	Unit	Method Reference
PFDoDA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFTrDA	<0.0010	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	NR	µg/L	AsureQuality Method (LC-MS/MS)
NMeFOSA-M	NR	µg/L	AsureQuality Method (LC-MS/MS)
Perfluorooctanesulfonamidoacetic acids			
NEtFOSAA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
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)	<0.0020	µg/L	AsureQuality Method (LC-MS/MS)
F-53B (minor)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Sum F-53B	<0.0020	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	139	%	AsureQuality Method (LC-MS/MS)
M8PFOS	204 (R)	%	AsureQuality Method (LC-MS/MS)
M4PFBA	98	%	AsureQuality Method (LC-MS/MS)
M5PFPeA	92	%	AsureQuality Method (LC-MS/MS)
M5PFHxA	106	%	AsureQuality Method (LC-MS/MS)
MPFHpA	115	%	AsureQuality Method (LC-MS/MS)
M8PFOA	116	%	AsureQuality Method (LC-MS/MS)
M9PFNA	123	%	AsureQuality Method (LC-MS/MS)
M6PFDA	143	%	AsureQuality Method (LC-MS/MS)
M7PFUnDA	244 (R)	%	AsureQuality Method (LC-MS/MS)
MPFDoDA	396 (R)	%	AsureQuality Method (LC-MS/MS)
MPFTeDA	218 (R)	%	AsureQuality Method (LC-MS/MS)
MPFOSA	102	%	AsureQuality Method (LC-MS/MS)
DNEtFOSA	45	%	AsureQuality Method (LC-MS/MS)
DNMeFOSA	65	%	AsureQuality Method (LC-MS/MS)
DNEtFOSAA	168 (R)	%	AsureQuality Method (LC-MS/MS)
DNMeFOSAA	146	%	AsureQuality Method (LC-MS/MS)
DNEtFOSE	52	%	AsureQuality Method (LC-MS/MS)
DNMeFOSE	60	%	AsureQuality Method (LC-MS/MS)

Test	Result	Unit	Method Reference
M4:2FTS	133	%	AsureQuality Method (LC-MS/MS)
M6:2FTS	115	%	AsureQuality Method (LC-MS/MS)
M8:2FTS	153 (R)	%	AsureQuality Method (LC-MS/MS)
M3HFPO-DA	102	%	AsureQuality Method (LC-MS/MS)

R = Recovery outside method limits

Customer Sample Name: OHA_AAZ_100424 **Lab ID:** 24-102531-2

Sample Condition: Acceptable **Sampled Date**: 10-Apr-2024

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	0.0021	µg/L	AsureQuality Method (LC-MS/MS)
PFPeS	0.0019	µg/L	AsureQuality Method (LC-MS/MS)
di-PFHxS (1)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
mono-PFHxS (1)	0.0032	µg/L	AsureQuality Method (LC-MS/MS)
L-PFHxS (1)	0.016	µg/L	AsureQuality Method (LC-MS/MS)
Total PFHxS (3)	0.019	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)	0.0087	µg/L	AsureQuality Method (LC-MS/MS)
L-PFOS (5)	0.0092	µg/L	AsureQuality Method (LC-MS/MS)
Total PFOS (7)	0.018	µg/L	AsureQuality Method (LC-MS/MS)
Sum PFHxS+PFOS (1)	0.037	µg/L	AsureQuality Method (LC-MS/MS)
PFNS	<0.0020	µg/L	AsureQuality Method (LC-MS/MS)
PFDS	NR	µg/L	AsureQuality Method (LC-MS/MS)
PFECHS	<0.0020	µg/L	AsureQuality Method (LC-MS/MS)
Perfluoroalkylcarboxylic acids			
PFBA	0.016	µg/L	AsureQuality Method (LC-MS/MS)
PFPeA	0.052	µg/L	AsureQuality Method (LC-MS/MS)
PFHxA	0.035	µg/L	AsureQuality Method (LC-MS/MS)
PFHpA	0.016	µg/L	AsureQuality Method (LC-MS/MS)
PFOA	0.0065	µg/L	AsureQuality Method (LC-MS/MS)
PFNA	0.0016	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	<0.0010	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	NR	µg/L	AsureQuality Method (LC-MS/MS)
NMeFOSA-M	NR	µg/L	AsureQuality Method (LC-MS/MS)
Perfluorooctanesulfonamidoacetic acids			
NEtFOSAA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
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)

Test	Result	Unit	Method Reference
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)	<0.0020	µg/L	AsureQuality Method (LC-MS/MS)
F-53B (minor)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Sum F-53B	<0.0020	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	152 (R)	%	AsureQuality Method (LC-MS/MS)
M3PFHxS	159 (R)	%	AsureQuality Method (LC-MS/MS)
M8PFOS	242 (R)	%	AsureQuality Method (LC-MS/MS)
M4PFBA	113	%	AsureQuality Method (LC-MS/MS)
M5PFPeA	106	%	AsureQuality Method (LC-MS/MS)
M5PFHxA	128	%	AsureQuality Method (LC-MS/MS)
MPFHpA	124	%	AsureQuality Method (LC-MS/MS)
M8PFOA	136	%	AsureQuality Method (LC-MS/MS)
M9PFNA	148	%	AsureQuality Method (LC-MS/MS)
M6PFDA	167 (R)	%	AsureQuality Method (LC-MS/MS)
M7PFUnDA	227 (R)	%	AsureQuality Method (LC-MS/MS)
MPFDoDA	279 (R)	%	AsureQuality Method (LC-MS/MS)
MPFTeDA	182 (R)	%	AsureQuality Method (LC-MS/MS)
MPFOSA	55	%	AsureQuality Method (LC-MS/MS)
DNEtFOSA	55	%	AsureQuality Method (LC-MS/MS)
DNMeFOSA	36	%	AsureQuality Method (LC-MS/MS)
DNEtFOSAA	129	%	AsureQuality Method (LC-MS/MS)
DNMeFOSAA	139	%	AsureQuality Method (LC-MS/MS)
DNEtFOSE	14 (R)	%	AsureQuality Method (LC-MS/MS)
DNMeFOSE	13 (R)	%	AsureQuality Method (LC-MS/MS)
M4:2FTS	170 (R)	%	AsureQuality Method (LC-MS/MS)
M6:2FTS	140	%	AsureQuality Method (LC-MS/MS)
M8:2FTS	164 (R)	%	AsureQuality Method (LC-MS/MS)
M3HFPO-DA	126	%	AsureQuality Method (LC-MS/MS)

R = Recovery outside method limits

Customer Sample Name: OHA_ABA_100424 **Lab ID:** 24-102531-3

Sample Condition: Acceptable **Sampled Date**: 10-Apr-2024

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)

Test	Result	Unit	Method Reference
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	<0.0020	µg/L	AsureQuality Method (LC-MS/MS)
PFDS	NR	µg/L	AsureQuality Method (LC-MS/MS)
PFECHS	<0.0020	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	<0.0010	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	NR	µg/L	AsureQuality Method (LC-MS/MS)
NMeFOSA-M	NR	µg/L	AsureQuality Method (LC-MS/MS)
Perfluorooctanesulfonamidoacetic acids			
NEtFOSAA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
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)	<0.0020	µg/L	AsureQuality Method (LC-MS/MS)
F-53B (minor)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Sum F-53B	<0.0020	µg/L	AsureQuality Method (LC-MS/MS)
ADONA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)

Test	Result	Unit	Method Reference
HFPO-DA (GenX)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Internal Standards			
M3PFBS	111	%	AsureQuality Method (LC-MS/MS)
M3PFHxS	123	%	AsureQuality Method (LC-MS/MS)
M8PFOS	156 (R)	%	AsureQuality Method (LC-MS/MS)
M4PFBA	103	%	AsureQuality Method (LC-MS/MS)
M5PFPeA	96	%	AsureQuality Method (LC-MS/MS)
M5PFHxA	107	%	AsureQuality Method (LC-MS/MS)
MPFHpA	108	%	AsureQuality Method (LC-MS/MS)
M8PFOA	119	%	AsureQuality Method (LC-MS/MS)
M9PFNA	125	%	AsureQuality Method (LC-MS/MS)
M6PFDA	121	%	AsureQuality Method (LC-MS/MS)
M7PFUnDA	179 (R)	%	AsureQuality Method (LC-MS/MS)
MPFDoDA	256 (R)	%	AsureQuality Method (LC-MS/MS)
MPFTeDA	150	%	AsureQuality Method (LC-MS/MS)
MPFOSA	111	%	AsureQuality Method (LC-MS/MS)
DNEtFOSA	168 (R)	%	AsureQuality Method (LC-MS/MS)
DNMeFOSA	69	%	AsureQuality Method (LC-MS/MS)
DNEtFOSAA	162 (R)	%	AsureQuality Method (LC-MS/MS)
DNMeFOSAA	152 (R)	%	AsureQuality Method (LC-MS/MS)
DNEtFOSE	95	%	AsureQuality Method (LC-MS/MS)
DNMeFOSE	87	%	AsureQuality Method (LC-MS/MS)
M4:2FTS	115	%	AsureQuality Method (LC-MS/MS)
M6:2FTS	112	%	AsureQuality Method (LC-MS/MS)
M8:2FTS	144	%	AsureQuality Method (LC-MS/MS)
M3HFPO-DA	104	%	AsureQuality Method (LC-MS/MS)

R = Recovery outside method limits

Customer Sample Name: OHA_ABB_100424 **Lab ID:** 24-102531-4

Sample Condition: Acceptable **Sampled Date**: 10-Apr-2024

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	<0.0020	µg/L	AsureQuality Method (LC-MS/MS)
PFDS	NR	µg/L	AsureQuality Method (LC-MS/MS)
PFECHS	<0.0020	µg/L	AsureQuality Method (LC-MS/MS)

Test	Result	Unit	Method Reference
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	<0.0010	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	NR	µg/L	AsureQuality Method (LC-MS/MS)
NMeFOSA-M	NR	µg/L	AsureQuality Method (LC-MS/MS)
Perfluorooctanesulfonamidoacetic acids			
NEtFOSAA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
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)	<0.0020	µg/L	AsureQuality Method (LC-MS/MS)
F-53B (minor)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Sum F-53B	<0.0020	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	99	%	AsureQuality Method (LC-MS/MS)
M3PFHxS	66	%	AsureQuality Method (LC-MS/MS)
M8PFOS	37	%	AsureQuality Method (LC-MS/MS)
M4PFBA	102	%	AsureQuality Method (LC-MS/MS)
M5PFPeA	94	%	AsureQuality Method (LC-MS/MS)
M5PFHxA	93	%	AsureQuality Method (LC-MS/MS)
MPFHpA	87	%	AsureQuality Method (LC-MS/MS)
M8PFOA	82	%	AsureQuality Method (LC-MS/MS)
M9PFNA	60	%	AsureQuality Method (LC-MS/MS)
M6PFDA	46	%	AsureQuality Method (LC-MS/MS)
M7PFUnDA	36	%	AsureQuality Method (LC-MS/MS)

Test	Result	Unit	Method Reference
MPFDoDA	25 (R)	%	AsureQuality Method (LC-MS/MS)
MPFTeDA	35	%	AsureQuality Method (LC-MS/MS)
MPFOSA	75	%	AsureQuality Method (LC-MS/MS)
DNEtFOSA	57	%	AsureQuality Method (LC-MS/MS)
DNMeFOSA	40	%	AsureQuality Method (LC-MS/MS)
DNEtFOSAA	42	%	AsureQuality Method (LC-MS/MS)
DNMeFOSAA	48	%	AsureQuality Method (LC-MS/MS)
DNEtFOSE	42	%	AsureQuality Method (LC-MS/MS)
DNMeFOSE	45	%	AsureQuality Method (LC-MS/MS)
M4:2FTS	103	%	AsureQuality Method (LC-MS/MS)
M6:2FTS	87	%	AsureQuality Method (LC-MS/MS)
M8:2FTS	80	%	AsureQuality Method (LC-MS/MS)
M3HFPO-DA	96	%	AsureQuality Method (LC-MS/MS)

R = Recovery outside method limits

Customer Sample Name: OHA_ABC_100424 **Lab ID:** 24-102531-5

Sample Condition: Acceptable **Sampled Date**: 10-Apr-2024

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	<0.0020	µg/L	AsureQuality Method (LC-MS/MS)
PFDS	NR	µg/L	AsureQuality Method (LC-MS/MS)
PFECHS	<0.0020	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	<0.0010	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)

Test	Result	Unit	Method Reference
Perfluorooctanesulfonamides			
PFOSA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
NEtFOSA-M	NR	µg/L	AsureQuality Method (LC-MS/MS)
NMeFOSA-M	NR	µg/L	AsureQuality Method (LC-MS/MS)
Perfluorooctanesulfonamidoacetic acids			
NEtFOSAA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
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)	<0.0020	µg/L	AsureQuality Method (LC-MS/MS)
F-53B (minor)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Sum F-53B	<0.0020	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	104	%	AsureQuality Method (LC-MS/MS)
M8PFOS	127	%	AsureQuality Method (LC-MS/MS)
M4PFBA	94	%	AsureQuality Method (LC-MS/MS)
M5PFPeA	85	%	AsureQuality Method (LC-MS/MS)
M5PFHxA	94	%	AsureQuality Method (LC-MS/MS)
MPFHpA	100	%	AsureQuality Method (LC-MS/MS)
M8PFOA	101	%	AsureQuality Method (LC-MS/MS)
M9PFNA	107	%	AsureQuality Method (LC-MS/MS)
M6PFDA	109	%	AsureQuality Method (LC-MS/MS)
M7PFUnDA	109	%	AsureQuality Method (LC-MS/MS)
MPFDoDA	109	%	AsureQuality Method (LC-MS/MS)
MPFTeDA	55	%	AsureQuality Method (LC-MS/MS)
MPFOSA	73	%	AsureQuality Method (LC-MS/MS)
DNEtFOSA	62	%	AsureQuality Method (LC-MS/MS)
DNMeFOSA	27 (R)	%	AsureQuality Method (LC-MS/MS)
DNEtFOSAA	104	%	AsureQuality Method (LC-MS/MS)
DNMeFOSAA	106	%	AsureQuality Method (LC-MS/MS)
DNEtFOSE	16 (R)	%	AsureQuality Method (LC-MS/MS)
DNMeFOSE	31	%	AsureQuality Method (LC-MS/MS)
M4:2FTS	95	%	AsureQuality Method (LC-MS/MS)
M6:2FTS	94	%	AsureQuality Method (LC-MS/MS)
M8:2FTS	115	%	AsureQuality Method (LC-MS/MS)
M3HFPO-DA	98	%	AsureQuality Method (LC-MS/MS)

Test	Result	Unit	Method Reference

R = Recovery outside method limits

QC Results

Blank

Relates to sample(s) 24-102531-1, 24-102531-2, 24-102531-3, 24-102531-4, 24-102531-5

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)
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	<0.0020	µg/L	AsureQuality Method (LC-MS/MS)
PFDS	NR	µg/L	AsureQuality Method (LC-MS/MS)
PFECHS	<0.0020	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	<0.0010	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	NR	µg/L	AsureQuality Method (LC-MS/MS)
NMeFOSA-M	NR	µg/L	AsureQuality Method (LC-MS/MS)
Perfluorooctanesulfonamidoacetic acids			
NEtFOSAA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
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)	<0.0020	µg/L	AsureQuality Method (LC-MS/MS)
F-53B (minor)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Sum F-53B	<0.0020	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	74	%	AsureQuality Method (LC-MS/MS)
M8PFOS	44	%	AsureQuality Method (LC-MS/MS)
M4PFBA	107	%	AsureQuality Method (LC-MS/MS)
M5PFPeA	102	%	AsureQuality Method (LC-MS/MS)
M5PFHxA	101	%	AsureQuality Method (LC-MS/MS)
MPFHpA	101	%	AsureQuality Method (LC-MS/MS)
M8PFOA	83	%	AsureQuality Method (LC-MS/MS)
M9PFNA	68	%	AsureQuality Method (LC-MS/MS)
M6PFDA	53	%	AsureQuality Method (LC-MS/MS)
M7PFUnDA	28 (R)	%	AsureQuality Method (LC-MS/MS)
MPFDoDA	18 (R)	%	AsureQuality Method (LC-MS/MS)
MPFTeDA	15 (R)	%	AsureQuality Method (LC-MS/MS)
MPFOSA	58	%	AsureQuality Method (LC-MS/MS)
DNEtFOSA	21 (R)	%	AsureQuality Method (LC-MS/MS)
DNMeFOSA	29 (R)	%	AsureQuality Method (LC-MS/MS)
DNEtFOSAA	33	%	AsureQuality Method (LC-MS/MS)
DNMeFOSAA	49	%	AsureQuality Method (LC-MS/MS)
DNEtFOSE	45	%	AsureQuality Method (LC-MS/MS)
DNMeFOSE	46	%	AsureQuality Method (LC-MS/MS)
M4:2FTS	106	%	AsureQuality Method (LC-MS/MS)
M6:2FTS	96	%	AsureQuality Method (LC-MS/MS)
M8:2FTS	104	%	AsureQuality Method (LC-MS/MS)
M3HFPO-DA	99	%	AsureQuality Method (LC-MS/MS)

R = Recovery outside method limits

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
PFPeS	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
PFPeA	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	0.0010 µg/L
PFTeDA	NR µg/L
P37DMOA	0.0010 µg/L
Perfluorooctanesulfonamides	
PFOSA	0.0010 µg/L
NEtFOSA-M	NR µg/L
NMeFOSA-M	NR 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
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	
PFPrS	Perfluoro-1-propanesulfonic acid
PFBS	Perfluoro-1-butanesulfonic acid
PFPeS	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 Perfluorooctanesulfonic acid
PFNS	Perfluoro-1-nonanesulfonic acid
PFDS	Perfluoro-1-decanesulfonic acid
PFECHS	Perfluoro-4-ethylcyclohexanesulfonic acid
Perfluoroalkylcarboxylic acids	
PFBA	Perfluoro-n-butanoic acid
PFPeA	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
Perfluorooctanesulfonamides	
PFOSA	Perfluoro-1-octanesulfonamide
NEtFOSA-M	N-ethylperfluoro-1-octanesulfonamide
NMeFOSA-M	N-methylperfluoro-1-octanesulfonamide
Perfluorooctanesulfonamidoacetic acids	
NEtFOSAA	N-ethylperfluoro-1-octanesulfonamidoacetic acid
NMeFOSAA	N-methylperfluoro-1-octanesulfonamidoacetic acid
Perfluorooctanesulfonamidoethanols	
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-chloroeicosafluoro-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

AsureQuality Limited | 1C Quadrant Drive | Waiwhetu | Lower Hutt 5010 | Wellington | New Zealand
PO Box 31242 | Lower Hutt 5040 | Wellington | New Zealand
t. +64 4 570 8800 | e. cswellington@asurequality.com | w. www.asurequality.com

Certificate of Analysis

Submission Reference: A02744124
Final Report

NZDF ESDAT
Pattle Delamore Partners Limited
P O Box 9528
Auckland 1149
New Zealand

PO Number: OHA_PFAS

Report Issued: 09-May-2024 **AsureQuality Reference: 24-103785** **Sample(s) Received:** 12-Apr-2024 08:15

Testing Period: 15-Apr-2024 to 09-May-2024
Date of analysis is available on request.

Results

The tests were performed on the samples as received.

Customer Sample Name: OHA_WS1_100424 **Lab ID:** 24-103785-1

Sample Condition: Acceptable **Sampled Date**: 10-Apr-2024

Test	Result	Unit	Method Reference
Poly- and Perfluorinated Alkyl Substances (PFAS) in Potable Water			
Perfluoroalkylsulfonic acids			
PFPrS	0.013	µg/L	AsureQuality Method (LC-MS/MS)
PFBS	0.028	µg/L	AsureQuality Method (LC-MS/MS)
PFPeS	0.025	µg/L	AsureQuality Method (LC-MS/MS)
di-PFHxS (1)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
mono-PFHxS (1)	0.036	µg/L	AsureQuality Method (LC-MS/MS)
L-PFHxS (1)	0.15	µg/L	AsureQuality Method (LC-MS/MS)
Total PFHxS (3)	0.19	µg/L	AsureQuality Method (LC-MS/MS)
PFHpS	0.0033	µg/L	AsureQuality Method (LC-MS/MS)
di-PFOS (5)	0.0037	µg/L	AsureQuality Method (LC-MS/MS)
mono-PFOS (5)	0.030	µg/L	AsureQuality Method (LC-MS/MS)
L-PFOS (5)	0.021	µg/L	AsureQuality Method (LC-MS/MS)
Total PFOS (7)	0.055	µg/L	AsureQuality Method (LC-MS/MS)
Sum PFHxS+PFOS (1)	0.24	µg/L	AsureQuality Method (LC-MS/MS)
PFNS	<0.0020	µg/L	AsureQuality Method (LC-MS/MS)
PFDS	NR	µg/L	AsureQuality Method (LC-MS/MS)
PFECHS	<0.0020	µg/L	AsureQuality Method (LC-MS/MS)
Perfluoroalkylcarboxylic acids			
PFBA	0.026	µg/L	AsureQuality Method (LC-MS/MS)
PFPeA	0.14	µg/L	AsureQuality Method (LC-MS/MS)
PFHxA	0.11	µg/L	AsureQuality Method (LC-MS/MS)
PFHpA	0.038	µg/L	AsureQuality Method (LC-MS/MS)
PFOA	0.032	µg/L	AsureQuality Method (LC-MS/MS)
PFNA	0.011	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)

Test	Result	Unit	Method Reference
PFDoDA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFTrDA	<0.0010	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	NR	µg/L	AsureQuality Method (LC-MS/MS)
NMeFOSA-M	NR	µg/L	AsureQuality Method (LC-MS/MS)
Perfluorooctanesulfonamidoacetic acids			
NEtFOSAA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
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	0.0016	µg/L	AsureQuality Method (LC-MS/MS)
6:2 FTS	0.16	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)	<0.0020	µg/L	AsureQuality Method (LC-MS/MS)
F-53B (minor)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Sum F-53B	<0.0020	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	131	%	AsureQuality Method (LC-MS/MS)
M3PFHxS	137	%	AsureQuality Method (LC-MS/MS)
M8PFOS	190 (R)	%	AsureQuality Method (LC-MS/MS)
M4PFBA	106	%	AsureQuality Method (LC-MS/MS)
M5PFPeA	95	%	AsureQuality Method (LC-MS/MS)
M5PFHxA	114	%	AsureQuality Method (LC-MS/MS)
MPFHpA	126	%	AsureQuality Method (LC-MS/MS)
M8PFOA	117	%	AsureQuality Method (LC-MS/MS)
M9PFNA	136	%	AsureQuality Method (LC-MS/MS)
M6PFDA	146	%	AsureQuality Method (LC-MS/MS)
M7PFUnDA	202 (R)	%	AsureQuality Method (LC-MS/MS)
MPFDoDA	265 (R)	%	AsureQuality Method (LC-MS/MS)
MPFTeDA	77	%	AsureQuality Method (LC-MS/MS)
MPFOSA	112	%	AsureQuality Method (LC-MS/MS)
DNEtFOSA	116	%	AsureQuality Method (LC-MS/MS)
DNMeFOSA	63	%	AsureQuality Method (LC-MS/MS)
DNEtFOSAA	154 (R)	%	AsureQuality Method (LC-MS/MS)
DNMeFOSAA	129	%	AsureQuality Method (LC-MS/MS)
DNEtFOSE	69	%	AsureQuality Method (LC-MS/MS)
DNMeFOSE	59	%	AsureQuality Method (LC-MS/MS)

Test	Result	Unit	Method Reference
M4:2FTS	124	%	AsureQuality Method (LC-MS/MS)
M6:2FTS	131	%	AsureQuality Method (LC-MS/MS)
M8:2FTS	152 (R)	%	AsureQuality Method (LC-MS/MS)
M3HFPO-DA	108	%	AsureQuality Method (LC-MS/MS)

R = Recovery outside method limits

Customer Sample Name: Duplicate of 24-103785-1A **Lab ID:** 24-103785-2

Sample Description: OHA_WS1_100424 Duplicate

Sample Condition: Acceptable **Sampled Date**: 10-Apr-2024

Test	Result	Unit	Method Reference
Poly- and Perfluorinated Alkyl Substances (PFAS) in Potable Water			
Perfluoroalkylsulfonic acids			
PFPrS	0.013	µg/L	AsureQuality Method (LC-MS/MS)
PFBS	0.028	µg/L	AsureQuality Method (LC-MS/MS)
PFPeS	0.027	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)	0.15	µg/L	AsureQuality Method (LC-MS/MS)
Total PFHxS (3)	0.18	µg/L	AsureQuality Method (LC-MS/MS)
PFHpS	0.0029	µg/L	AsureQuality Method (LC-MS/MS)
di-PFOS (5)	0.0030	µg/L	AsureQuality Method (LC-MS/MS)
mono-PFOS (5)	0.026	µg/L	AsureQuality Method (LC-MS/MS)
L-PFOS (5)	0.019	µg/L	AsureQuality Method (LC-MS/MS)
Total PFOS (7)	0.048	µg/L	AsureQuality Method (LC-MS/MS)
Sum PFHxS+PFOS (1)	0.23	µg/L	AsureQuality Method (LC-MS/MS)
PFNS	<0.0020	µg/L	AsureQuality Method (LC-MS/MS)
PFDS	NR	µg/L	AsureQuality Method (LC-MS/MS)
PFECHS	<0.0020	µg/L	AsureQuality Method (LC-MS/MS)
Perfluoroalkylcarboxylic acids			
PFBA	0.026	µg/L	AsureQuality Method (LC-MS/MS)
PFPeA	0.14	µg/L	AsureQuality Method (LC-MS/MS)
PFHxA	0.12	µg/L	AsureQuality Method (LC-MS/MS)
PFHpA	0.041	µg/L	AsureQuality Method (LC-MS/MS)
PFOA	0.033	µg/L	AsureQuality Method (LC-MS/MS)
PFNA	0.011	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	<0.0010	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	NR	µg/L	AsureQuality Method (LC-MS/MS)
NMeFOSA-M	NR	µg/L	AsureQuality Method (LC-MS/MS)
Perfluorooctanesulfonamidoacetic acids			
NEtFOSAA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
NMeFOSAA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Perfluorooctanesulfonamidoethanols			
NEtFOSE-M	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)

Test	Result	Unit	Method Reference
NMeFOSE-M	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Telomere Sulfonic acids			
4:2 FTS	0.0018	µg/L	AsureQuality Method (LC-MS/MS)
6:2 FTS	0.16	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)	<0.0020	µg/L	AsureQuality Method (LC-MS/MS)
F-53B (minor)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Sum F-53B	<0.0020	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	120	%	AsureQuality Method (LC-MS/MS)
M3PFHxS	138	%	AsureQuality Method (LC-MS/MS)
M8PFOS	180 (R)	%	AsureQuality Method (LC-MS/MS)
M4PFBA	102	%	AsureQuality Method (LC-MS/MS)
M5PFPeA	91	%	AsureQuality Method (LC-MS/MS)
M5PFHxA	102	%	AsureQuality Method (LC-MS/MS)
MPFHpA	113	%	AsureQuality Method (LC-MS/MS)
M8PFOA	108	%	AsureQuality Method (LC-MS/MS)
M9PFNA	114	%	AsureQuality Method (LC-MS/MS)
M6PFDA	135	%	AsureQuality Method (LC-MS/MS)
M7PFUnDA	179 (R)	%	AsureQuality Method (LC-MS/MS)
MPFDoDA	242 (R)	%	AsureQuality Method (LC-MS/MS)
MPFTeDA	126	%	AsureQuality Method (LC-MS/MS)
MPFOSA	101	%	AsureQuality Method (LC-MS/MS)
DNEtFOSA	171 (R)	%	AsureQuality Method (LC-MS/MS)
DNMeFOSA	90	%	AsureQuality Method (LC-MS/MS)
DNEtFOSAA	115	%	AsureQuality Method (LC-MS/MS)
DNMeFOSAA	106	%	AsureQuality Method (LC-MS/MS)
DNEtFOSE	67	%	AsureQuality Method (LC-MS/MS)
DNMeFOSE	59	%	AsureQuality Method (LC-MS/MS)
M4:2FTS	110	%	AsureQuality Method (LC-MS/MS)
M6:2FTS	125	%	AsureQuality Method (LC-MS/MS)
M8:2FTS	144	%	AsureQuality Method (LC-MS/MS)
M3HFPO-DA	108	%	AsureQuality Method (LC-MS/MS)

R = Recovery outside method limits

QC Results

Blank

Relates to sample(s) 24-103785-1, 24-103785-2

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)
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	<0.0020	µg/L	AsureQuality Method (LC-MS/MS)
PFDS	NR	µg/L	AsureQuality Method (LC-MS/MS)
PFECHS	<0.0020	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	<0.0010	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	NR	µg/L	AsureQuality Method (LC-MS/MS)
NMeFOSA-M	NR	µg/L	AsureQuality Method (LC-MS/MS)
Perfluorooctanesulfonamidoacetic acids			
NEtFOSAA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
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)

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)	<0.0020	µg/L	AsureQuality Method (LC-MS/MS)
F-53B (minor)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Sum F-53B	<0.0020	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	74	%	AsureQuality Method (LC-MS/MS)
M8PFOS	44	%	AsureQuality Method (LC-MS/MS)
M4PFBA	107	%	AsureQuality Method (LC-MS/MS)
M5PFPeA	102	%	AsureQuality Method (LC-MS/MS)
M5PFHxA	101	%	AsureQuality Method (LC-MS/MS)
MPFHpA	101	%	AsureQuality Method (LC-MS/MS)
M8PFOA	83	%	AsureQuality Method (LC-MS/MS)
M9PFNA	68	%	AsureQuality Method (LC-MS/MS)
M6PFDA	53	%	AsureQuality Method (LC-MS/MS)
M7PFUnDA	28 (R)	%	AsureQuality Method (LC-MS/MS)
MPFDoDA	18 (R)	%	AsureQuality Method (LC-MS/MS)
MPFTeDA	15 (R)	%	AsureQuality Method (LC-MS/MS)
MPFOSA	58	%	AsureQuality Method (LC-MS/MS)
DNEtFOSA	21 (R)	%	AsureQuality Method (LC-MS/MS)
DNMeFOSA	29 (R)	%	AsureQuality Method (LC-MS/MS)
DNEtFOSAA	33	%	AsureQuality Method (LC-MS/MS)
DNMeFOSAA	49	%	AsureQuality Method (LC-MS/MS)
DNEtFOSE	45	%	AsureQuality Method (LC-MS/MS)
DNMeFOSE	46	%	AsureQuality Method (LC-MS/MS)
M4:2FTS	106	%	AsureQuality Method (LC-MS/MS)
M6:2FTS	96	%	AsureQuality Method (LC-MS/MS)
M8:2FTS	104	%	AsureQuality Method (LC-MS/MS)
M3HFPO-DA	99	%	AsureQuality Method (LC-MS/MS)

R = Recovery outside method limits

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
PFPeS	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
PFPeA	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	0.0010 µg/L
PFTeDA	NR µg/L
P37DMOA	0.0010 µg/L
Perfluorooctanesulfonamides	
PFOSA	0.0010 µg/L
NEtFOSA-M	NR µg/L
NMeFOSA-M	NR 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
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	
PFPrS	Perfluoro-1-propanesulfonic acid
PFBS	Perfluoro-1-butanesulfonic acid
PFPeS	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 Perfluorooctanesulfonic acid
PFNS	Perfluoro-1-nonanesulfonic acid
PFDS	Perfluoro-1-decanesulfonic acid
PFECHS	Perfluoro-4-ethylcyclohexanesulfonic acid
Perfluoroalkylcarboxylic acids	
PFBA	Perfluoro-n-butanoic acid
PFPeA	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
Perfluorooctanesulfonamides	
PFOSA	Perfluoro-1-octanesulfonamide
NEtFOSA-M	N-ethylperfluoro-1-octanesulfonamide
NMeFOSA-M	N-methylperfluoro-1-octanesulfonamide
Perfluorooctanesulfonamidoacetic acids	
NEtFOSAA	N-ethylperfluoro-1-octanesulfonamidoacetic acid
NMeFOSAA	N-methylperfluoro-1-octanesulfonamidoacetic acid
Perfluorooctanesulfonamidoethanols	
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-chloroeicosafluoro-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

AsureQuality Limited | 1C Quadrant Drive | Waiwhetu | Lower Hutt 5010 | Wellington | New Zealand
PO Box 31242 | Lower Hutt 5040 | Wellington | New Zealand
t. +64 4 570 8800 | e. cswellington@asurequality.com | w. www.asurequality.com

Certificate of Analysis

Submission Reference: A02744124
Final Report

NZDF ESDAT
Pattle Delamore Partners Limited
P O Box 9528
Auckland 1149
New Zealand

PO Number: OHA_PFAS

Report Issued: 09-May-2024 **AsureQuality Reference: 24-103788** **Sample(s) Received:** 12-Apr-2024 08:15

Testing Period: 15-Apr-2024 to 09-May-2024
Date of analysis is available on request.

Results

The tests were performed on the samples as received.

Customer Sample Name: OHA_WS2_100424 **Lab ID:** 24-103788-1

Sample Condition: Acceptable **Sampled Date**: 10-Apr-2024

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)	0.0025	µg/L	AsureQuality Method (LC-MS/MS)
Total PFHxS (3)	0.0025	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)	0.0017	µg/L	AsureQuality Method (LC-MS/MS)
L-PFOS (5)	0.0031	µg/L	AsureQuality Method (LC-MS/MS)
Total PFOS (7)	0.0048	µg/L	AsureQuality Method (LC-MS/MS)
Sum PFHxS+PFOS (1)	0.0073	µg/L	AsureQuality Method (LC-MS/MS)
PFNS	<0.0020	µg/L	AsureQuality Method (LC-MS/MS)
PFDS	NR	µg/L	AsureQuality Method (LC-MS/MS)
PFECHS	<0.0020	µg/L	AsureQuality Method (LC-MS/MS)
Perfluoroalkylcarboxylic acids			
PFBA	0.0031	µg/L	AsureQuality Method (LC-MS/MS)
PFPeA	0.0031	µg/L	AsureQuality Method (LC-MS/MS)
PFHxA	0.0019	µg/L	AsureQuality Method (LC-MS/MS)
PFHpA	0.0013	µg/L	AsureQuality Method (LC-MS/MS)
PFOA	0.0015	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)

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	NR	µg/L	AsureQuality Method (LC-MS/MS)
Perfluorooctanesulfonamides			
PFOSA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
NEtFOSA-M	NR	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)
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	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)	NR	µg/L	AsureQuality Method (LC-MS/MS)
Miscellaneous			
F-53B (major)	<0.0020	µg/L	AsureQuality Method (LC-MS/MS)
F-53B (minor)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Sum F-53B	<0.0020	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	66	%	AsureQuality Method (LC-MS/MS)
M8PFOS	36	%	AsureQuality Method (LC-MS/MS)
M4PFBA	96	%	AsureQuality Method (LC-MS/MS)
M5PFPeA	93	%	AsureQuality Method (LC-MS/MS)
M5PFHxA	95	%	AsureQuality Method (LC-MS/MS)
MPFHpA	86	%	AsureQuality Method (LC-MS/MS)
M8PFOA	74	%	AsureQuality Method (LC-MS/MS)
M9PFNA	65	%	AsureQuality Method (LC-MS/MS)
M6PFDA	49	%	AsureQuality Method (LC-MS/MS)
M7PFUnDA	36	%	AsureQuality Method (LC-MS/MS)
MPFDoDA	29 (R)	%	AsureQuality Method (LC-MS/MS)
MPFTeDA	6 (R)	%	AsureQuality Method (LC-MS/MS)
MPFOSA	53	%	AsureQuality Method (LC-MS/MS)
DNEtFOSA	24 (R)	%	AsureQuality Method (LC-MS/MS)
DNMeFOSA	50	%	AsureQuality Method (LC-MS/MS)
DNEtFOSAA	32	%	AsureQuality Method (LC-MS/MS)
DNMeFOSAA	40	%	AsureQuality Method (LC-MS/MS)
DNEtFOSE	42	%	AsureQuality Method (LC-MS/MS)
DNMeFOSE	53	%	AsureQuality Method (LC-MS/MS)

Test	Result	Unit	Method Reference
M4:2FTS	102	%	AsureQuality Method (LC-MS/MS)
M6:2FTS	100	%	AsureQuality Method (LC-MS/MS)
M8:2FTS	50	%	AsureQuality Method (LC-MS/MS)
M3HFPO-DA	93	%	AsureQuality Method (LC-MS/MS)

R = Recovery outside method limits

QC Results

Blank

Relates to sample(s) 24-103788-1

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	<0.0020	µg/L	AsureQuality Method (LC-MS/MS)
PFDS	NR	µg/L	AsureQuality Method (LC-MS/MS)
PFECHS	<0.0020	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	NR	µg/L	AsureQuality Method (LC-MS/MS)
Perfluorooctanesulfonamides			
PFOSA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
NEtFOSA-M	NR	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)
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	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)	NR	µg/L	AsureQuality Method (LC-MS/MS)
Miscellaneous			
F-53B (major)	<0.0020	µg/L	AsureQuality Method (LC-MS/MS)
F-53B (minor)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Sum F-53B	<0.0020	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	100	%	AsureQuality Method (LC-MS/MS)
M8PFOS	100	%	AsureQuality Method (LC-MS/MS)
M4PFBA	100	%	AsureQuality Method (LC-MS/MS)
M5PFPeA	100	%	AsureQuality Method (LC-MS/MS)
M5PFHxA	100	%	AsureQuality Method (LC-MS/MS)
MPFHpA	100	%	AsureQuality Method (LC-MS/MS)
M8PFOA	100	%	AsureQuality Method (LC-MS/MS)
M9PFNA	100	%	AsureQuality Method (LC-MS/MS)
M6PFDA	100	%	AsureQuality Method (LC-MS/MS)
M7PFUnDA	100	%	AsureQuality Method (LC-MS/MS)
MPFDoDA	100	%	AsureQuality Method (LC-MS/MS)
MPFTeDA	100	%	AsureQuality Method (LC-MS/MS)
MPFOSA	100	%	AsureQuality Method (LC-MS/MS)
DNEtFOSA	100	%	AsureQuality Method (LC-MS/MS)
DNMeFOSA	100	%	AsureQuality Method (LC-MS/MS)
DNEtFOSAA	100	%	AsureQuality Method (LC-MS/MS)
DNMeFOSAA	100	%	AsureQuality Method (LC-MS/MS)
DNEtFOSE	100	%	AsureQuality Method (LC-MS/MS)
DNMeFOSE	100	%	AsureQuality Method (LC-MS/MS)
M4:2FTS	100	%	AsureQuality Method (LC-MS/MS)
M6:2FTS	100	%	AsureQuality Method (LC-MS/MS)
M8:2FTS	100	%	AsureQuality Method (LC-MS/MS)
M3HFPO-DA	100	%	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
PFPeS	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
PFPeA	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	NR µg/L
Perfluorooctanesulfonamides	
PFOSA	0.0010 µg/L
NEtFOSA-M	NR 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	NR µg/L
Telomere Carboxylic acids	
FPrPA (3:3FTA)	0.0010 µg/L
FPePA (5:3FTA)	0.0010 µg/L

FHpPA (7:3FTA)	NR 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	
PFPrS	Perfluoro-1-propanesulfonic acid
PFBS	Perfluoro-1-butanesulfonic acid
PFPeS	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 Perfluorooctanesulfonic acid
PFNS	Perfluoro-1-nonanesulfonic acid
PFDS	Perfluoro-1-decanesulfonic acid
PFECHS	Perfluoro-4-ethylcyclohexanesulfonic acid
Perfluoroalkylcarboxylic acids	
PFBA	Perfluoro-n-butanoic acid
PFPeA	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
Perfluorooctanesulfonamides	
PFOSA	Perfluoro-1-octanesulfonamide
NEtFOSA-M	N-ethylperfluoro-1-octanesulfonamide
NMeFOSA-M	N-methylperfluoro-1-octanesulfonamide
Perfluorooctanesulfonamidoacetic acids	
NEtFOSAA	N-ethylperfluoro-1-octanesulfonamidoacetic acid
NMeFOSAA	N-methylperfluoro-1-octanesulfonamidoacetic acid
Perfluorooctanesulfonamidoethanols	
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-chloroeicosafluoro-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

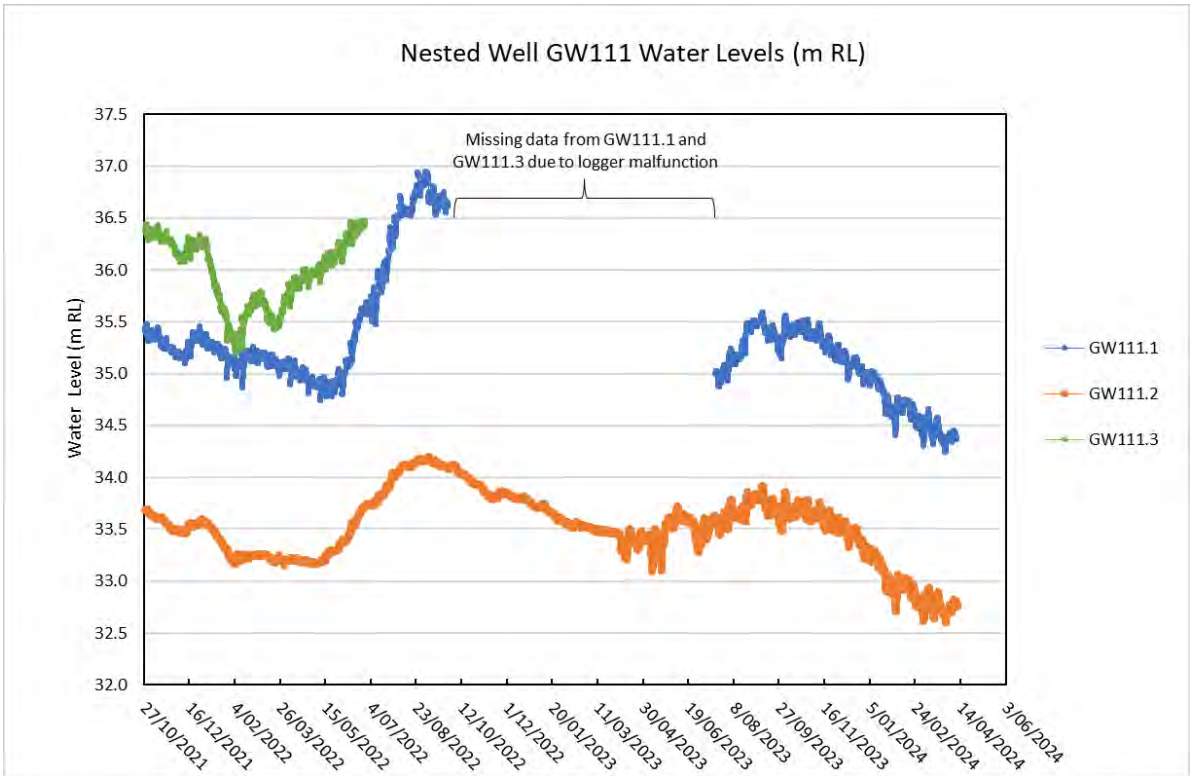
Appendix B: GW Level Measurements

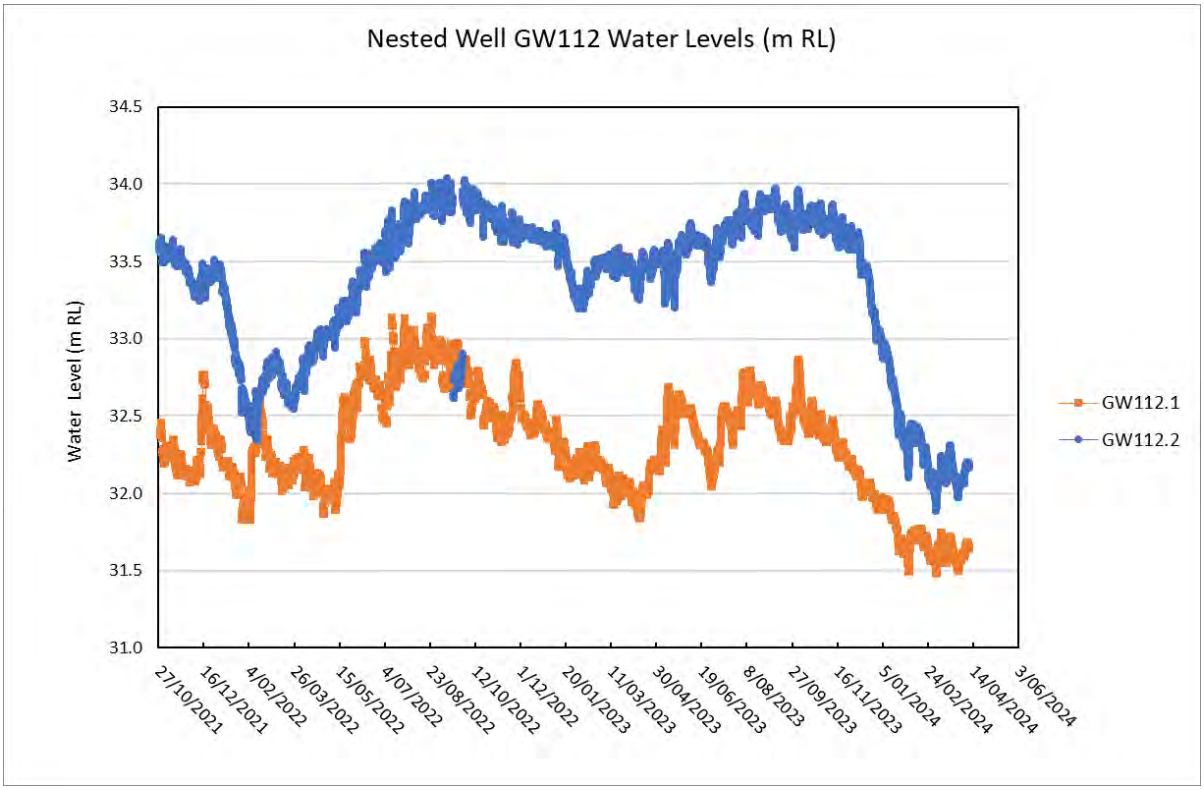
Table B-1: April 2024 Well Details and Water Level

Monitoring Well Ref	GW67	GW106	GW107	GW108	GW109	GW6	MW4	MW6	MW9
Total Depth of Well (m below TOC [1])	2.96	6.81	10.71	3.88	7.82	6.74	9.90	4.43	4.53
Diameter (mm)	116	50	50	50	50	1070	50	40	40
TOC [1] (m below ground level)	0	0.05	0.08	0.04	0.04	0.67 m agl [2]	0.07	0.03	0.05
Date	**11/04/2024**	**9/04/2024**	**11/04/2024**	**9/04/2024**	**11/04/2024**	**10/04/2024**	**9/04/2024**		
Depth to Water (m below ground level)	-	2.63	3.25	2.05	4.78	4.87	8.03	3.66	2.11
Water depth (m below TOC)	-	2.58	3.17	2.01	4.740	5.54	7.96	3.63	2.06

Monitoring Well Ref	GW111.1	GW111.2	GW111.3	GW112.1	GW112.2
Total Depth of Well (m below TOC [1])	11.59	38.0	81.0	10.31	50.0
Diameter (mm)	50	50	50	50	50
TOC [1] (m below ground level)	0.426 m agl [2]	0.315 m agl [2]	0.286 m agl [2]	0.494 m agl [2]	1.011 m agl [2]
Date	**10/04/2024**				
Depth to Water (m below ground level)	7.05	8.89	6.57	1.50	0.71 m agl [2]
Water depth (m below TOC)	7.48	9.20	6.86	1.99	1.99

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


Nested Well GW111 Water Levels (m RL)
Missing data from GW111.1 and GW111.3 due to logger malfunction
Water Level (m RL)
37.5
37.0
36.5
36.0
35.5
35.0
34.5
34.0
33.5
33.0
32.5
32.0
27/10/2021
16/12/2021
4/02/2022
26/03/2022
15/05/2022
4/07/2022
23/08/2022
12/10/2022
1/12/2022
20/01/2023
11/03/2023
30/04/2023
19/06/2023
8/08/2023
27/09/2023
16/11/2023
5/01/2024
24/02/2024
14/04/2024
3/06/2024
GW111.1
GW111.2
GW111.3


Nested Well GW112 Water Levels (m RL)
Water Level (m RL)
34.5
34.0
33.5
33.0
32.5
32.0
31.5
31.0
27/10/2021
16/12/2021
4/02/2022
26/03/2022
15/05/2022
4/07/2022
23/08/2022
12/10/2022
1/12/2022
20/01/2023
11/03/2023
30/04/2023
19/06/2023
8/08/2023
27/09/2023
16/11/2023
5/01/2024
24/02/2024
14/04/2024
3/06/2024
GW112.1
GW112.2

Appendix C: Field Sheets

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

Location: Ohakea

Land owner: –

Address: Access from Fagen Road

Weather: Sunny

Sample point: tap / well / surface water

Description of sample point: stream

Distance of sample point from bore: (m)

Sampling equipment: mighty gripper

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~~8~~

Sample Code (Name): SW24

Date and time: 4:24 10/4/24

Coordinates (NZTM): E

N

Sampled By: Nathon (Clean hands)

Bray (Dirty hands)

Site Photos taken? ☐ Yes ☑ No

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

Stream

Animals observed on site: Chickens / cows / sheep / pigs / goats

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	–	–	–	13.9	7.07	230	-2.9	3.74	–	17.01
During										
During										
During										
During										
During										
During										
During										
During										
During										
During										

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

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? ☐ Yes ☑ No

COC form completed and checked? ☑ Yes

Location field sheet completed? ☐ Yes ☐ N/A

Stabilisation criteria field sheet completed? ☑ Yes

Letter given to landowner? ☐ Yes

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

Land owner:

Address: off Tangimoana

Weather:

Sample point: tap / well / surface water

Description of sample point: Ditch

Distance of sample point from bore: – (m)

Sampling equipment: Mighty Gripper

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: A02744125

Sample Code (Name): SW6

Date and time: 10/4/24

Coordinates: (NZTM) E

N

Sampled By: – (Clean hands)

– (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

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										
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 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

Comments

Ditch Dry - Sample not collected.

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

Land owner: –

Address: off Compion Road.

Weather: Overcast

Sample point: tap / well / surface water

Description of sample point:

Distance of sample point from bore: (m)

Sampling equipment: –

QA/QA Sample Codes:

Duplicate: AAZ –

Trip Blank: AAB

Field Blank: ABA

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

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

Job Number: A027441[illegible]5

Sample Code (Name): SW36

Date and time: 5:27 10/4/24

Coordinates (NZTM): E

N

Sampled By: Bryn (Clean hands)

Nathan (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 NA

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	–	5:08	–	14.5	7.02	917	93.4	1.71	–	4.71
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 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

Comments

AAZ - Dup

New concrete bridge over Stream
Some fish carcasses in stream.
Access to stream restricted.

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

Land owner: –

Address: Taylor Road

Weather: Fine

Sample point: tap / well / surface water

Description of sample point: slow flow stream

Distance of sample point from bore: (m)

Sampling equipment: mighty gripper

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: A027444 125

Sample Code (Name): SW37

Date and time: 9/4/24

Coordinates (NZTM): E

N

Sampled By: Bryn (Clean hands)

Nathan (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 N/A

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		2:53		15.6	6.72	581	-34.9	2.42		13.99
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 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

Comments

Stream flow very slow

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

MW4

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

Location: Ohakea

Land owner: NZDF

Address: On - base

Weather: Sunny

Sample point: tap / well / surface water

Description of sample point:

Distance of sample point from bore: (m)

Sampling equipment: Peristaltic pump

QA/QA Sample Codes:

Duplicate: AAV

Trip Blank: AAX

Field Blank: AAW

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

Job Number: A0274412[illegible]

Sample Code (Name): MW4

Date and time: 10:36 9/4/24

Coordinates (NZTM): E

N

Sampled By: Bryn (Clean hands)

Needham (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 NA

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

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	10:21	Cell	18.2	6.49	560	-16.2	1.35	7.963	6.55
During	4	10:25	0.6	16.2	6.46	561	-21.5	0.53	7.970	10.08
During	7	10:28	1.2	16.2	6.44	559	-22.2	0.38	7.971	29.17
During	10	10:31	1.8	16.1	6.44	559	-24.1	0.32	7.971	56.61
During	14	10:35	2.4	16.1	6.45	559	-26.1	0.28	7.972	105.02
During	17	10:38	3.0	16.2	6.46	559	-27.2	0.26	7.973	22.6
During										
During										
During										
During										
During										

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

Comments

Fence damaged
Well lid off to the side
↳ well open and exposed to elements

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

11 x 30 + 250 = 580 = 0.6

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
Land owner: NZDF
Address: On base
Weather: Fine
Sample point: tap / well / surface water
Description of sample point: –
Distance of sample point from bore: – (m)
Sampling equipment: Peristaltic Pump

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~~4~~
Sample Code (Name): MW6
Date and time: 11:36 9/4/24
Coordinates (NZTM): E
N
Sampled By: Bryn (Clean hands)
Neilham (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 NA

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	0	11:19	Cell	19.9	6.23	194.2	92.7	4.11	3.625	4.94
During	5	11:24	0.4	19.8	6.02	187.4	119.2	3.27	3.640	5.15
During	10	11:29	0.8	19.7	5.97	184.1	132.1	3.10	3.645	5.08
During	14	11:33	1.2	19.5	5.95	182.5	140.3	2.99	3.650	4.80
During	19	11:38	1.6	19.3	5.94	181.7	147.9	2.93	3.660	4.28
During	23	11:42	2.0	19.0	5.94	181.4	165.8	2.93	3.674	4.16
During	27	11:46	2.4	19.0	5.93	181.0	168.2	2.91	3.680	4.00
During	31	11:51	2.8	19.0	5.93	181.1	170.3	2.91	3.690	4.81
During										
During										
During										

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

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

4.46 x 30 + 280 = 0.4L

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

Land owner: NZDF

Address: On base

Weather: fine

Sample point: tap / well / surface water

Description of sample point: -

Distance of sample point from bore: - (m)

Sampling equipment: Peristaltic Pump

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: A0274412A

Sample Code (Name): MW9

Date and time: 12:49 9/4/24

Coordinates (NZTM): E

N

Sampled By: Nathan (Clean hands)

B.yn (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 NA

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	0	12:31	bell	18.3	5.89	321.8	61.6	2.12	2.06	12:SC
During	4	12:35	0.4	18.3	5.77	315.4	102.4	0.63	2.11	8:46
During	8	12:39	0.8	18.2	5.75	306.2	123.5	0.4	2.18	10.62
During	11	12:42	1.2	18.3	5.79	306.8	76.2	0.54	2.22	10.46
During	15	12:46	1.6	18.2	5.83	313.2	47.9	0.30	2.27	13.21
During	19	12:50	2.0	18.6	5.85	320.0	28.9	0.27	2.31	9.94
During				Sw	Lower o/t.					
During										
During										
During										
During										

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

Comments

Toby lid painted blue

Well casing crushed and bent. at top

→ No phones

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

30 x 4.42 + 250 = 0.4L

Site surrounding site developed

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

Land owner: -

Address: off Tangimoana Road

Weather: Sunny

Sample point: tap / well / surface water

Description of sample point: Open well

Distance of sample point from bore: (m)

Sampling equipment: Peristaltic Pump

Job Number: [illegible] A0274412[illegible]

Sample Code (Name): GW6

Date and time: 10/4/24

Coordinates (NZTM): E

N

Sampled By: Nathan (Clean hands)

Bryn (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 NA

QA/QA Sample Codes:

Duplicate -

Trip Blank -

Field Blank -

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

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

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	10:13	Cell	17.9	6.9	578	9.6	3.19	5.84	12.90
During	6	10:19	GW6 1	15.9	6.78	564	-82.6	0.49	5.84	17.87
During	10	10:23	GW6 2	15.6	6.78	564	-109.2	0.33	5.84	28.95
During	14	10:27	M2 3	15.9	6.79	564	-[illegible]128.1	0.27	5.84	42.25
During	19	10:32	4	15.8	6.79	565	-148.4	0.24	5.84	56.57
During	21	10:34	5	15.9	6.79	565	-152.1	0.22	5.84	55.37
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 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

Comments

Blueish layer on top of a Reddish (rusting) layer in jug

6.3 x 30 + 250 = 439 = 0.4L

low water, lots of leaves.

Water has a sulfur smell

DTB 6.74.

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

Land owner: -

Address: off Baily Road

Weather: Sunny - windy

Sample point: tap / well / surface water

Description of sample point: -

Distance of sample point from bore: - (m)

Sampling equipment: Transfer bottle

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: A027 44124

Sample Code (Name): WS1

Date and time: 10/4/24

Coordinates (NZTM): E

N

Sampled By: Bmo (Clean hands)

Nathan (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

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	-	11.00	-	15.4	6.91	431.8	-76.2	5.24	-	1575.30
During										
During										
During										
During										
During										
During										
During										
During										
During										
During										

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

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

Stud door fixed
purged for 2 minutes before sampling

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

Land owner: -

Address: Pump house in quarry

Weather: Sunny

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: A0274412A

Sample Code (Name): WS2

Date and time: 8:02 10/4/24

Coordinates (NZTM): E

N

Sampled By: Nathan (Clean hands)

Bryn (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 NA

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	-	7:42	-	14.6	6.54	499.6	33.1	4.72	9.65	89.71
During										
During										
During										
During										
During										
During										
During										
During										
During										
During										

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

Comments: Tap run for two minutes

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

13.8 depth to base of bore, cut off at 11. (bore turned off) being discontinued in May.

Analyses Required: PFAS suite

Serial number of water quality sensor unit:

DTW 9.65

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

Land owner: -

Address: Speedy Road.

Weather: Sunny

Sample point: tap / well / surface water

Description of sample point:

Distance of sample point from bore: (m)

Sampling equipment: Pump in tank

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: GW 31

Sample Code (Name): AQ2744128S

Date and time: 10/4/24

Coordinates (NZTM): E

N

Sampled By: Nathan (Clean hands)

Bryn (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

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		9.10		17.4	6.32	479.5	-3.9	2.14		2.71
During										
During										
During										
During										
During										
During										
During										
During										
During										
During										

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

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

New Cow Shed pump and gone pump feeds into water tank.

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

Land owner: –

Address: Access of property by SH1

Weather: fine

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: BOWS A027441.26

Sample Code (Name): GWS3

Date and time: 8:38 10/4/24

Coordinates (NZTM): E

N

Sampled By: Bryn (Clean hands)

Nathan (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

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		8:35		13.9	6.58	716	-27.9	1.87		167.46
During										
During										
During										
During										
During										
During										
During										
During										
During										
During										

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

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

A. Legrim

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

Land owner: –

Address: Soldiers road

Weather:

Sample point: (tap) / well / surface water

Description of sample point: from ~~pool~~ tank.

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: A0274425

Sample Code (Name): GWBS

Date and time: 10:44 11/4/24

Coordinates (NZTM): E

N

Sampled By: Nathan (Clean hands)

Bryn (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 NA

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	–	9:55	–	14.2	7.17	954	-83.3	3.80	–	3156.8
During										
During										
During										
During										
During										
During										
During										
During										
During										
During										

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

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? ☐ 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

Land owner: –

Address: Opp base

Weather:

Sample point: tap / well / surface water

Description of sample point: From well

Distance of sample point from bore: – (m)

Sampling equipment: peri pump

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: A027444125

Sample Code (Name): GW67

Date and time: 9:36 11/4/24

Coordinates (NZTM): E

N

Sampled By: / (Clean hands) (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

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										
During	Well	infilled - was informed by owner that is is no								
During		longer in use								
During										
During										
During										
During										
During										
During										
During										
During										

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

Comments: Dry well

DTB 2.96

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?	☐ 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

Land owner: -

Address: Taylor Road

Weather:

Sample point: tap / well / surface water

Description of sample point: -

Distance of sample point from bore: - (m)

Sampling equipment: Peristaltic Pump

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: A0274412S

Sample Code (Name): GGW106

Date and time: 2:21 9/4/24

Coordinates (NZTM): E

N

Sampled By: Bryn (Clean hands)

Nathan (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 NA

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	0	2:01	0.4	17.0	6.16	685	107.1	1.64	2.58	20.54
During	2	2:03	0.5	16.7	6.11	684	111.6	0.70	2.58	17.71
During	4	2:05	1	16.7	6.08	683	117.2	0.47	2.58	12.21
During	6	2:07	1.5	16.7	6.04	681	121.8	0.37	2.58	20.59
During	8	2:09	2.0	16.8	6.03	678	124.2	0.32	2.58	31.38
During	10	2:11	2.5	16.8	6.03	675	126.3	0.29	2.58	46.85
During	12	2:12	3.0	16.8	6.04	673	127.0	0.27	2.58	8.51
During										
During										
During										
During										

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

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

0.5L

DTB-6-81

Could not get lid to sit flat. One screw in. lid open to any surface water inflow

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

Land owner:

Address: Tangimoana Road

Weather: Overcast

Sample point: tap / well / surface water

Description of sample point: -

Distance of sample point from bore: - (m)

Sampling equipment: Peristaltic Pump

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: A0274425

Sample Code (Name): GW107

Date and time: 8:34 11/4/24

Coordinates (NZTM): E

N

Sampled By: Nathan (Clean hands)

Bryn (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 NA

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	0	8:18	Well	16.3	7.65	349.1	36.6	4.00	3.17	11.57
During	2	8:20	0.5	15.4	6.81	285.2	-43.3	0.85	3.17	14.26
During	4	8:22	1.0	15.3	6.67	248.0	-54.2	0.63	3.17	12.31
During	5	8:23	1.5	15.2	6.67	564.2	-60.6	0.52	3.17	9.38
During	7	8:25	2.0	15.2	6.81	610	-72.7	0.45	3.17	10.86
During	9	8:27	2.5	15.1	6.84	616	-77.8	0.40	3.17	12.60
During	11	8:29	3.0	15.1	6.86	619	-82.0	0.37	3.17	17.10
During	14	8:32	4.0	15.1	6.88	621	-86.0	0.33	3.17	23.30
During	17	8:35	5.0	15.1	6.89	624	-88.8	0.30	3.17	33.76
During										
During										

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

Comments: Yellow colour to the water.

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

6 x 30 + 250 = 430 = 0.5L

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

Land owner:

Address: Taylor Road

Weather: Fine

Sample point: tap / well / surface water

Description of sample point:

Distance of sample point from bore: (m)

Sampling equipment: Peristaltic Pump

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: AO2744126

Sample Code (Name): GW108

Date and time: 3:16 9/4/24

Coordinates (NZTM): E

N

Sampled By: Nathan (Clean hands)

Bryn (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 NA

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	0	2:257	Cell	18.4	6.65	539	-16.6	3.95	2.01	9.67
During	3	3:00	0.5	16.5	6.24	539	+4.8	0.79	2.03	14.00
During	5	3:02	1.0	16.6	6.19	537	-8.9	0.51	2.05	13.74
During	8	3:05	1.5	16.6	6.15	532	-5.1	0.39	2.06	20.10
During	10	3:07	2.0	16.5	6.12	504	0.2	0.39	2.07	25.13
During	12	3:09	2.5	16.5	6.10	497	7.9	0.50	2.07	29.75
During										
During										
During										
During										
During										

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

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

0.5L

Well lid could not fit with cap - well cap removed and replaced with tape

DTB 3.88

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

Land owner: McDonell Road.

Address: -

Weather: Overcast

Sample point: tap / well / surface water

Description of sample point: from well.

Distance of sample point from bore: - (m)

Sampling equipment: lowflow

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: A0274426

Sample Code (Name): GW109

Date and time: 11/04/24

Coordinates (NZTM): E

N

Sampled By: Nathan (Clean hands)

BM (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

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	-	1037	-	16.1	6.93	387.7	134.5	2.35	4.75	49.40
During	2	1039	0.5	15.8	6.28	381.5	129.7	0.84	4.75	116.66
During	4	1041	1.0	15.8	6.16	381.3	125.0	0.58	4.75	196.23
During	6	1043	1.5	15.8	6.12	380.4	122.9	0.46	4.75	297.86
During	8	1045	2.0	15.8	6.09	379.8	123.2	0.39	4.75	317.92
During	10	1047	2.5	15.8	6.07	380.0	124.2	0.36	4.75	418.55
During	12	1049.	3.0	15.8	6.06	380.2	125.5	0.37	4.75	333.76
During	14.	1050	3.5	15.8	6.06	379.9	125.5	0.31	4.75	358.87
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 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

Comments

DTB - 7.82m

DTW - 4.74 m

Sample train 0.5

Analyses Required: PFAS suite

Serial number of water quality sensor unit:

Shake test – foam produced? ☐ Yes ☑ No

COC form completed and checked? ☑ Yes

Location field sheet completed? ☐ Yes ☐ N/A

Stabilisation criteria field sheet completed? ☑ Yes

Letter given to landowner? ☐ Yes

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

Land owner: -

Address: off Bailey Road

Weather: Sunny

Sample point: tap / well / surface water

Description of sample point: -

Distance of sample point from bore: - (m)

Sampling equipment: peri pump

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: A027441123

Sample Code (Name): GW111-1

Date and time: 10/04/24

Coordinates (NZTM): E

N

Sampled By: Bryn (Clean hands)

Nathan (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

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

7.48.

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	-	1324	-	15.9	6.49	266.3	12.4	2.38	7.48	13.13
During	2	1326	0.75	15.5	6.23	264.4	37.5	1.45	7.48	21.27
During	4	1328	1.5	15.4	6.14	263.6	52.8	1.22	7.48	29.57
During	6	1330	2.25	15.4	6.10	263.6	61.1	1.12	7.48	46.36
During	8	1332	3.00	15.3	6.08	263.1	67.9	1.05	7.48	53.28
During	8	1334	3.75	15.2	6.06	263.1	72.1	1.03	7.48	62.79
During	10	1336	4.5	15.2	6.04	263.0	77.6	1.00	7.48	82.27
During			6.0							
During										
During										
During										

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

Comments

DTW 7.48
DTB 11.59

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?	☐ 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

Land owner: NZDF

Address: off Bailey Road

Weather: Sunny

Sample point: tap / well / surface water

Description of sample point: -

Distance of sample point from bore: - (m)

Sampling equipment: bladder pump

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: A027441129

Sample Code (Name): GW111.2

Date and time: 1:04 10/4/24

Coordinates (NZTM): E

N

Sampled By: Natha (Clean hands)

Bryn (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

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	0	12:48	1	14.2	7.52	698	-132.7	1.72	9-20	26.16
During	4	12:51	4	14.1	6.28	771	-38.2	0.58	9-20	15.80
During	11	12:59	8	14.0	5.49	756	21.8	0.20	9-20	11.57
During	~~12~~ 13	1:01	9.5	14.1	5.46	745	33.4	0.19	9-20	5.54
During	16	1:04	12	14.0	5.42	747	44.2	0.16	9-20	5.81
During										
During										
During										
During										
During										
During										

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

Comments

DTW 9.20.

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

1.4L - Sample train

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

Land owner: NZDF

Address: Bayley Road

Weather: Sunny

Sample point: tap / well / surface water

Description of sample point: –

Distance of sample point from bore: – (m)

Sampling equipment: Bladder Pump

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: A02744125

Sample Code (Name): GW111.3

Date and time: 11:36 10 / 4 / 24

Coordinates (NZTM): E

N

Sampled By: Nathan (Clean hands)

Bry (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 NA

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	0	11:20	Cell	18.8	8.68	546	-234.7	0.85	6.86	27.47
During	6	11:26	2.5	14.7	8.31	644	-284.2	1.06	6.86	321.1
During	18	11:38	5.0	15.1	5.52	806	-42.8	1.12	6.86	66.06
During	27	11:47	7.5	14.4	7.02	759	-132.1	1.02	6-86	36.6
During	31	11:51	10.0	14.8	6.57	762	-116.4	0.54	6-86	19.37
During	39	11:59	12.5	15.1	6.22	791	-75.4	0.23	6-86	10.57
During	49	12:09	15.0	15.2	5.78	800	-20.9	0.23	6-86	14.74
During	58	12:18	17.5	14.8	5.41	815	26.0	0.19	6-86	145.2
During		12:25	20.0	14.3	6.58	780	-63.9	0.20	6-86	9.95
During		12:31	22.5	14.1	5.50	793	20.	1.09		665
During										

† 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**

Water sample internal ø = 6mm ≈ 30mL per meter

Comments

DTW: 6.86

2.5L

Blown hose at 6L

Blown hose at 19.0L

Blown hose at 22.5L

Water level stable.

Sampled at 12:31 → assumed in water column

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

Land owner: –

Address: off Speedy Road

Weather: Sunny

Sample point: tap / well / surface water

Description of sample point: –

Distance of sample point from bore: – (m)

Sampling equipment: bladder pump

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: A0274412S

Sample Code (Name): GW112.21

Date and time: 2:48 10/4/24

Coordinates (NZTM): E

N

Sampled By: Nathan (Clean hands)

Bryn (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 NA

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	0	2:28	Cell	16.8	6.35	381.0	29.4	2.34	1.99	39.25
During	2	2.30	0.6	16.3	6.12	377.1	48.0	0.76	1.99	42.32
During	4	2:32	1.2	16.3	6.08	376.8	55	0.53	1.99	46.65
During	6	2:34	1.8	16.3	6.05	375.2	58	0.45	1.99	45.61
During	8	2:36	2.4	16.4	6.04	373.1	58.8	0.40	1.99	36.42
During	10	2:38	3.0	16.4	6.04	371.5	58.4	0.38	1.99	42.14
During	12	2:40	3.6	16.4	6.05	367.8	59.2	0.32	1.94	42.59
During										
During										
During										
During										

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

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

11 x 30 + 250 = 580 = 0.6L

DTW 1.99.
DTB 10.31

Small volume of red ppt at first flush

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

Land owner: -

Address: off Speedy Road

Weather: Cloudy

Sample point: tap / well / surface water

Description of sample point:

Distance of sample point from bore: (m)

Sampling equipment: Bladder Pump

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: A027441 2S

Sample Code (Name): GW112.2

Date and time: 3:15 10/4/24

Coordinates (NZTM): E

N

Sampled By: Nathan (Clean hands)

Bryn (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 NA

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	0	3.02	Cell	17.2	6.46	815	10.9	3.90	1.99	7.76
During	5	3:07	2.	15.3	6.78	981	-108.2	0.38	1.99	82.56
During	10	3:12	4	15.1	6.84	860	-24.4	0.24	1.99	9.56
During	15	3.17	6	15.1	6.84	847	-129.3	0.20	1.99	7.07
During	20	3.22	8	15.1	6.86	844	-133.4	0.17	1.99	9.47
During	25	15.28	10	15.0	6.88	843	-136.9	0.15	1.99	10.06
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 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

Comments

DTW for TOC - 1.99

2L

~~Small volume of red ppt at first flush.~~

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

Appendix D: QA/QC Results

Table D-1: QA/QC Water Sampling Results - Duplicates - Per- and Poly-Fluoroalkyl Substances (PFAS) [1]

Sample Location	SW36	SW36	**%RPD (SW36 and AAZ)**	MW4	MW4	**%RPD (MW4 and AAV)**
Sample Name	OHA_SW36_100424	OHA_AAZ_100424		OHA_MW4_090424	OHA_AAV_090424	
Laboratory Reference	24-102531-1	24-102531-2		24-100824-1	24-100824-2	
Monitoring Zone	Ōhakea - off base			Ōhakea - on base		
Sampled Date	10/04/2024	10/04/2024		9/04/2024	9/04/2024	
PFPrS	<0.0010	<0.0010	-	<0.025	<0.025	-
PFBS	0.0023	0.0021	9.09%	0.027	<0.025	-
PFPeS	0.0021	0.0019	10.00%	0.031	0.030	3.28%
di-PFHxS (1)	<0.0010	<0.0010	-	<0.025	<0.025	-
mono-PFHxS (1)	0.0031	0.0032	3.17%	0.060	0.061	1.65%
L-PFHxS (1)	0.016	0.016	0.00%	0.37	0.41	10.26%
Total PFHxS (3)	0.019	0.019	0.00%	0.43	0.47	8.89%
PFHpS	<0.0010	<0.0010	-	<0.025	<0.025	-
di-PFOS (5)	<0.0010	<0.0010	-	<0.025	<0.025	-
mono-PFOS (5)	0.0088	0.0087	1.14%	0.37	0.39	5.26%
L-PFOS (5)	0.0084	0.0092	9.09%	0.79	0.95	18.39%
Total PFOS (7)	0.017	0.018	5.71%	1.2	1.3	8.00%
Sum PFHxS+PFOS (1)	0.036	0.037	2.74%	1.6	1.8	11.76%
PFNS	<0.0020	<0.0020	-	<0.050	<0.050	-
PFDS	-	-	-	<0.10	<0.10	-
PFBA	0.016	0.016	0.00%	0.14	0.12	15.38%
PFPeA	0.052	0.052	0.00%	0.50	0.49	2.02%
PFHxA	0.035	0.035	0.00%	0.35	0.34	2.90%
PFHpA	0.015	0.016	6.45%	0.17	0.17	0.00%
PFOA	0.0067	0.0065	3.03%	0.16	0.17	6.06%
PFNA	0.0015	0.0016	6.45%	0.098	0.096	2.06%
PFDA	<0.0010	<0.0010	-	<0.025	<0.025	-
PFUnDA	<0.0010	<0.0010	-	<0.025	<0.025	-
PFDoDA	<0.0010	<0.0010	-	<0.10	<0.10	-
PFTrDA	<0.0010	<0.0010	-	<0.10	<0.10	-
PFTeDA	-	-	-	<0.10	<0.10	-
PFOSA	<0.0010	<0.0010	-	<0.025	<0.025	-
NEtFOSA-M	-	-	-	<0.10	<0.10	-
NMeFOSA-M	-	-	-	<0.10	<0.10	-
NEtFOSAA	<0.0010	<0.0010	-	<0.025	<0.025	-
NMeFOSAA	<0.0010	<0.0010	-	<0.025	<0.025	-
NEtFOSE-M	<0.0010	<0.0010	-	<0.10	<0.10	-
NMeFOSE-M	<0.0010	<0.0010	-	<0.10	<0.10	-
4:2 FTS	<0.0010	<0.0010	-	<0.025	<0.025	-
6:2 FTS	<0.0010	<0.0010	-	0.29	0.26	10.91%
8:2 FTS	<0.0010	<0.0010	-	<0.10	<0.10	-
10:2 FTS	<0.0010	<0.0010	-	<0.025	<0.025	-
F-53B (major)	<0.0020	<0.0020	-	<0.10	<0.10	-
F-53B (minor)	<0.0010	<0.0010	-	<0.050	<0.050	-
Sum F-53B	<0.0020	<0.0020	-	<0.10	<0.10	-
FPrPA (3:3FTA)	<0.0010	<0.0010	-	<0.10	<0.10	-
FPePA (5:3FTA)	<0.0010	<0.0010	-	<0.025	<0.025	-
FHpPA (7:3FTA)	<0.0010	<0.0010	-	<0.025	<0.025	-
ADONA	<0.0010	<0.0010	-	<0.025	<0.025	-
HFPO-DA (GenX)	<0.0010	<0.0010	-	<0.050	<0.050	-
P37DMOA	<0.0010	<0.0010	-	<0.050	<0.050	-
PFECHS	<0.0020	<0.0020	-	<0.025	<0.025	-

Notes:

1. Results in µg/L.

-	No value available
<0.001	Below the limit of reporting
%RPD	Relative Percent Difference

Table D-2: QA/QC Water Sampling Results - Blanks - Per- and Poly-Fluoroalkyl Substances (PFAS) [1]

Sample Location	Ōhakea - off base			Ōhakea - on base		
Sample Name	OHA_ABA_100424	OHA_ABB_100424	OHA_ABC_100424	OHA_AAW_090424	OHA_AAX_090424	OHA_AAY_090424
Lab Report Number	24-102531-3	24-102531-4	24-102531-5	24-100824-3	24-100824-4	24-100824-5
Sample Type	Field Blank	Trip Blank	Rinsate	Field Blank	Trip Blank	Rinsate
Sample Date	10/04/2024	10/04/2024	10/04/2024	9/04/2024	9/04/2024	9/04/2024
PFPrS	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
PFBS	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
PFPeS	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
di-PFHxS (1)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
mono-PFHxS (1)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
L-PFHxS (1)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Total PFHxS (3)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
PFHpS	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
di-PFOS (5)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
mono-PFOS (5)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
L-PFOS (5)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Total PFOS (7)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Sum PFHxS+PFOS (1)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
PFNS	<0.0020	<0.0020	<0.0020	<0.0010	<0.0010	<0.0010
PFDS	NR	NR	NR	<0.0050	<0.0050	<0.0050
PFBA	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
PFPeA	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
PFHxA	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
PFHpA	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
PFOA	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
PFNA	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
PFDA	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
PFUnDA	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
PFDoDA	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
PFTrDA	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
PFTeDA	NR	NR	NR	<0.0010	<0.0010	<0.0010
PFOSA	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
NEtFOSA-M	NR	NR	NR	<0.0010	<0.0010	<0.0010
NMeFOSA-M	NR	NR	NR	<0.0010	<0.0010	<0.0010
NEtFOSAA	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
NMeFOSAA	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
NEtFOSE-M	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
NMeFOSE-M	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
4:2 FTS	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
6:2 FTS	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
8:2 FTS	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
10:2 FTS	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
F-53B (major)	<0.0020	<0.0020	<0.0020	<0.0010	<0.0010	<0.0010
F-53B (minor)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Sum F-53B	<0.0020	<0.0020	<0.0020	<0.0010	<0.0010	<0.0010
FPrPA (3:3FTA)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
FPePA (5:3FTA)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
FHpPA (7:3FTA)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
ADONA	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
HFPO-DA (GenX)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
P37DMOA	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
PFECHS	<0.0020	<0.0020	<0.0020	<0.0050	<0.0050	<0.0050

NR	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]

	PFAS in Groundwater								Guidelines		
Sample Name	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			
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	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]
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											
PFPrS	-	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]	**0.3**	**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	-	-
PFECHS	-	-	-	-	-	<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	-	-	-
MeFOSAA	-	<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	-	-	-
FHpPA	-	-	-	-	-	<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:

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]

	PFAS in Groundwater								Guidelines		
Sample Name	OHA_FTA_MW4_9_270922	OHA_MW4_030423	OHA_MW4_071123	OHA_MW4_090424	MW6	MW6	MW6	OHA_MW6			
Location	MW4	MW4	MW4	MW4	MW6	MW6	MW6	MW6			
Sample Date	27/09/2022	3/04/2023	7/11/2023	9/04/2024	20/04/2017	1/08/2017	31/10/2017	22/02/2018			
Lab Report Number	3008321	3276254	3518235	24-100824-1	1327497	841470	937355	1055089			
Monitoring Zone	On-base	On-base	On-base	On-base	On-base	On-base	On-base	On-base	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]
Sample Results											
PFPrS	<0.025	<0.025	<0.025	<0.025	0.11	0.21	0.66	0.17	-	-	-
PFBS	0.032	0.032	0.025	0.027	0.56	0.76	1.8	0.43	-	-	-
PFPeS	0.045	0.036	0.038	0.031	0.81	0.81	2.3	0.66	-	-	-
di-PFHxS	<0.025	<0.025	<0.025	<0.025	0.014	0.02	0.052	0.025	-	-	-
Mono-PFHxS	0.11	0.077	0.077	0.060	1.1	1.9	4.1	1.8	-	-	-
L-PFHxS	0.62	0.54	0.43	0.37	5.3	8.1	22	4.1	-	-	-
Total PFHxS[4]	0.73	0.62	0.51	0.43	6.4	10	26	5.9	-	-	-
PFHpS	<0.025	<0.025	<0.025	<0.025	0.34	0.6	0.49	0.38	-	-	-
di-PFOS	0.026	0.03	<0.025	<0.025	0.31	0.23	0.27	0.39	-	-	-
Mono-PFOS	0.72	0.59	0.58	0.37	4.9	2.8	2.4	3.3	-	-	-
L-PFOS	1.3	1.3	1.3	0.79	6.6	5.9	3	4.5	-	-	-
Total PFOS[4]	**2**	**1.9**	**1.9**	**1.2**	**12**	**8.9**	**5.7**	**8.2**	-	0.0091 [6]	0.48 [6]
Sum of PFHxS and PFOS[5]	2.7	2.5	2.4	1.6	18	-	-	14	0.07	-	-
PFECHS	<0.025	<0.025	<0.025	<0.025	-	-	-	-	-	-	-
PFBA	0.24	0.17	0.20	0.14	1.1	1.1	1.3	0.66	-	-	-
PFPeA	0.95	0.66	0.78	0.50	3.6	4	6.8	2.5	-	-	-
PFHxA	0.61	0.44	0.51	0.35	2.8	4.4	7	2	-	-	-
PFHpA	0.36	0.24	0.26	0.17	0.9	1.5	2.5	0.93	-	-	-
PFOA	0.37	0.3	0.26	0.16	1.3	1.8	1.7	0.89	0.56	19	220
PFNA	0.23	0.17	0.17	0.098	0.75	0.86	0.37	0.66	-	-	-
PFDA	<0.025	<0.025	<0.025	<0.025	0.016	0.029	0.013	0.012	-	-	-
PFUnDA	<0.025	<0.025	<0.025	<0.025	-	0.0057	0.0043	<0.005	-	-	-
PFTrDA	<0.1	<0.1	<0.10	<0.10	-	-	-	-	-	-	-
PFTeDA	<0.1	<0.1	<0.10	<0.10	-	-	-	-	-	-	-
PFDoDA	<0.1	<0.1	<0.10	<0.10	-	<0.005	<0.001	-	-	-	-
FOSA	<0.025	<0.025	<0.025	<0.025	0.0014	<0.001	<0.001	0.0085	-	-	-
MeFOSA	<0.1	<0.1	<0.10	<0.10	-	<0.005	<0.005	-	-	-	-
MeFOSAA	<0.025	<0.025	<0.025	<0.025	-	<0.005	<0.005	<0.005	-	-	-
EtFOSAA	<0.025	<0.025	<0.025	<0.025	-	<0.005	<0.005	<0.005	-	-	-
4:2 FTS	<0.025	<0.025	<0.025	<0.025	<0.001	<0.005	<0.005	<0.005	-	-	-
6:2 FTS	0.73	0.4	0.46	0.29	0.53	0.74	0.33	1.7	-	-	-
8:2 FTS	<0.1	<0.1	<0.10	<0.10	0.0089	0.0064	<0.005	0.04	-	-	-
10:2 FTS	<0.025	<0.025	<0.025	<0.025	-	-	-	-	-	-	-
FPrPA	<0.1	<0.1	<0.10	<0.10	-	-	-	-	-	-	-
EtFOSA	<0.1	<0.1	<0.10	<0.10	-	<0.005	<0.005	-	-	-	-
EtFOSE	<0.1	<0.1	<0.10	<0.10	-	<0.005	<0.005	<0.025	-	-	-
FPePA	<0.025	<0.025	<0.025	<0.025	-	-	-	-	-	-	-
FHpPA	<0.025	<0.025	<0.025	<0.025	-	-	-	-	-	-	-
F-53B minor	<0.05	<0.05	<0.050	<0.050	-	-	-	-	-	-	-
HFPO-DA	<0.05	<0.05	<0.050	<0.050	-	-	-	-	-	-	-
Sum F-53B	<0.1	<0.1	<0.10	<0.10	-	-	-	-	-	-	-
ADONA	<0.025	<0.025	<0.025	<0.025	-	-	-	-	-	-	-
P37DMOA	<0.05	<0.05	<0.050	<0.050	-	-	-	-	-	-	-
F-53B major	<0.1	<0.1	<0.10	<0.10	-	-	-	-	-	-	-

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]

	PFAS in Groundwater								Guidelines		
Sample Name	MW6	OHA_RUP_MW6_6_300920	OHA_RUP_MW6_7_170321	OHA_RUP_MW6_8_271021	OHA_RUP_MW6_9_300322	OHA_RUP_MW6_10_270922	OHA_MW6_030423	OHA_MW6_071123			
Location	MW6	MW6	MW6	MW6	MW6	MW6	MW6	MW6			
Sample Date	4/07/2018	30/09/2020	17/03/2021	27/10/2021	30/03/2022	27/09/2022	3/04/2023	7/11/2023			
Lab Report Number	1186580	2132127	2314824	2590573	2788509	3008307	3276245	3518293	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]
Monitoring Zone	On-base	On-base	On-base	On-base	On-base	On-base	On-base	On-base			
Sample Results											
PFPrS	0.22	0.063	0.028	0.1	0.053	0.16	0.03	0.065	-	-	-
PFBS	0.72	0.22	0.11	0.33	0.19	0.46	0.11	0.25	-	-	-
PFPeS	0.77	0.26	0.12	0.38	0.24	0.64	0.12	0.30	-	-	-
di-PFHxS	0.015	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	-	-	-
Mono-PFHxS	1.7	0.62	0.25	0.77	0.57	1.3	0.28	0.69	-	-	-
L-PFHxS	11	4.2	1.6	5.7	3.8	7.7	2	4.6	-	-	-
Total PFHxS[4]	13	4.8	1.8	6.5	4.4	9	2.3	5.3	-	-	-
PFHpS	0.34	0.15	0.06	0.24	0.15	0.24	0.087	0.17	-	-	-
di-PFOS	0.27	0.13	0.075	0.18	0.15	0.17	0.097	0.12	-	-	-
Mono-PFOS	4.5	2.9	1.1	2.7	2.5	2.3	1.7	2.6	-	-	-
L-PFOS	9.7	6.5	1.7	4.6	5.5	3.4	3.3	4.8	-	-	-
Total PFOS[4]	**14**	**9.5**	**2.9**	**7.5**	**8.2**	**5.9**	**5.1**	**7.5**	-	0.0091 [6]	0.48 [6]
Sum of PFHxS and PFOS[5]	27	14	4.7	14	13	15	7.4	13	0.07	-	-
PFECHS	-	-	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	-	-	-
PFBA	1.2	1.4	0.35	0.57	0.57	0.61	0.37	0.53	-	-	-
PFPeA	4.1	3.2	1.1	1.7	2	2.2	1.1	1.6	-	-	-
PFHxA	4	2.2	0.78	1.6	1.4	2.2	0.78	1.4	-	-	-
PFHpA	1.9	1	0.37	0.69	0.63	0.9	0.39	0.63	-	-	-
PFOA	2.2	1.1	0.35	0.97	0.68	1	0.45	0.84	0.56	19	220
PFNA	1.3	0.75	0.28	0.61	0.55	0.49	0.41	0.50	-	-	-
PFDA	0.045	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	-	-	-
PFUnDA	-	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	-	-	-
PFTrDA	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.10	-	-	-
PFTeDA	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.10	-	-	-
PFDoDA	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.10	-	-	-
FOSA	<0.001	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	-	-	-
MeFOSA	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.10	-	-	-
MeFOSAA	-	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	-	-	-
EtFOSAA	-	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	-	-	-
4:2 FTS	<0.001	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	-	-	-
6:2 FTS	0.46	0.23	0.84	<1	0.78	0.32	0.32	0.28	-	-	-
8:2 FTS	0.0069	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.10	-	-	-
10:2 FTS	-	-	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	-	-	-
FPrPA	-	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.10	-	-	-
EtFOSA	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.10	-	-	-
EtFOSE	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.10	-	-	-
FPePA	-	-	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	-	-	-
FHpPA	-	-	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	-	-	-
F-53B minor	-	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.050	-	-	-
HFPO-DA	-	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.050	-	-	-
Sum F-53B	-	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.10	-	-	-
ADONA	-	-	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	-	-	-
P37DMOA	-	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.050	-	-	-
F-53B major	-	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.10	-	-	-

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]

	PFAS in Groundwater								Guidelines		
Sample Name	OHA_MW6_090424	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_GW111.1_040423	OHA_GW111.1_101123	OHA_GW111.1_100424			
Location	MW6	GW111.1	GW111.1	GW111.1	GW111.1	GW111.1	GW111.1	GW111.1			
Sample Date	9/04/2024	17/03/2021	28/10/2021	30/03/2022	28/09/2022	4/04/2023	10/11/2023	10/04/2024			
Lab Report Number	24-100834-1	2390370	2593741	2787340	3021350	3288820	3521624	24-102486-1	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]
Monitoring Zone	On-base	On-base	On-base	On-base	On-base	On-base	On-base	On-base			
Sample Results											
PFPrS	<0.025	<0.025	<0.025	0.0023	0.0031	0.0019	0.0017	0.0017	-	-	-
PFBS	0.075	<0.025	<0.025	0.0083	0.011	0.0073	0.0068	0.0064	-	-	-
PFPeS	0.095	<0.025	<0.025	0.0083	0.014	0.0068	0.0062	0.0065	-	-	-
di-PFHxS	<0.025	<0.025	<0.025	<0.001	<0.001	<0.001	<0.0010	<0.0010	-	-	-
Mono-PFHxS	0.22	<0.025	0.032	0.012	0.03	0.012	0.014	0.011	-	-	-
L-PFHxS	1.5	0.083	0.2	0.076	0.14	0.072	0.078	0.068	-	-	-
Total PFHxS[4]	1.7	0.083	0.23	0.088	0.17	0.084	0.092	0.079	-	-	-
PFHpS	0.066	<0.025	<0.025	0.0022	0.0045	0.0018	0.0018	0.0018	-	-	-
di-PFOS	0.056	<0.025	<0.025	0.0036	0.0061	0.0032	0.0043	0.0037	-	-	-
Mono-PFOS	0.88	0.035	0.15	0.061	0.087	0.043	0.059	0.053	-	-	-
L-PFOS	1.8	0.05	0.21	0.14	0.14	0.063	0.081	0.080	-	-	-
Total PFOS[4]	**2.7**	**0.085**	**0.36**	**0.2**	**0.23**	**0.11**	**0.14**	**0.14**	-	0.0091 [6]	0.48 [6]
Sum of PFHxS and PFOS[5]	4.4	0.17	0.59	0.29	0.4	0.19	0.23	0.22	0.07	-	-
PFECHS	<0.025	<0.025	<0.025	<0.001	<0.001	-	<0.0010	<0.0050	-	-	-
PFBA	0.32	0.11	0.15	0.079	0.11	0.07	0.082	0.087	-	-	-
PFPeA	1.0	0.39	0.86	0.26	0.53	0.24	0.28	0.29	-	-	-
PFHxA	0.64	0.28	0.47	0.2	0.33	0.16	0.19	0.19	-	-	-
PFHpA	0.27	0.15	0.17	0.092	0.16	0.08	0.099	0.10	-	-	-
PFOA	0.27	0.073	0.13	0.064	0.084	0.052	0.069	0.070	0.56	19	220
PFNA	0.21	<0.025	0.048	0.017	0.044	0.015	0.015	0.015	-	-	-
PFDA	<0.025	<0.025	<0.025	<0.001	<0.001	<0.001	<0.0010	<0.0010	-	-	-
PFUnDA	<0.025	<0.025	<0.025	<0.001	<0.001	<0.001	<0.0010	<0.0010	-	-	-
PFTrDA	<0.10	<0.1	<0.1	<0.001	-	-	<0.0020	<0.0010	-	-	-
PFTeDA	<0.10	<0.1	<0.1	-	<0.001	<0.001	<0.0010	<0.0010	-	-	-
PFDoDA	<0.10	<0.1	<0.1	<0.001	<0.001	<0.001	<0.0010	<0.0010	-	-	-
FOSA	<0.025	<0.025	<0.025	<0.001	<0.001	<0.001	<0.0010	<0.0010	-	-	-
MeFOSA	<0.10	<0.1	<0.1	<0.001	<0.001	<0.001	-	<0.0010	-	-	-
MeFOSAA	<0.025	<0.025	<0.025	<0.001	<0.001	<0.001	<0.0010	<0.0010	-	-	-
EtFOSAA	<0.025	<0.025	<0.025	<0.001	<0.001	<0.001	<0.0010	<0.0010	-	-	-
4:2 FTS	<0.025	<0.025	<0.025	<0.001	<0.001	<0.001	<0.0010	<0.0010	-	-	-
6:2 FTS	0.46	<0.05	0.15	0.012	0.25	0.0035	0.0087	0.0023	-	-	-
8:2 FTS	<0.10	<0.1	<0.1	<0.001	0.0032	<0.001	<0.0010	<0.0010	-	-	-
10:2 FTS	<0.025	<0.025	<0.025	<0.001	<0.001	<0.001	-	<0.0010	-	-	-
FPrPA	<0.10	<0.1	<0.1	<0.001	<0.001	<0.001	<0.0010	<0.0010	-	-	-
EtFOSA	<0.10	<0.1	<0.1	<0.001	<0.001	<0.001	-	<0.0010	-	-	-
EtFOSE	<0.10	<0.1	<0.1	<0.001	<0.001	<0.001	-	<0.0010	-	-	-
FPePA	<0.025	<0.025	<0.025	<0.001	<0.001	<0.001	<0.0010	<0.0010	-	-	-
FHpPA	<0.025	<0.025	<0.025	<0.001	<0.001	-	<0.0010	<0.0010	-	-	-
F-53B minor	<0.050	<0.05	<0.05	<0.001	<0.001	<0.001	<0.0010	<0.0010	-	-	-
HFPO-DA	<0.050	<0.05	<0.05	<0.001	<0.001	<0.001	<0.0010	<0.0010	-	-	-
Sum F-53B	<0.10	<0.1	<0.1	<0.001	<0.001	<0.001	<0.0010	<0.0010	-	-	-
ADONA	<0.025	<0.025	<0.025	<0.001	<0.001	<0.001	<0.0010	<0.0010	-	-	-
P37DMOA	<0.050	<0.05	<0.05	<0.001	<0.001	<0.001	<0.0010	<0.0010	-	-	-
F-53B major	<0.10	<0.1	<0.1	<0.001	<0.001	<0.001	<0.0010	<0.0010	-	-	-

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]

	PFAS in Groundwater								Guidelines		
Sample Name	OHA_BAI_GW111.2_1_040221	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_GW111.2_040423	OHA_GW111.2_101123	OHA_GW111.2_100424			
Location	GW111.2	GW111.2	GW111.2	GW111.2	GW111.2	GW111.2	GW111.2	GW111.2			
Sample Date	4/02/2021	17/03/2021	28/10/2021	30/03/2022	28/09/2022	4/04/2023	10/11/2023	10/04/2024	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]
Lab Report Number	2256089	2390370	2593741	2787340	3021350	3288820	3521624	24-102486-2			
Monitoring Zone	On-base	On-base	On-base	On-base	On-base	On-base	On-base	On-base			
Sample Results											
PFPrS	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0010	<0.0010	-	-	-
PFBS	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0010	<0.0010	-	-	-
PFPeS	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0010	<0.0010	-	-	-
di-PFHxS	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0010	<0.0010	-	-	-
Mono-PFHxS	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0010	<0.0010	-	-	-
L-PFHxS	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0010	<0.0010	-	-	-
Total PFHxS[4]	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0010	<0.0010	-	-	-
PFHpS	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0010	<0.0010	-	-	-
di-PFOS	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0010	<0.0010	-	-	-
Mono-PFOS	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0010	<0.0010	-	-	-
L-PFOS	<0.001	<0.001	0.0012	<0.001	<0.001	<0.001	<0.0010	<0.0010	-	-	-
Total PFOS[4]	<0.001	<0.001	0.0012	<0.001	<0.001	<0.001	<0.0010	<0.0010	-	0.0091 [6]	0.48 [6]
Sum of PFHxS and PFOS[5]	<0.001	<0.001	0.0012	<0.001	<0.001	<0.001	<0.0010	<0.0010	0.07	-	-
PFECHS	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.0010	<0.0020	-	-	-
PFBA	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.0010	<0.0010	-	-	-
PFPeA	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.0021	0.0016	-	-	-
PFHxA	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.0012	<0.0010	-	-	-
PFHpA	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0010	<0.0010	-	-	-
PFOA	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0010	<0.0010	0.56	19	220
PFNA	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0010	<0.0010	-	-	-
PFDA	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0010	<0.0010	-	-	-
PFUnDA	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0010	<0.0010	-	-	-
PFTrDA	-	-	-	-	-	-	<0.0020	<0.0010	-	-	-
PFTeDA	-	-	-	<0.001	-	-	<0.0010	-	-	-	-
PFDoDA	<0.001	-	<0.001	<0.001	<0.001	<0.001	<0.0010	<0.0010	-	-	-
FOSA	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0010	<0.0010	-	-	-
MeFOSA	<0.001	-	<0.001	<0.001	<0.001	<0.001	-	-	-	-	-
MeFOSAA	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0010	<0.0010	-	-	-
EtFOSAA	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0010	<0.0010	-	-	-
4:2 FTS	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0010	<0.0010	-	-	-
6:2 FTS	<0.001	<0.001	0.0024	<0.001	<0.001	<0.001	<0.0010	<0.0010	-	-	-
8:2 FTS	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0010	<0.0010	-	-	-
10:2 FTS	<0.001	-	<0.001	<0.001	<0.001	<0.001	-	<0.0010	-	-	-
FPrPA	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0010	<0.0010	-	-	-
EtFOSA	<0.001	-	<0.001	<0.001	<0.001	<0.001	-	-	-	-	-
EtFOSE	<0.001	-	<0.001	<0.001	<0.001	<0.001	-	<0.0010	-	-	-
FPePA	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0010	<0.0010	-	-	-
FHpPA	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.0010	<0.0010	-	-	-
F-53B minor	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0010	<0.0010	-	-	-
HFPO-DA	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0010	<0.0010	-	-	-
Sum F-53B	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0010	<0.0010	-	-	-
ADONA	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0010	<0.0010	-	-	-
P37DMOA	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0010	<0.0010	-	-	-
F-53B major	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0010	<0.0020	-	-	-

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]

	PFAS in Groundwater								Guidelines		
Sample Name	OHA_BAI_GW111.3_1_170321	OHA_BAI_GW111.3_2_281021	OHA_BAI_GW111.3_3_300322	OHA_BAI_GW111.3_4_270922	OHA_GW111.3_040423	OHA_GW111.3_101123	OHA_GW111.3_100424	MW9			
Location	GW111.3	GW111.3	GW111.3	GW111.3	GW111.3	GW111.3	GW111.3	MW9			
Sample Date	17/03/2021	28/10/2021	30/03/2022	27/09/2022	4/04/2023	10/11/2023	10/04/2024	20/04/2017			
Lab Report Number	2390370	2593741	2787340	3021350	3288820	3521624	24-102486-3	1327497	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]
Monitoring Zone	On-base	On-base	On-base	On-base	On-base	On-base	On-base	On-base			
Sample Results											
PFPrS	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0010	<0.0010	0.019	-	-	-
PFBS	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0010	<0.0010	0.12	-	-	-
PFPeS	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0010	<0.0010	0.16	-	-	-
di-PFHxS	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0010	<0.0010	0.003	-	-	-
Mono-PFHxS	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0010	<0.0010	0.21	-	-	-
L-PFHxS	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0010	<0.0010	1.5	-	-	-
Total PFHxS[4]	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0010	<0.0010	1.7	-	-	-
PFHpS	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0010	<0.0010	0.072	-	-	-
di-PFOS	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0010	<0.0010	0.055	-	-	-
Mono-PFOS	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0010	<0.0010	0.62	-	-	-
L-PFOS	<0.001	0.0021	0.0027	<0.001	<0.001	<0.0010	<0.0010	0.52	-	-	-
Total PFOS[4]	<0.001	0.0021	0.0027	<0.001	<0.001	<0.0010	<0.0010	**1.2**	-	0.0091 [6]	0.48 [6]
Sum of PFHxS and PFOS[5]	<0.001	0.0021	0.0027	<0.001	<0.001	<0.0010	<0.0010	2.9	0.07	-	-
PFECHS	<0.001	<0.001	<0.001	<0.001	-	<0.0010	<0.0020	-	-	-	-
PFBA	<0.001	<0.001	-	<0.001	<0.001	<0.0010	<0.0010	0.69	-	-	-
PFPeA	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0010	<0.0010	3.5	-	-	-
PFHxA	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0010	<0.0010	1.8	-	-	-
PFHpA	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0010	<0.0010	1	-	-	-
PFOA	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0010	<0.0010	0.67	0.56	19	220
PFNA	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0010	<0.0010	0.36	-	-	-
PFDA	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0010	<0.0010	0.0014	-	-	-
PFUnDA	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0010	<0.0010	-	-	-	-
PFTrDA	-	-	-	-	-	-	<0.0010	-	-	-	-
PFTeDA	-	<0.001	<0.001	<0.001	<0.001	<0.0010	-	-	-	-	-
PFDoDA	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.0010	-	-	-	-
FOSA	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0010	<0.0010	<0.001	-	-	-
MeFOSA	-	<0.001	<0.001	<0.001	<0.001	-	-	-	-	-	-
MeFOSAA	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0010	<0.0010	-	-	-	-
EtFOSAA	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0010	<0.0010	-	-	-	-
4:2 FTS	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0010	<0.0010	0.012	-	-	-
6:2 FTS	<0.001	0.0037	<0.001	<0.001	<0.001	<0.0010	<0.0010	1.9	-	-	-
8:2 FTS	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0010	<0.0010	0.0035	-	-	-
10:2 FTS	-	<0.001	<0.001	<0.001	<0.001	-	<0.0010	-	-	-	-
FPrPA	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0010	<0.0010	-	-	-	-
EtFOSA	-	<0.001	<0.001	<0.001	<0.001	-	-	-	-	-	-
EtFOSE	-	<0.001	<0.001	<0.001	<0.001	-	<0.0010	-	-	-	-
FPePA	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0010	<0.0010	-	-	-	-
FHpPA	<0.001	<0.001	<0.001	<0.001	-	<0.0010	<0.0010	-	-	-	-
F-53B minor	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.0010	-	-	-	-
HFPO-DA	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0010	<0.0010	-	-	-	-
Sum F-53B	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0010	<0.0010	-	-	-	-
ADONA	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0010	<0.0010	-	-	-	-
P37DMOA	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0010	<0.0010	-	-	-	-
F-53B major	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0010	<0.0020	-	-	-	-

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]

	PFAS in Groundwater								Guidelines		
Sample Name	MW9	OHA_MW9	MW9	OHA_DTK_MW9_5_300920	OHA_DTK_MW9_6_180321	OHA_DTK_MW9_7_271021	OHA_DTK_MW9_8_300322	OHA_DTK_MW9_9_270922			
Location	MW9	MW9	MW9	MW9	MW9	MW9	MW9	MW9			
Sample Date	1/11/2017	20/02/2018	4/07/2018	30/09/2020	18/03/2021	27/10/2021	30/03/2022	27/09/2022			
Lab Report Number	937355	1055089	1186581	2132127	2314824	2590573	2786745	3019529			
Monitoring Zone	On-base	On-base	On-base	On-base	On-base	On-base	On-base	On-base	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]
Sample Results											
PFPrS	0.018	0.031	0.0091	<0.025	<0.025	<0.025	0.022	0.0094	-	-	-
PFBS	0.072	0.093	0.028	0.034	0.064	0.046	0.049	0.02	-	-	-
PFPeS	0.11	0.14	0.043	0.038	0.069	0.057	0.074	0.029	-	-	-
di-PFHxS	0.0025	0.003	<0.001	<0.025	<0.025	<0.025	0.0015	<0.001	-	-	-
Mono-PFHxS	0.16	0.26	0.058	0.071	0.14	0.1	0.14	0.053	-	-	-
L-PFHxS	1.1	1.3	0.42	0.47	0.91	0.79	0.89	0.42	-	-	-
Total PFHxS[4]	1.3	1.6	0.48	0.54	1	0.89	1	0.47	-	-	-
PFHpS	0.06	0.071	0.021	<0.025	0.034	0.029	0.042	0.02	-	-	-
di-PFOS	0.057	0.078	0.013	<0.025	0.045	0.042	0.049	0.023	-	-	-
Mono-PFOS	0.46	0.72	0.18	0.19	0.52	0.46	0.55	0.32	-	-	-
L-PFOS	0.31	0.58	0.19	0.24	0.46	0.53	0.59	0.34	-	-	-
Total PFOS[4]	**0.83**	**1.4**	**0.38**	**0.43**	**1**	**1**	**1.2**	**0.68**	-	0.0091 [6]	0.48 [6]
Sum of PFHxS and PFOS[5]	-	3	0.86	0.97	2	1.9	2.2	1.2	0.07	-	-
PFECHS	-	-	-	-	<0.025	<0.025	<0.001	<0.001	-	-	-
PFBA	0.57	0.54	0.45	0.57	0.51	0.52	0.59	0.39	-	-	-
PFPeA	2.9	2.6	1.7	2.1	2.3	2	2.1	1	-	-	-
PFHxA	1.5	1.5	0.92	1	1.3	1	1.1	0.49	-	-	-
PFHpA	0.57	0.68	0.44	0.43	0.56	0.49	0.56	0.29	-	-	-
PFOA	0.52	0.67	0.36	0.33	0.48	0.47	0.51	0.3	0.56	19	220
PFNA	0.34	0.41	0.23	0.13	0.26	0.26	0.28	0.21	-	-	-
PFDA	<0.001	<0.001	0.0011	<0.025	<0.025	<0.025	0.0015	0.0013	-	-	-
PFUnDA	<0.001	<0.005	<0.001	<0.025	<0.025	<0.025	<0.001	<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	<0.001	-	-	-
FOSA	<0.001	<0.001	<0.001	<0.025	<0.025	<0.025	<0.001	<0.001	-	-	-
MeFOSA	<0.005	-	<0.005	<0.1	<0.1	<0.1	<0.001	<0.001	-	-	-
MeFOSAA	<0.005	<0.005	<0.001	<0.025	<0.025	<0.025	<0.001	<0.001	-	-	-
EtFOSAA	<0.005	<0.005	<0.001	<0.025	<0.025	<0.025	<0.001	<0.001	-	-	-
4:2 FTS	0.0095	0.011	0.004	<0.025	<0.025	<0.025	0.0018	-	-	-	-
6:2 FTS	3.6	1.7	1.5	1.1	3.2	2.3	2.6	0.98	-	-	-
8:2 FTS	<0.005	<0.005	0.0022	<0.1	<0.1	<0.1	0.0043	0.0027	-	-	-
10:2 FTS	-	-	-	-	<0.025	<0.025	<0.001	<0.001	-	-	-
FPrPA	-	-	-	-	<0.1	<0.1	<0.001	<0.001	-	-	-
EtFOSA	<0.005	-	<0.005	<0.1	<0.1	<0.1	<0.001	<0.001	-	-	-
EtFOSE	<0.005	<0.025	<0.005	<0.1	<0.1	<0.1	<0.001	<0.001	-	-	-
FPePA	-	-	-	-	<0.025	<0.025	0.0032	0.0029	-	-	-
FHpPA	-	-	-	-	<0.025	<0.025	<0.001	<0.001	-	-	-
F-53B minor	-	-	-	-	<0.05	<0.05	<0.001	<0.001	-	-	-
HFPO-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	<0.001	<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]

	PFAS in Groundwater								Guidelines		
Sample Name	OHA_MW9_030423	OHA_MW9_071123	OHA_MW9_090424	OHA_WS1	WS01	WS1	OHA_FTA_WS1_4_290920	OHA_FTA_WS1_5_170321			
Location	MW9	MW9	MW9	WS1	WS1	WS1	WS1	WS1			
Sample Date	3/04/2023	7/11/2023	9/04/2024	19/02/2018	3/07/2018	21/07/2018	29/09/2020	17/03/2021	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]
Lab Report Number	3276265	3518232	24-100846-1	1055089	1186578	1326866	2096316	2318531			
Monitoring Zone	On-base	On-base	On-base	On-base	On-base	On-base	On-base	On-base			
Sample Results											
PFPrS	<0.025	<0.025	<0.025	0.01	0.0098	0.0097	0.012	0.013	-	-	-
PFBS	0.045	0.036	0.035	0.022	0.024	0.023	0.026	0.026	-	-	-
PFPeS	0.048	0.034	0.044	0.02	0.021	0.023	0.023	0.024	-	-	-
di-PFHxS	<0.025	<0.025	<0.025	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-
Mono-PFHxS	0.09	0.077	0.087	0.027	0.029	0.03	0.035	0.033	-	-	-
L-PFHxS	0.72	0.50	0.63	0.11	0.12	0.12	0.12	0.13	-	-	-
Total PFHxS[4]	0.81	0.58	0.72	0.14	0.15	0.15	0.16	0.16	-	-	-
PFHpS	0.03	<0.025	0.034	0.0022	0.0026	0.0034	0.0023	0.0018	-	-	-
di-PFOS	0.039	<0.025	0.034	0.0029	0.0031	0.0024	0.0041	0.0029	-	-	-
Mono-PFOS	0.45	0.33	0.36	0.02	0.022	0.013	0.021	0.019	-	-	-
L-PFOS	0.56	0.39	0.32	0.0077	0.011	0.0071	0.0073	0.011	-	-	-
Total PFOS[4]	**1**	**0.72**	**0.71**	**0.031**	**0.036**	**0.022**	**0.032**	**0.033**	-	0.0091 [6]	0.48 [6]
Sum of PFHxS and PFOS[5]	1.8	1.3	1.4	0.17	0.19	0.17	0.19	0.19	0.07	-	-
PFECHS	<0.025	<0.025	<0.025	-	-	-	-	<0.001	-	-	-
PFBA	0.4	0.40	0.45	0.019	0.018	0.018	0.018	0.018	-	-	-
PFPeA	1.5	1.3	1.5	0.11	0.1	0.1	0.093	0.089	-	-	-
PFHxA	0.85	0.68	0.80	0.09	0.092	0.097	0.088	0.082	-	-	-
PFHpA	0.45	0.34	0.39	0.028	0.027	0.025	0.029	0.03	-	-	-
PFOA	0.45	0.33	0.33	0.02	0.022	0.018	0.021	0.024	0.56	19	220
PFNA	0.27	0.20	0.19	0.0064	0.0078	0.0056	0.0062	0.0065	-	-	-
PFDA	<0.025	<0.025	<0.025	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-
PFUnDA	<0.025	<0.025	<0.025	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-
PFTrDA	<0.1	<0.10	<0.10	-	<0.025	-	-	-	-	-	-
PFTeDA	<0.1	<0.10	<0.10	-	<0.1	-	-	-	-	-	-
PFDoDA	<0.1	<0.10	<0.10	-	<0.025	<0.005	<0.001	<0.001	-	-	-
FOSA	<0.025	<0.025	<0.025	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-
MeFOSA	<0.1	<0.10	<0.10	<0.005	-	<0.005	<0.001	-	-	-	-
MeFOSAA	<0.025	<0.025	<0.025	<0.005	<0.001	<0.005	<0.001	<0.001	-	-	-
EtFOSAA	<0.025	<0.025	<0.025	<0.005	<0.001	<0.005	<0.001	<0.001	-	-	-
4:2 FTS	<0.025	<0.025	<0.025	<0.005	<0.001	<0.001	<0.001	<0.001	-	-	-
6:2 FTS	1.7	1.2	1.6	0.12	0.11	0.12	0.089	0.1	-	-	-
8:2 FTS	<0.1	<0.10	<0.10	<0.005	<0.001	<0.001	<0.001	<0.001	-	-	-
10:2 FTS	<0.025	<0.025	<0.025	-	-	-	-	<0.001	-	-	-
FPrPA	<0.1	<0.10	<0.10	-	-	-	-	<0.001	-	-	-
EtFOSA	<0.1	<0.10	<0.10	<0.005	-	<0.005	<0.001	-	-	-	-
EtFOSE	<0.1	<0.10	<0.10	<0.005	-	<0.005	<0.001	-	-	-	-
FPePA	<0.025	<0.025	<0.025	-	-	-	-	<0.001	-	-	-
FHpPA	<0.025	<0.025	<0.025	-	-	-	-	<0.001	-	-	-
F-53B minor	<0.05	<0.050	<0.050	-	-	-	-	<0.001	-	-	-
HFPO-DA	<0.05	<0.050	<0.050	-	-	-	-	<0.001	-	-	-
Sum F-53B	<0.1	<0.10	<0.10	-	-	-	-	<0.001	-	-	-
ADONA	<0.025	<0.025	<0.025	-	-	-	-	<0.001	-	-	-
P37DMOA	<0.05	<0.050	<0.050	-	-	-	-	<0.001	-	-	-
F-53B major	<0.1	<0.10	<0.10	-	-	-	-	<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]

	PFAS in Groundwater								Guidelines		
Sample Name	OHA_FTA_WS1_6_271021	OHA_FTA_WS1_7_290322	OHA_FTA_WS1_8_270922	OHA_WS1_040423	OHA_WS1_091123	OHA_WS1_100424	WS2-1	WS2			
Location	WS1	WS1	WS1	WS1	WS1	WS1	WS2	WS2			
Sample Date	27/10/2021	29/03/2022	27/09/2022	4/04/2023	9/11/2023	10/04/2024	24/07/2015	21/07/2017			
Lab Report Number	2590573	2775976	3009068	3277679	3521601	24-103785-1	ES1526917	1326866	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]
Monitoring Zone	On-base	On-base	On-base	On-base	On-base	On-base	On-base	On-base			
Sample Results											
PFPrS	<0.025	0.014	0.014	0.014	0.012	0.013	-	<0.001	-	-	-
PFBS	0.026	0.027	0.026	0.027	0.028	0.028	<0.02	<0.001	-	-	-
PFPeS	0.026	0.028	0.026	0.028	0.025	0.025	-	<0.001	-	-	-
di-PFHxS	<0.025	<0.001	<0.001	<0.001	<0.0010	<0.0010	-	<0.001	-	-	-
Mono-PFHxS	0.037	0.034	0.034	0.036	0.042	0.036	-	<0.001	-	-	-
L-PFHxS	0.14	0.14	0.14	0.15	0.15	0.15	-	0.0038	-	-	-
Total PFHxS[4]	0.18	0.17	0.17	0.19	0.19	0.19	<0.02	0.0038	-	-	-
PFHpS	<0.025	0.003	0.0028	0.0028	0.0030	0.0033	-	<0.001	-	-	-
di-PFOS	<0.025	0.0032	0.0034	0.0041	0.0027	0.0037	-	<0.001	-	-	-
Mono-PFOS	<0.025	0.025	0.031	0.03	0.035	0.030	-	<0.001	-	-	-
L-PFOS	<0.025	0.013	0.017	0.0075	0.017	0.021	-	<0.001	-	-	-
Total PFOS[4]	<0.025	**0.041**	**0.051**	**0.042**	**0.055**	**0.055**	<0.02	<0.001	-	0.0091 [6]	0.48 [6]
Sum of PFHxS and PFOS[5]	0.18	0.21	0.22	0.23	0.24	0.24	-	0.0038	0.07	-	-
PFECHS	<0.025	<0.001	<0.001	-	<0.0020	<0.0020	-	-	-	-	-
PFBA	<0.1	0.023	0.023	0.026	0.026	0.026	-	<0.005	-	-	-
PFPeA	0.11	0.11	0.12	0.14	0.14	0.14	-	0.0072	-	-	-
PFHxA	0.093	0.098	0.097	0.11	0.11	0.11	<0.02	0.004	-	-	-
PFHpA	0.036	0.035	0.035	0.04	0.038	0.038	<0.02	0.002	-	-	-
PFOA	0.029	0.028	0.029	0.031	0.031	0.032	<0.02	0.0018	0.56	19	220
PFNA	<0.025	0.0084	0.0097	0.0082	0.0097	0.011	<0.02	<0.001	-	-	-
PFDA	<0.025	<0.001	<0.001	<0.001	<0.0010	<0.0010	<0.02	<0.001	-	-	-
PFUnDA	<0.025	<0.001	<0.001	<0.001	<0.0010	<0.0010	<0.05	<0.001	-	-	-
PFTrDA	<0.1	-	-	-	-	<0.0010	<0.05	-	-	-	-
PFTeDA	<0.1	<0.001	-	-	<0.0010	-	<0.5	-	-	-	-
PFDoDA	<0.1	<0.001	<0.001	<0.001	<0.0010	<0.0010	<0.05	<0.005	-	-	-
FOSA	<0.025	<0.001	<0.001	<0.001	<0.0010	<0.0010	<0.02	<0.001	-	-	-
MeFOSA	<0.1	<0.001	<0.001	<0.001	<0.0010	-	<0.5	<0.005	-	-	-
MeFOSAA	<0.025	<0.001	<0.001	<0.001	<0.0010	<0.0010	-	<0.005	-	-	-
EtFOSAA	<0.025	<0.001	<0.001	<0.001	<0.0010	<0.0010	-	<0.005	-	-	-
4:2 FTS	<0.025	0.0012	0.0012	0.0013	0.0013	0.0016	-	<0.001	-	-	-
6:2 FTS	<1	0.13	0.13	0.097	0.13	0.16	<0.1	<0.001	-	-	-
8:2 FTS	<0.1	<0.001	<0.001	<0.001	<0.0010	<0.0010	<0.1	<0.001	-	-	-
10:2 FTS	<0.025	<0.001	<0.001	<0.001	<0.0010	<0.0010	-	-	-	-	-
FPrPA	<0.1	<0.001	<0.001	<0.001	<0.0010	<0.0010	-	-	-	-	-
EtFOSA	<0.1	<0.001	<0.001	<0.001	<0.0010	-	<0.05	<0.005	-	-	-
EtFOSE	<0.1	<0.001	<0.001	<0.001	<0.0010	<0.0010	<0.5	<0.005	-	-	-
FPePA	<0.025	<0.001	<0.001	<0.001	<0.0010	<0.0010	-	-	-	-	-
FHpPA	<0.025	<0.001	<0.001	-	<0.0010	<0.0010	-	-	-	-	-
F-53B minor	<0.05	<0.001	<0.001	-	<0.0010	<0.0010	-	-	-	-	-
HFPO-DA	<0.05	<0.001	<0.001	<0.001	<0.0010	<0.0010	-	-	-	-	-
Sum F-53B	<0.1	<0.001	<0.001	-	<0.0020	<0.0020	-	-	-	-	-
ADONA	<0.025	<0.001	<0.001	<0.001	<0.0010	<0.0010	-	-	-	-	-
P37DMOA	<0.05	<0.001	<0.001	-	-	<0.0010	-	-	-	-	-
F-53B major	<0.1	<0.001	<0.001	-	<0.0020	<0.0020	-	-	-	-	-

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]

	PFAS in Groundwater								Guidelines		
Sample Name	OHA_WS2	WS02	OHA_QRY_WS2_5_221119	OHA_QRY_WS2_6_020620	OHA_QRY_WS2_7_290920	OHA_QRY_WS2_8_181120	OHA_QRY_WS2_9_180321	OHA_QRY_WS2_10_220621			
Location	WS2	WS2	WS2	WS2	WS2	WS2	WS2	WS2			
Sample Date	21/02/2018	3/07/2018	22/11/2019	2/06/2020	29/09/2020	18/11/2020	18/03/2021	22/06/2021			
Lab Report Number	1055089	1186581	1740590	1983524	2096325	2172205	2327922	2434042			
Monitoring Zone	On-base	On-base	On-base	On-base	On-base	On-base	On-base	On-base			
Sample Results											
PFPrS	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-
PFBS	<0.001	0.0011	<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	0.0011	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-
L-PFHxS	0.0033	0.0053	0.0031	0.0021	0.0024	0.0041	0.0029	0.0027	-	-	-
Total PFHxS[4]	0.0033	0.0064	0.0031	0.0021	0.0024	0.0041	0.0029	0.0027	-	-	-
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	0.0016	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-
L-PFOS	<0.001	0.0025	<0.001	0.0011	0.0016	<0.001	<0.001	<0.001	-	-	-
Total PFOS[4]	0.001	0.0041	<0.001	0.0011	0.0016	<0.001	<0.001	<0.001	-	0.0091 [6]	0.48 [6]
Sum of PFHxS and PFOS[5]	0.0043	0.01	0.0031	0.0032	0.004	0.0041	0.0029	0.0027	0.07	-	-
PFECHS	-	-	-	-	-	-	<0.001	<0.001	-	-	-
PFBA	<0.005	<0.005	0.0033	<0.005	0.0029	0.0035	0.0034	<0.005	-	-	-
PFPeA	0.0049	0.0076	0.0043	0.0027	0.0025	0.0041	0.004	0.0032	-	-	-
PFHxA	0.0031	0.0055	0.0031	0.0017	0.0016	0.003	0.0026	0.002	-	-	-
PFHpA	0.0017	0.0028	0.0016	0.0011	<0.001	0.0019	0.0015	0.0014	-	-	-
PFOA	0.0014	0.0024	0.0012	0.0036	<0.001	0.0015	0.0012	0.0013	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	<0.001	-	-	-	<0.001	-	-	-
PFTeDA	-	-	<0.001	<0.001	-	-	-	-	-	-	-
PFDoDA	-	-	<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	<0.005	-	<0.001	<0.001	-	-	<0.001	<0.001	-	-	-
MeFOSAA	<0.005	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-
EtFOSAA	<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	<0.005	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-
8:2 FTS	<0.005	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-	-
10:2 FTS	-	-	-	-	-	-	-	<0.001	-	-	-
FPrPA	-	-	-	-	-	-	<0.001	<0.001	-	-	-
EtFOSA	<0.005	-	<0.001	<0.001	-	-	-	<0.001	-	-	-
EtFOSE	<0.005	<0.005	<0.001	<0.001	-	<0.001	-	<0.001	-	-	-
FPePA	-	-	-	-	-	-	<0.001	<0.001	-	-	-
FHpPA	-	-	-	-	-	-	<0.001	<0.001	-	-	-
F-53B minor	-	-	-	-	-	-	<0.001	<0.001	-	-	-
HFPO-DA	-	-	-	-	-	-	<0.001	<0.001	-	-	-
Sum F-53B	-	-	-	-	-	-	<0.001	<0.001	-	-	-
ADONA	-	-	-	-	-	-	<0.001	<0.001	-	-	-
P37DMOA	-	-	-	-	-	-	<0.001	<0.001	-	-	-
F-53B major	-	-	-	-	-	-	<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]

	PFAS in Groundwater								Guidelines		
Sample Name	OHA_QRY_WS2_11_281021	OHA_QRY_WS2_12_300322	OHA_QRY_WS2_14_280922	OHA_WS2_040423	OHA_WS2_081123	OHA_WS2_100424	OHA_ADJ_GW106_1_160321	OHA_ADJ_GW106_2_291021			
Location	WS2	WS2	WS2	WS2	WS2	WS2	GW106	GW106			
Sample Date	28/10/2021	30/03/2022	28/09/2022	4/04/2023	8/11/2023	10/04/2024	16/03/2021	29/10/2021			
Lab Report Number	2593734	2786751	3019773	3277677	3519860	24-103788-1	2316433	2590583			
Monitoring Zone	On-base	On-base	On-base	On-base	On-base	On-base	Off-base	Off-base	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]
Sample Results											
PFPrS	<0.001	<0.001	<0.001	<0.001	<0.0010	<0.0010	<0.001	<0.001	-	-	-
PFBS	<0.001	<0.001	<0.001	<0.001	<0.0010	<0.0010	<0.001	<0.001	-	-	-
PFPeS	<0.001	<0.001	<0.001	<0.001	<0.0010	<0.0010	<0.001	<0.001	-	-	-
di-PFHxS	<0.001	<0.001	<0.001	<0.001	<0.0010	<0.0010	<0.001	<0.001	-	-	-
Mono-PFHxS	<0.001	<0.001	<0.001	<0.001	<0.0010	<0.0010	<0.001	<0.001	-	-	-
L-PFHxS	0.0044	0.0037	0.0036	0.0032	0.0032	0.0025	<0.001	<0.001	-	-	-
Total PFHxS[4]	0.0044	0.0037	0.0036	0.0032	0.0032	0.0025	<0.001	<0.001	-	-	-
PFHpS	<0.001	<0.001	<0.001	<0.001	<0.0010	<0.0010	<0.001	<0.001	-	-	-
di-PFOS	<0.001	<0.001	<0.001	<0.001	<0.0010	<0.0010	<0.001	<0.001	-	-	-
Mono-PFOS	0.0011	0.0013	0.0016	0.0012	0.0013	0.0017	<0.001	<0.001	-	-	-
L-PFOS	<0.001	0.002	0.0017	0.0018	0.0017	0.0031	<0.001	<0.001	-	-	-
Total PFOS[4]	0.0011	0.0033	0.0033	0.003	0.0030	0.0048	<0.001	<0.001	-	0.0091 [6]	0.48 [6]
Sum of PFHxS and PFOS[5]	0.0055	0.007	0.0069	0.0062	0.0062	0.0073	<0.001	<0.001	0.07	-	-
PFECHS	<0.001	<0.001	<0.001	-	<0.0010	<0.0020	<0.001	<0.001	-	-	-
PFBA	0.0039	0.0048	0.0037	0.0035	-	0.0031	<0.002	<0.001	-	-	-
PFPeA	0.0048	0.0052	0.0039	0.0038	0.0031	0.0031	<0.001	<0.001	-	-	-
PFHxA	0.0034	0.0036	0.0027	0.0023	0.0022	0.0019	<0.001	<0.001	-	-	-
PFHpA	0.0017	0.0019	0.0017	0.0016	0.0013	0.0013	<0.001	<0.001	-	-	-
PFOA	0.0016	0.0017	0.0015	0.0015	0.0014	0.0015	<0.001	<0.001	0.56	19	220
PFNA	<0.001	<0.001	<0.001	<0.001	<0.0010	<0.0010	<0.001	<0.001	-	-	-
PFDA	<0.001	<0.001	<0.001	<0.001	<0.0010	<0.0010	<0.001	<0.001	-	-	-
PFUnDA	<0.001	<0.001	<0.001	<0.001	<0.0010	<0.0010	<0.001	<0.001	-	-	-
PFTrDA	-	<0.001	-	-	<0.0050	-	-	<0.001	-	-	-
PFTeDA	<0.001	<0.001	<0.001	-	<0.0010	-	-	<0.001	-	-	-
PFDoDA	<0.001	<0.001	<0.001	<0.001	<0.0010	<0.0010	<0.001	<0.001	-	-	-
FOSA	<0.001	<0.001	<0.001	<0.001	<0.0010	<0.0010	<0.001	<0.001	-	-	-
MeFOSA	<0.001	<0.001	<0.001	<0.001	<0.0010	<0.0010	<0.001	<0.001	-	-	-
MeFOSAA	<0.001	<0.001	<0.001	<0.001	<0.0010	<0.0010	<0.001	<0.001	-	-	-
EtFOSAA	<0.001	<0.001	<0.001	<0.001	<0.0010	<0.0010	<0.001	<0.001	-	-	-
4:2 FTS	<0.001	<0.001	<0.001	<0.001	<0.0010	<0.0010	<0.001	<0.001	-	-	-
6:2 FTS	<0.001	<0.001	<0.001	<0.001	<0.0010	<0.0010	<0.001	<0.001	-	-	-
8:2 FTS	<0.001	<0.001	<0.001	<0.001	<0.0010	<0.0010	<0.001	<0.001	-	-	-
10:2 FTS	<0.001	<0.001	<0.001	<0.001	<0.0010	-	<0.001	<0.001	-	-	-
FPrPA	<0.001	<0.001	<0.001	<0.001	<0.0010	<0.0010	<0.001	<0.001	-	-	-
EtFOSA	<0.001	<0.001	<0.001	<0.001	<0.0010	-	<0.001	<0.001	-	-	-
EtFOSE	<0.001	<0.001	<0.001	<0.001	<0.0010	<0.0010	<0.001	<0.001	-	-	-
FPePA	<0.001	<0.001	<0.001	<0.001	<0.0010	<0.0010	<0.001	<0.001	-	-	-
FHpPA	<0.001	<0.001	<0.001	-	-	-	<0.001	<0.001	-	-	-
F-53B minor	<0.001	<0.001	<0.001	-	<0.0010	<0.0010	<0.001	<0.001	-	-	-
HFPO-DA	<0.001	<0.001	<0.001	<0.001	<0.0010	<0.0010	<0.001	<0.001	-	-	-
Sum F-53B	<0.001	<0.001	<0.001	-	<0.0010	<0.0020	<0.001	<0.001	-	-	-
ADONA	<0.001	<0.001	<0.001	<0.001	<0.0010	<0.0010	<0.001	<0.001	-	-	-
P37DMOA	<0.001	<0.001	<0.001	-	-	-	<0.001	<0.001	-	-	-
F-53B major	<0.001	<0.001	<0.001	-	<0.0010	<0.0020	<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]

	PFAS in Groundwater								Guidelines		
Sample Name	OHA_ADJ_GW106_3_290322	OHA_ADJ_GW106_4_290922	OHA_GW106_050423	OHA_GW106_091123	OHA_GW106_090424	OHA_ADJ_GW107_1_011020	OHA_ADJ_GW107_2_291021	OHA_ADJ_GW107_3_300322			
Location	GW106	GW106	GW106	GW106	GW106	GW107	GW107	GW107			
Sample Date	29/03/2022	29/09/2022	5/04/2023	9/11/2023	9/04/2024	1/10/2020	29/10/2021	30/03/2022			
Lab Report Number	2780982	3011677	3288825	3521619	24-100766-1	2096735	2590579	2786744			
Monitoring Zone	Off-base	Off-base	Off-base	Off-base	Off-base	Off-base	Off-base	Off-base			
Sample Results											
PFPrS	<0.001	<0.001	<0.001	<0.0010	<0.0010	<0.001	<0.001	<0.001	-	-	-
PFBS	<0.001	<0.001	<0.001	<0.0010	<0.0010	<0.001	<0.001	<0.001	-	-	-
PFPeS	<0.001	<0.001	<0.001	<0.0010	<0.0010	<0.001	<0.001	<0.001	-	-	-
di-PFHxS	<0.001	<0.001	<0.001	<0.0010	<0.0010	<0.001	<0.001	<0.001	-	-	-
Mono-PFHxS	<0.001	<0.001	<0.001	<0.0010	<0.0010	<0.001	<0.001	<0.001	-	-	-
L-PFHxS	<0.001	<0.001	<0.001	<0.0010	<0.0010	<0.001	<0.001	<0.001	-	-	-
Total PFHxS[4]	<0.001	<0.001	<0.001	<0.0010	<0.0010	<0.001	<0.001	<0.001	-	-	-
PFHpS	<0.001	<0.001	<0.001	<0.0010	<0.0010	<0.001	<0.001	<0.001	-	-	-
di-PFOS	<0.001	<0.001	<0.001	<0.0010	<0.0010	<0.001	<0.001	<0.001	-	-	-
Mono-PFOS	<0.001	<0.001	<0.001	<0.0010	<0.0010	<0.001	<0.001	<0.001	-	-	-
L-PFOS	<0.001	<0.001	<0.001	<0.0010	<0.0010	<0.001	<0.001	<0.001	-	-	-
Total PFOS[4]	<0.001	<0.001	<0.001	<0.0010	<0.0010	<0.001	<0.001	<0.001	-	0.0091 [6]	0.48 [6]
Sum of PFHxS and PFOS[5]	<0.001	<0.001	<0.001	<0.0010	<0.0010	<0.001	<0.001	<0.001	0.07	-	-
PFECHS	<0.001	<0.001	-	<0.0010	<0.0050	-	<0.001	<0.001	-	-	-
PFBA	<0.001	<0.001	<0.001	<0.0010	<0.0010	<0.001	<0.001	<0.001	-	-	-
PFPeA	<0.001	<0.001	<0.001	<0.0010	<0.0010	<0.001	<0.001	<0.001	-	-	-
PFHxA	<0.001	<0.001	<0.001	<0.0010	<0.0010	<0.001	<0.001	<0.001	-	-	-
PFHpA	<0.001	<0.001	<0.001	<0.0010	<0.0010	<0.001	<0.001	<0.001	-	-	-
PFOA	<0.001	<0.001	<0.001	<0.0010	<0.0010	<0.001	<0.001	<0.001	0.56	19	220
PFNA	<0.001	<0.001	<0.001	<0.0010	<0.0010	<0.001	<0.001	<0.001	-	-	-
PFDA	<0.001	<0.001	<0.001	<0.0010	<0.0010	-	<0.001	<0.001	-	-	-
PFUnDA	<0.001	<0.001	<0.001	<0.0010	<0.0010	-	<0.001	<0.001	-	-	-
PFTrDA	<0.001	-	-	<0.0020	<0.0010	-	<0.001	<0.001	-	-	-
PFTeDA	-	-	-	<0.0010	<0.0010	-	-	<0.001	-	-	-
PFDoDA	<0.001	<0.001	<0.001	<0.0010	<0.0010	-	<0.001	<0.001	-	-	-
FOSA	<0.001	<0.001	<0.001	<0.0010	<0.0010	<0.001	<0.001	<0.001	-	-	-
MeFOSA	<0.001	<0.001	<0.001	<0.0010	<0.0010	-	<0.001	<0.001	-	-	-
MeFOSAA	<0.001	<0.001	<0.001	<0.0010	<0.0010	-	<0.001	<0.001	-	-	-
EtFOSAA	<0.001	<0.001	<0.001	<0.0010	<0.0010	-	<0.001	<0.001	-	-	-
4:2 FTS	<0.001	<0.001	<0.001	<0.0010	<0.0010	<0.001	<0.001	<0.001	-	-	-
6:2 FTS	<0.001	<0.001	<0.001	<0.0010	<0.0010	<0.001	<0.001	<0.001	-	-	-
8:2 FTS	<0.001	<0.001	<0.001	<0.0010	<0.0010	<0.001	<0.001	<0.001	-	-	-
10:2 FTS	<0.001	<0.001	<0.001	-	<0.0010	-	<0.001	<0.001	-	-	-
FPrPA	<0.001	<0.001	<0.001	<0.0010	<0.0010	-	<0.001	<0.001	-	-	-
EtFOSA	<0.001	<0.001	<0.001	<0.0010	<0.0010	-	<0.001	<0.001	-	-	-
EtFOSE	<0.001	<0.001	<0.001	<0.0010	<0.0010	<0.001	<0.001	<0.001	-	-	-
FPePA	<0.001	<0.001	<0.001	<0.0010	<0.0010	-	<0.001	<0.001	-	-	-
FHpPA	<0.001	<0.001	-	<0.0010	<0.0010	-	<0.001	<0.001	-	-	-
F-53B minor	<0.001	<0.001	<0.001	<0.0010	<0.0010	-	<0.001	<0.001	-	-	-
HFPO-DA	<0.001	<0.001	<0.001	<0.0010	<0.0010	-	<0.001	<0.001	-	-	-
Sum F-53B	<0.001	<0.001	<0.001	<0.0010	<0.0010	-	<0.001	<0.001	-	-	-
ADONA	<0.001	<0.001	<0.001	<0.0010	<0.0010	-	<0.001	<0.001	-	-	-
P37DMOA	<0.001	<0.001	<0.001	<0.0010	<0.0010	-	<0.001	<0.001	-	-	-
F-53B major	<0.001	<0.001	<0.001	<0.0010	<0.0010	-	<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]

	PFAS in Groundwater								Guidelines		
Sample Name	OHA_ADJ_GW107_4_300922	OHA_GW107_050423	OHA_GW107_091123	OHA_GW107_110424	OHA_ADJ_GW108_1_011020	OHA_ADJ_GW108_2_150321	OHA_ADJ_GW108_3_291021	OHA_ADJ_GW108_4_290322			
Location	GW107	GW107	GW107	GW107	GW108	GW108	GW108	GW108			
Sample Date	30/09/2022	5/04/2023	9/11/2023	11/04/2024	1/10/2020	15/03/2021	29/10/2021	29/03/2022			
Lab Report Number	3020439	3283490	3521604	24-103820-1	2096735	2313652	2590569	2780972	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]
Monitoring Zone	Off-base	Off-base	Off-base	Off-base	Off-base	Off-base	Off-base	Off-base			
Sample Results											
PFPrS	<0.001	<0.001	<0.0010	<0.0010	<0.001	<0.001	<0.001	<0.001	-	-	-
PFBS	<0.001	<0.001	<0.0010	<0.0010	<0.001	<0.001	<0.001	<0.001	-	-	-
PFPeS	<0.001	<0.001	<0.0010	<0.0010	<0.001	<0.001	<0.001	<0.001	-	-	-
di-PFHxS	<0.001	<0.001	<0.0010	<0.0010	<0.001	<0.001	<0.001	<0.001	-	-	-
Mono-PFHxS	<0.001	<0.001	<0.0010	<0.0010	<0.001	<0.001	<0.001	<0.001	-	-	-
L-PFHxS	<0.001	<0.001	<0.0010	<0.0010	<0.001	<0.001	<0.001	<0.001	-	-	-
Total PFHxS[4]	<0.001	<0.001	<0.0010	<0.0010	<0.001	<0.001	<0.001	<0.001	-	-	-
PFHpS	<0.001	<0.001	<0.0010	<0.0010	<0.001	<0.001	<0.001	<0.001	-	-	-
di-PFOS	<0.001	<0.001	<0.0010	<0.0010	<0.001	<0.001	<0.001	<0.001	-	-	-
Mono-PFOS	<0.001	<0.001	<0.0010	<0.0010	<0.001	<0.001	<0.001	<0.001	-	-	-
L-PFOS	<0.001	<0.001	<0.0010	<0.0010	<0.001	<0.001	<0.001	<0.001	-	-	-
Total PFOS[4]	<0.001	<0.001	<0.0010	<0.0010	<0.001	<0.001	<0.001	<0.001	-	0.0091 [6]	0.48 [6]
Sum of PFHxS and PFOS[5]	<0.001	<0.001	<0.0010	<0.0010	<0.001	<0.001	<0.001	<0.001	0.07	-	-
PFECHS	<0.001	<0.001	<0.0020	<0.0020	-	<0.001	<0.001	<0.001	-	-	-
PFBA	<0.001	<0.001	<0.0010	<0.0010	<0.001	0.0011	<0.001	0.002	-	-	-
PFPeA	<0.001	<0.001	<0.0010	<0.0010	<0.001	<0.001	<0.001	<0.001	-	-	-
PFHxA	<0.001	<0.001	<0.0010	<0.0010	<0.001	<0.001	<0.001	<0.001	-	-	-
PFHpA	<0.001	<0.001	<0.0010	<0.0010	<0.001	<0.001	<0.001	<0.001	-	-	-
PFOA	<0.001	<0.001	<0.0010	<0.0010	<0.001	<0.001	<0.001	<0.001	0.56	19	220
PFNA	<0.001	<0.001	<0.0010	<0.0010	<0.001	<0.001	<0.001	<0.001	-	-	-
PFDA	<0.001	<0.001	<0.0010	<0.0010	<0.001	<0.001	<0.001	<0.001	-	-	-
PFUnDA	-	<0.001	<0.0010	<0.0010	-	<0.001	<0.001	<0.001	-	-	-
PFTrDA	-	-	-	-	-	-	<0.001	<0.001	-	-	-
PFTeDA	-	-	<0.0010	-	-	-	<0.001	-	-	-	-
PFDoDA	<0.001	<0.001	<0.0010	<0.0010	-	<0.001	<0.001	<0.001	-	-	-
FOSA	<0.001	<0.001	<0.0010	<0.0010	<0.001	<0.001	<0.001	<0.001	-	-	-
MeFOSA	<0.001	<0.001	<0.0010	<0.0010	-	-	<0.001	-	-	-	-
MeFOSAA	<0.001	<0.001	<0.0010	<0.0010	<0.001	<0.001	<0.001	<0.001	-	-	-
EtFOSAA	<0.001	<0.001	<0.0010	<0.0010	<0.001	<0.001	<0.001	<0.001	-	-	-
4:2 FTS	<0.001	<0.001	<0.0010	<0.0010	<0.001	<0.001	<0.001	-	-	-	-
6:2 FTS	<0.001	<0.001	<0.0010	<0.0010	<0.001	<0.001	<0.001	<0.001	-	-	-
8:2 FTS	<0.001	<0.001	<0.0010	<0.0010	<0.001	<0.001	<0.001	<0.001	-	-	-
10:2 FTS	<0.001	<0.001	<0.0010	-	-	-	<0.001	<0.001	-	-	-
FPrPA	<0.001	<0.001	<0.0010	<0.0010	-	<0.001	<0.001	<0.001	-	-	-
EtFOSA	<0.001	<0.001	<0.0010	-	-	-	<0.001	-	-	-	-
EtFOSE	<0.001	<0.001	<0.0010	<0.0010	<0.001	-	<0.001	<0.001	-	-	-
FPePA	<0.001	<0.001	<0.0010	<0.0010	-	<0.001	<0.001	<0.001	-	-	-
FHpPA	<0.001	<0.001	<0.0010	-	-	<0.001	<0.001	<0.001	-	-	-
F-53B minor	<0.001	<0.001	<0.0010	<0.0010	-	<0.001	<0.001	<0.001	-	-	-
HFPO-DA	<0.001	<0.001	<0.0010	<0.0010	-	<0.001	<0.001	<0.001	-	-	-
Sum F-53B	<0.001	<0.001	<0.0020	<0.0020	-	<0.001	<0.001	<0.001	-	-	-
ADONA	<0.001	<0.001	<0.0010	<0.0010	-	<0.001	<0.001	<0.001	-	-	-
P37DMOA	<0.001	<0.001	-	-	-	<0.001	<0.001	<0.001	-	-	-
F-53B major	<0.001	<0.001	<0.0020	<0.0020	<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]

	PFAS in Groundwater								Guidelines		
Sample Name	OHA_ADJ_GW108_5_290922	OHA_GW108_050423	OHA_GW108_091123	OHA_GW108_090424	OHA_ADJ_GW109_1_011020	OHA_ADJ_GW109_2_150321	OHA_ADJ_GW109_3_291021	OHA_ADJ_GW109_4_290322			
Location	GW108	GW108	GW108	GW108	GW109	GW109	GW109	GW109			
Sample Date	29/09/2022	5/04/2023	9/11/2023	9/04/2024	1/10/2020	15/03/2021	29/10/2021	29/03/2022	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]
Lab Report Number	3011674	3288826	3521589	24-100810-1	2096735	2313643	2593930	2780975			
Monitoring Zone	Off-base	Off-base	Off-base	Off-base	Off-base	Off-base	Off-base	Off-base			
Sample Results											
PFPrS	<0.001	<0.001	<0.0010	<0.0010	<0.001	<0.001	<0.001	<0.001	-	-	-
PFBS	<0.001	<0.001	<0.0010	<0.0010	<0.001	<0.001	<0.001	<0.001	-	-	-
PFPeS	<0.001	<0.001	<0.0010	<0.0010	<0.001	<0.001	<0.001	<0.001	-	-	-
di-PFHxS	<0.001	<0.001	<0.0010	<0.0010	<0.001	<0.001	<0.001	<0.001	-	-	-
Mono-PFHxS	<0.001	<0.001	<0.0010	<0.0010	<0.001	<0.001	<0.001	<0.001	-	-	-
L-PFHxS	<0.001	<0.001	<0.0010	<0.0010	<0.001	<0.001	<0.001	<0.001	-	-	-
Total PFHxS[4]	<0.001	<0.001	<0.0010	<0.0010	<0.001	<0.001	<0.001	<0.001	-	-	-
PFHpS	<0.001	<0.001	<0.0010	<0.0010	<0.001	<0.001	<0.001	<0.001	-	-	-
di-PFOS	<0.001	<0.001	<0.0010	<0.0010	<0.001	<0.001	<0.001	<0.001	-	-	-
Mono-PFOS	<0.001	<0.001	<0.0010	<0.0010	<0.001	<0.001	<0.001	<0.001	-	-	-
L-PFOS	<0.001	<0.001	<0.0010	<0.0010	<0.001	<0.001	<0.001	<0.001	-	-	-
Total PFOS[4]	<0.001	<0.001	<0.0010	<0.0010	<0.001	<0.001	<0.001	<0.001	-	0.0091 [6]	0.48 [6]
Sum of PFHxS and PFOS[5]	<0.001	<0.001	<0.0010	<0.0010	<0.001	<0.001	<0.001	<0.001	0.07	-	-
PFECHS	<0.001	-	<0.0020	<0.0050	-	<0.001	<0.001	<0.001	-	-	-
PFBA	<0.001	<0.001	0.0015	<0.0010	<0.001	<0.001	<0.001	<0.001	-	-	-
PFPeA	<0.001	<0.001	<0.0010	<0.0010	<0.001	<0.001	<0.001	<0.001	-	-	-
PFHxA	<0.001	<0.001	<0.0010	<0.0010	<0.001	<0.001	<0.001	<0.001	-	-	-
PFHpA	<0.001	<0.001	<0.0010	<0.0010	<0.001	<0.001	<0.001	<0.001	-	-	-
PFOA	<0.001	<0.001	<0.0010	<0.0010	<0.001	<0.001	<0.001	<0.001	0.56	19	220
PFNA	<0.001	<0.001	<0.0010	<0.0010	<0.001	<0.001	<0.001	<0.001	-	-	-
PFDA	<0.001	<0.001	<0.0010	<0.0010	<0.001	<0.001	<0.001	<0.001	-	-	-
PFUnDA	-	<0.001	<0.0010	<0.0010	-	<0.001	<0.001	<0.001	-	-	-
PFTrDA	-	-	-	<0.0010	-	-	-	<0.001	-	-	-
PFTeDA	-	-	<0.0010	<0.0010	-	-	<0.001	-	-	-	-
PFDoDA	-	<0.001	<0.0010	<0.0010	-	-	<0.001	<0.001	-	-	-
FOSA	<0.001	<0.001	<0.0010	<0.0010	<0.001	<0.001	<0.001	<0.001	-	-	-
MeFOSA	<0.001	<0.001	<0.0010	<0.0010	-	-	<0.001	<0.001	-	-	-
MeFOSAA	<0.001	<0.001	<0.0010	<0.0010	<0.001	<0.001	<0.001	<0.001	-	-	-
EtFOSAA	<0.001	<0.001	<0.0010	<0.0010	<0.001	<0.001	<0.001	<0.001	-	-	-
4:2 FTS	<0.001	<0.001	<0.0010	<0.0010	<0.001	<0.001	<0.001	<0.001	-	-	-
6:2 FTS	<0.001	<0.001	<0.0010	<0.0010	<0.001	<0.001	<0.001	<0.001	-	-	-
8:2 FTS	<0.001	<0.001	<0.0010	<0.0010	<0.001	<0.001	<0.001	<0.001	-	-	-
10:2 FTS	-	<0.001	<0.0010	<0.0010	-	-	<0.001	<0.001	-	-	-
FPrPA	<0.001	<0.001	<0.0010	<0.0010	-	<0.001	<0.001	<0.001	-	-	-
EtFOSA	<0.001	<0.001	<0.0010	<0.0010	-	-	<0.001	<0.001	-	-	-
EtFOSE	<0.001	<0.001	<0.0010	<0.0010	<0.001	-	<0.001	<0.001	-	-	-
FPePA	<0.001	<0.001	<0.0010	<0.0010	-	<0.001	<0.001	<0.001	-	-	-
FHpPA	<0.001	-	<0.0010	<0.0010	-	<0.001	<0.001	<0.001	-	-	-
F-53B minor	-	<0.001	<0.0010	<0.0010	-	<0.001	<0.001	<0.001	-	-	-
HFPO-DA	<0.001	<0.001	<0.0010	<0.0010	-	<0.001	<0.001	<0.001	-	-	-
Sum F-53B	<0.001	<0.001	<0.0020	<0.0010	-	<0.001	<0.001	<0.001	-	-	-
ADONA	<0.001	<0.001	<0.0010	<0.0010	-	<0.001	<0.001	<0.001	-	-	-
P37DMOA	<0.001	<0.001	-	<0.0010	-	<0.001	<0.001	<0.001	-	-	-
F-53B major	<0.001	<0.001	<0.0020	<0.0010	-	<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]

PFAS in Groundwater											
Sample Name	OHA_ADJ_GW109_5_280922	OHA_GW109_030423	OHA_GW109_091123	OHA_GW109_110424	OHA_ADJ_GW112.1_1_180321	OHA_ADJ_GW112.1_2_281021	OHA_ADJ_GW112.1_3_290322	OHA_ADJ_GW112.1_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	GW109	GW109	GW109	GW109	GW112.1	GW112.1	GW112.1	GW112.1			
Sample Date	28/09/2022	3/04/2023	9/11/2023	11/04/2024	18/03/2021	28/10/2021	29/03/2022	28/09/2022			
Lab Report Number	3007288	3277682	3521598	24-103810-1	2335132	2593744	2785103	3020548			
Monitoring Zone	Off-base	Off-base	Off-base	Off-base	Off-base	Off-base	Off-base	Off-base			
Sample Results											
PFPrS	<0.001	<0.001	<0.0010	<0.0010	<0.001	0.012	<0.025	<0.025	-	-	-
PFBS	<0.001	<0.001	<0.0010	<0.0010	<0.001	0.028	0.028	0.031	-	-	-
PFPeS	<0.001	<0.001	<0.0010	<0.0010	<0.001	0.033	0.028	0.028	-	-	-
di-PFHxS	<0.001	<0.001	<0.0010	<0.0010	<0.001	<0.001	<0.025	<0.025	-	-	-
Mono-PFHxS	<0.001	<0.001	<0.0010	<0.0010	<0.001	0.052	0.045	0.043	-	-	-
L-PFHxS	<0.001	<0.001	<0.0010	<0.0010	<0.001	0.25	0.25	0.24	-	-	-
Total PFHxS[4]	<0.001	<0.001	<0.0010	<0.0010	<0.001	0.3	0.3	0.28	-	-	-
PFHpS	<0.001	<0.001	<0.0010	<0.0010	<0.001	0.0076	<0.025	<0.025	-	-	-
di-PFOS	<0.001	<0.001	<0.0010	<0.0010	<0.001	0.011	<0.025	<0.025	-	-	-
Mono-PFOS	<0.001	<0.001	<0.0010	<0.0010	<0.001	0.14	0.088	0.093	-	-	-
L-PFOS	<0.001	<0.001	<0.0010	<0.0010	<0.001	0.21	0.094	0.1	-	-	-
Total PFOS[4]	<0.001	<0.001	<0.0010	<0.0010	<0.001	**0.36**	**0.18**	**0.19**	-	0.0091 [6]	0.48 [6]
Sum of PFHxS and PFOS[5]	<0.001	<0.001	<0.0010	<0.0010	<0.001	0.66	0.48	0.47	0.07	-	-
PFECHS	<0.001	-	<0.0020	<0.0020	<0.001	<0.001	<0.025	<0.025	-	-	-
PFBA	<0.001	<0.001	<0.0010	<0.0010	<0.001	0.11	<0.2	0.12	-	-	-
PFPeA	<0.001	<0.001	<0.0010	<0.0010	<0.001	0.42	0.42	0.44	-	-	-
PFHxA	<0.001	<0.001	<0.0010	<0.0010	<0.001	0.33	0.34	0.34	-	-	-
PFHpA	<0.001	<0.001	<0.0010	<0.0010	<0.001	0.17	0.16	0.16	-	-	-
PFOA	<0.001	<0.001	<0.0010	<0.0010	<0.001	0.094	0.093	0.086	0.56	19	220
PFNA	<0.001	<0.001	<0.0010	<0.0010	<0.001	0.037	0.026	0.03	-	-	-
PFDA	<0.001	<0.001	<0.0010	<0.0010	<0.001	<0.001	<0.025	<0.025	-	-	-
PFUnDA	<0.001	<0.001	<0.0010	<0.0010	<0.001	<0.001	<0.025	<0.025	-	-	-
PFTrDA	-	-	-	-	-	-	<0.1	<0.1	-	-	-
PFTeDA	<0.001	-	-	-	-	-	<0.1	<0.1	-	-	-
PFDoDA	<0.001	<0.001	<0.0010	<0.0010	-	<0.001	<0.1	<0.1	-	-	-
FOSA	<0.001	<0.001	<0.0010	<0.0010	<0.001	<0.001	<0.025	<0.025	-	-	-
MeFOSA	<0.001	<0.001	<0.0010	<0.0010	-	<0.001	<0.1	<0.1	-	-	-
MeFOSAA	<0.001	<0.001	<0.0010	<0.0010	<0.001	<0.001	<0.025	<0.025	-	-	-
EtFOSAA	<0.001	<0.001	<0.0010	<0.0010	<0.001	<0.001	<0.025	<0.025	-	-	-
4:2 FTS	<0.001	<0.001	<0.0010	<0.0010	<0.001	<0.001	<0.025	<0.025	-	-	-
6:2 FTS	<0.001	<0.001	<0.0010	<0.0010	<0.001	0.1	0.11	0.12	-	-	-
8:2 FTS	<0.001	<0.001	<0.0010	<0.0010	<0.001	<0.001	<0.1	<0.1	-	-	-
10:2 FTS	<0.001	<0.001	<0.0010	-	<0.001	<0.001	<0.025	<0.025	-	-	-
FPrPA	<0.001	<0.001	<0.0010	<0.0010	<0.001	<0.001	<0.1	<0.1	-	-	-
EtFOSA	<0.001	<0.001	<0.0010	-	-	<0.001	<0.1	<0.1	-	-	-
EtFOSE	<0.001	<0.001	<0.0010	<0.0010	-	<0.001	<0.1	<0.1	-	-	-
FPePA	<0.001	<0.001	<0.0010	<0.0010	<0.001	<0.001	<0.025	<0.025	-	-	-
FHpPA	<0.001	-	<0.0010	-	<0.001	<0.001	<0.025	<0.025	-	-	-
F-53B minor	<0.001	-	<0.0010	<0.0010	<0.001	<0.001	<0.05	<0.05	-	-	-
HFPO-DA	<0.001	<0.001	<0.0010	<0.0010	<0.001	<0.001	<0.05	<0.05	-	-	-
Sum F-53B	<0.001	-	<0.0020	<0.0020	<0.001	<0.001	<0.1	<0.1	-	-	-
ADONA	<0.001	<0.001	<0.0010	<0.0010	<0.001	<0.001	<0.025	<0.025	-	-	-
P37DMOA	<0.001	-	-	-	<0.001	<0.001	<0.05	<0.05	-	-	-
F-53B major	<0.001	-	<0.0020	<0.0020	<0.001	<0.001	<0.1	<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-1: Groundwater Sampling Results - Per- and Poly-Fluoroalkyl Substances (PFAS) [1]

	PFAS in Groundwater								Guidelines		
Sample Name	OHA_GW112.1_040423	OHA_GW112.1_081123	OHA_GW112.1_100424	OHA_ADJ_GW112.2_1_180321	OHA_ADJ_GW112.2_2_281021	OHA_ADJ_GW112.2_3_280322	OHA_ADJ_GW112.2_4_280922	OHA_GW112.2_040423	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	GW112.2	GW112.2	GW112.2	GW112.2	GW112.2			
Sample Date	4/04/2023	8/11/2023	10/04/2024	18/03/2021	28/10/2021	28/03/2022	28/09/2022	4/04/2023			
Lab Report Number	3277686	3519873	24-102552-1	2335132	2593744	2785781	3020548	3277686			
Monitoring Zone	Off-base	Off-base	Off-base	Off-base	Off-base	Off-base	Off-base	Off-base			
Sample Results											
PFPrS	<0.025	<0.025	<0.025	0.012	<0.001	<0.001	<0.001	<0.001	-	-	-
PFBS	0.027	0.027	0.026	0.03	<0.001	<0.001	<0.001	<0.001	-	-	-
PFPeS	<0.025	0.028	0.028	0.035	<0.001	<0.001	<0.001	<0.001	-	-	-
di-PFHxS	<0.025	<0.025	<0.025	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-
Mono-PFHxS	0.041	0.043	0.043	0.056	<0.001	<0.001	<0.001	<0.001	-	-	-
L-PFHxS	0.27	0.23	0.26	0.29	<0.001	<0.001	<0.001	<0.001	-	-	-
Total PFHxS[4]	0.31	0.27	0.30	0.35	<0.001	<0.001	<0.001	<0.001	-	-	-
PFHpS	<0.025	<0.025	<0.025	0.0075	<0.001	<0.001	<0.001	<0.001	-	-	-
di-PFOS	<0.025	<0.025	<0.025	0.012	<0.001	<0.001	<0.001	<0.001	-	-	-
Mono-PFOS	0.095	0.10	0.092	0.16	<0.001	<0.001	<0.001	<0.001	-	-	-
L-PFOS	0.14	0.14	0.15	0.21	<0.001	<0.001	<0.001	<0.001	-	-	-
Total PFOS[4]	**0.24**	**0.24**	**0.24**	**0.38**	<0.001	<0.001	<0.001	<0.001	-	0.0091 [6]	0.48 [6]
Sum of PFHxS and PFOS[5]	0.55	0.51	0.54	0.73	<0.001	<0.001	<0.001	<0.001	0.07	-	-
PFECHS	<0.025	<0.025	<0.025	<0.001	<0.001	<0.001	<0.001	-	-	-	-
PFBA	0.12	0.11	0.13	0.11	<0.001	<0.001	<0.001	<0.001	-	-	-
PFPeA	0.42	0.42	0.42	0.4	<0.001	<0.001	<0.001	<0.001	-	-	-
PFHxA	0.39	0.35	0.34	0.34	<0.001	<0.001	<0.001	<0.001	-	-	-
PFHpA	0.17	0.15	0.16	0.17	<0.001	<0.001	<0.001	<0.001	-	-	-
PFOA	0.089	0.085	0.079	0.092	<0.001	<0.001	<0.001	<0.001	0.56	19	220
PFNA	0.031	0.034	0.030	0.041	<0.001	<0.001	<0.001	<0.001	-	-	-
PFDA	<0.025	<0.025	<0.025	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-
PFUnDA	<0.025	<0.025	<0.025	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-
PFTrDA	<0.1	<0.10	<0.10	-	-	<0.001	-	-	-	-	-
PFTeDA	<0.1	<0.10	<0.10	-	-	-	-	-	-	-	-
PFDoDA	<0.1	<0.10	<0.10	-	<0.001	<0.001	<0.001	<0.001	-	-	-
FOSA	<0.025	<0.025	<0.025	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-
MeFOSA	<0.1	<0.10	<0.10	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-
MeFOSAA	<0.025	<0.025	<0.025	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-
EtFOSAA	<0.025	<0.025	<0.025	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-
4:2 FTS	<0.025	<0.025	<0.025	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-
6:2 FTS	0.11	0.096	0.12	0.066	0.0052	<0.001	<0.001	<0.001	-	-	-
8:2 FTS	<0.1	<0.10	<0.10	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-
10:2 FTS	<0.025	<0.025	<0.025	-	<0.001	<0.001	<0.001	<0.001	-	-	-
FPrPA	<0.1	<0.10	<0.10	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-
EtFOSA	<0.1	<0.10	<0.10	-	<0.001	-	<0.001	<0.001	-	-	-
EtFOSE	<0.1	<0.10	<0.10	-	<0.001	<0.001	<0.001	<0.001	-	-	-
FPePA	<0.025	<0.025	<0.025	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-
FHpPA	<0.025	<0.025	<0.025	<0.001	<0.001	<0.001	<0.001	-	-	-	-
F-53B minor	<0.05	<0.050	<0.050	<0.001	<0.001	<0.001	<0.001	-	-	-	-
HFPO-DA	<0.05	<0.050	<0.050	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-
Sum F-53B	<0.1	<0.10	<0.10	<0.001	<0.001	<0.001	<0.001	-	-	-	-
ADONA	<0.025	<0.025	<0.025	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-
P37DMOA	<0.05	<0.050	<0.050	<0.001	<0.001	<0.001	<0.001	-	-	-	-
F-53B major	<0.1	<0.10	<0.10	<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]

	PFAS in Groundwater								Guidelines		
Sample Name	OHA_GW112.2_081123	OHA_GW112.2_100424	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	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	GW112.2	GW112.2	GW31	GW31	GW31	GW31	GW31	GW31			
Sample Date	8/11/2023	10/04/2024	12/02/2018	23/05/2018	12/09/2018	29/09/2020	16/03/2021	29/10/2021			
Lab Report Number	3519873	24-102552-2	1032528	1153593	1252502	2096319	2316425	2593739			
Monitoring Zone	Off-base	Off-base	Off-base	Off-base	Off-base	Off-base	Off-base	Off-base			
Sample Results											
PFPrS	<0.0010	<0.0010	0.0033	0.0038	0.0058	0.0045	0.0042	0.0054	-	-	-
PFBS	<0.0010	<0.0010	0.011	0.01	0.0095	0.01	0.011	0.009	-	-	-
PFPeS	<0.0010	<0.0010	0.014	0.0089	0.0084	0.0085	0.0096	0.0083	-	-	-
di-PFHxS	<0.0010	<0.0010	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-
Mono-PFHxS	<0.0010	<0.0010	0.016	0.013	0.014	0.016	0.017	0.013	-	-	-
L-PFHxS	<0.0010	<0.0010	0.064	0.055	0.056	0.063	0.073	0.059	-	-	-
Total PFHxS[4]	<0.0010	<0.0010	0.08	0.068	0.07	0.079	0.09	0.072	-	-	-
PFHpS	<0.0010	<0.0010	0.0014	0.0011	0.0011	0.0015	0.0016	0.0013	-	-	-
di-PFOS	<0.0010	<0.0010	0.0042	0.002	<0.001	0.0034	0.0034	0.0026	-	-	-
Mono-PFOS	<0.0010	<0.0010	0.033	0.016	0.016	0.028	0.037	0.025	-	-	-
L-PFOS	<0.0010	<0.0010	0.023	0.0079	0.0058	0.013	0.028	0.011	-	-	-
Total PFOS[4]	<0.0010	<0.0010	**0.06**	**0.026**	**0.022**	**0.044**	**0.068**	**0.039**	-	0.0091 [6]	0.48 [6]
Sum of PFHxS and PFOS[5]	<0.0010	<0.0010	0.14	0.094	0.092	0.12	0.16	0.11	0.07	-	-
PFECHS	<0.0010	<0.0020	-	-	-	-	<0.001	<0.001	-	-	-
PFBA	-	<0.0010	0.055	0.035	0.035	0.047	0.06	0.042	-	-	-
PFPeA	<0.0010	<0.0010	0.21	0.097	0.083	0.15	0.25	0.13	-	-	-
PFHxA	<0.0010	<0.0010	0.14	0.074	0.067	0.12	0.17	0.083	-	-	-
PFHpA	<0.0010	<0.0010	0.053	0.027	0.024	0.042	0.063	0.031	-	-	-
PFOA	<0.0010	<0.0010	0.024	0.013	0.011	0.019	0.025	0.016	0.56	19	220
PFNA	<0.0010	<0.0010	0.0059	0.0021	0.0014	0.0039	0.0076	0.0029	-	-	-
PFDA	<0.0010	<0.0010	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-
PFUnDA	<0.0010	<0.0010	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-
PFTrDA	<0.0050	<0.0010	-	<0.025	<0.005	-	-	-	-	-	-
PFTeDA	<0.0010	-	-	<0.1	<0.005	-	-	<0.001	-	-	-
PFDoDA	<0.0010	<0.0010	<0.001	<0.025	<0.001	<0.001	<0.001	<0.001	-	-	-
FOSA	<0.0010	<0.0010	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-
MeFOSA	<0.0010	-	<0.025	<0.005	<0.001	<0.001	<0.001	<0.001	-	-	-
MeFOSAA	<0.0010	<0.0010	<0.005	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-
EtFOSAA	-	<0.0010	<0.005	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-
4:2 FTS	<0.0010	<0.0010	<0.005	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-
6:2 FTS	<0.0010	<0.0010	0.036	0.0092	0.0052	0.0049	0.0052	0.0036	-	-	-
8:2 FTS	<0.0010	<0.0010	<0.005	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-
10:2 FTS	<0.0010	<0.0010	-	-	-	-	<0.001	<0.001	-	-	-
FPrPA	<0.0010	<0.0010	-	-	-	-	<0.001	<0.001	-	-	-
EtFOSA	<0.0010	-	<0.025	<0.001	<0.001	<0.001	<0.001	-	-	-	-
EtFOSE	-	<0.0010	<0.025	<0.005	<0.001	<0.001	<0.001	-	-	-	-
FPePA	<0.0010	<0.0010	-	-	-	-	<0.001	<0.001	-	-	-
FHpPA	-	<0.0010	-	-	-	-	<0.001	<0.001	-	-	-
F-53B minor	<0.0010	<0.0010	-	-	-	-	<0.001	<0.001	-	-	-
HFPO-DA	<0.0010	<0.0010	-	-	-	-	<0.001	<0.001	-	-	-
Sum F-53B	<0.0010	<0.0020	-	-	-	-	<0.001	<0.001	-	-	-
ADONA	<0.0010	<0.0010	-	-	-	-	<0.001	<0.001	-	-	-
P37DMOA	-	<0.0010	-	-	-	-	<0.001	<0.001	-	-	-
F-53B major	<0.0010	<0.0020	-	-	-	-	<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]

	PFAS in Groundwater								Guidelines		
Sample Name	OHA_ADJ_GW31_7_290322	OHA_ADJ_GW31_8_290922	OHA_GW31_040423	OHA_GW31_091123	OHA_GW31_100424	OHA_ADJ_GW53_1_150218	OHA_ADJ_GW53_2_150518	OHA_ADJ_GW53_3_10918	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	GW53	GW53	GW53			
Sample Date	29/03/2022	29/09/2022	4/04/2023	9/11/2023	10/04/2024	15/02/2018	15/05/2018	10/09/2018			
Lab Report Number	2786750	3007286	3277680	3521587	24-103818-1	1040534	1139707	1244388			
Monitoring Zone	Off-base	Off-base	Off-base	Off-base	Off-base	Off-base	Off-base	Off-base			
Sample Results											
PFPrS	0.0046	<0.001	0.0042	0.0031	0.0037	<0.001	<0.001	<0.001	-	-	-
PFBS	0.0095	<0.001	0.0081	0.0088	0.0099	<0.001	<0.001	<0.001	-	-	-
PFPeS	0.0085	<0.001	0.0075	0.0065	0.0077	<0.001	<0.001	<0.001	-	-	-
di-PFHxS	<0.001	<0.001	<0.001	<0.0010	<0.0010	<0.001	<0.001	<0.001	-	-	-
Mono-PFHxS	0.013	<0.001	0.011	0.014	0.015	<0.001	<0.001	<0.001	-	-	-
L-PFHxS	0.058	<0.001	0.048	0.050	0.062	<0.001	<0.001	<0.001	-	-	-
Total PFHxS[4]	0.071	<0.001	0.059	0.064	0.077	<0.001	<0.001	<0.001	-	-	-
PFHpS	0.0013	<0.001	0.0011	<0.0010	0.0013	<0.001	<0.001	<0.001	-	-	-
di-PFOS	0.0025	<0.001	0.002	0.0020	0.0031	<0.001	<0.001	<0.001	-	-	-
Mono-PFOS	0.024	<0.001	0.018	0.022	0.028	<0.001	<0.001	<0.001	-	-	-
L-PFOS	0.015	<0.001	0.0085	0.0078	0.014	<0.001	<0.001	<0.001	-	-	-
Total PFOS[4]	**0.042**	<0.001	**0.028**	**0.032**	**0.045**	<0.001	<0.001	<0.001	-	0.0091 [6]	0.48 [6]
Sum of PFHxS and PFOS[5]	0.11	<0.001	0.087	0.096	0.12	<0.001	<0.001	<0.001	0.07	-	-
PFECHS	<0.001	<0.001	-	<0.0020	<0.0020	-	-	-	-	-	-
PFBA	0.047	<0.001	0.04	0.040	0.052	<0.005	<0.005	<0.005	-	-	-
PFPeA	0.15	<0.001	0.11	0.11	0.17	<0.001	<0.001	<0.001	-	-	-
PFHxA	0.1	<0.001	0.072	0.077	0.11	<0.001	<0.001	<0.001	-	-	-
PFHpA	0.036	<0.001	0.027	0.029	0.038	<0.001	<0.001	<0.001	-	-	-
PFOA	0.017	<0.001	0.012	0.013	0.019	<0.001	<0.001	<0.001	0.56	19	220
PFNA	0.0041	<0.001	0.0026	0.0026	0.0052	<0.001	<0.001	<0.001	-	-	-
PFDA	<0.001	<0.001	<0.001	<0.0010	<0.0010	<0.001	<0.001	<0.001	-	-	-
PFUnDA	<0.001	<0.001	<0.001	<0.0010	<0.0010	<0.001	<0.001	<0.001	-	-	-
PFTrDA	<0.001	-	-	-	-	<0.025	<0.025	-	-	-	-
PFTeDA	-	<0.001	-	<0.0010	-	-	-	-	-	-	-
PFDoDA	<0.001	<0.001	<0.001	<0.0010	<0.0010	<0.025	<0.025	<0.001	-	-	-
FOSA	<0.001	<0.001	<0.001	<0.0010	<0.0010	<0.001	<0.001	<0.001	-	-	-
MeFOSA	<0.001	<0.001	<0.001	<0.0010	<0.0010	<0.025	<0.005	<0.001	-	-	-
MeFOSAA	<0.001	<0.001	<0.001	<0.0010	<0.0010	<0.001	<0.001	<0.001	-	-	-
EtFOSAA	<0.001	<0.001	<0.001	<0.0010	<0.0010	<0.001	<0.001	<0.001	-	-	-
4:2 FTS	<0.001	<0.001	<0.001	<0.0010	<0.0010	<0.001	<0.001	<0.001	-	-	-
6:2 FTS	0.0038	<0.001	0.0033	0.0032	0.0042	<0.001	<0.01	<0.001	-	-	-
8:2 FTS	<0.001	<0.001	<0.001	<0.0010	<0.0010	<0.001	<0.001	<0.001	-	-	-
10:2 FTS	<0.001	<0.001	<0.001	<0.0010	-	-	-	-	-	-	-
FPrPA	<0.001	<0.001	<0.001	<0.0010	<0.0010	-	-	-	-	-	-
EtFOSA	<0.001	<0.001	<0.001	<0.0010	-	<0.025	<0.001	<0.001	-	-	-
EtFOSE	<0.001	<0.001	<0.001	<0.0010	<0.0010	<0.025	<0.005	<0.005	-	-	-
FPePA	<0.001	<0.001	<0.001	<0.0010	<0.0010	-	-	-	-	-	-
FHpPA	<0.001	<0.001	-	<0.0010	-	-	-	-	-	-	-
F-53B minor	<0.001	<0.001	-	<0.0010	<0.0010	-	-	-	-	-	-
HFPO-DA	<0.001	<0.001	<0.001	<0.0010	<0.0010	-	-	-	-	-	-
Sum F-53B	<0.001	<0.001	-	<0.0020	<0.0020	-	-	-	-	-	-
ADONA	<0.001	<0.001	<0.001	<0.0010	<0.0010	-	-	-	-	-	-
P37DMOA	<0.001	<0.001	-	-	-	-	-	-	-	-	-
F-53B major	<0.001	<0.001	-	<0.0020	<0.0020	-	-	-	-	-	-

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]

	PFAS in Groundwater								Guidelines		
Sample Name	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	OHA_GW53_040423	OHA_GW53_081123	OHA_GW53_100424	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	30/09/2020	16/03/2021	29/10/2021	29/03/2022	29/09/2022	4/04/2023	8/11/2023	10/04/2024			
Lab Report Number	2096317	2316429	2593735	2780973	3011675	3277675	3519871	24-103815-1			
Monitoring Zone	Off-base	Off-base	Off-base	Off-base	Off-base	Off-base	Off-base	Off-base			
Sample Results											
PFPrS	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0010	-	-	-
PFBS	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0010	-	-	-
PFPeS	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0010	-	-	-
di-PFHxS	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0010	-	-	-
Mono-PFHxS	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0010	-	-	-
L-PFHxS	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0010	-	-	-
Total PFHxS[4]	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0010	-	-	-
PFHpS	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0010	-	-	-
di-PFOS	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0010	-	-	-
Mono-PFOS	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0010	-	-	-
L-PFOS	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0010	-	-	-
Total PFOS[4]	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0010	-	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	<0.0010	0.07	-	-
PFECHS	-	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.0020	-	-	-
PFBA	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	-	<0.0010	-	-	-
PFPeA	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0010	-	-	-
PFHxA	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0010	-	-	-
PFHpA	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0010	-	-	-
PFOA	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0010	0.56	19	220
PFNA	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0010	-	-	-
PFDA	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0010	-	-	-
PFUnDA	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.0010	-	-	-
PFTrDA	-	-	-	-	-	-	-	-	-	-	-
PFTeDA	-	-	<0.001	-	<0.001	-	-	-	-	-	-
PFDoDA	<0.001	<0.001	<0.001	-	<0.001	<0.001	-	<0.0010	-	-	-
FOSA	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0010	-	-	-
MeFOSA	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0010	-	-	-
MeFOSAA	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0010	-	-	-
EtFOSAA	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0010	-	-	-
4:2 FTS	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0010	-	-	-
6:2 FTS	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0010	-	-	-
8:2 FTS	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0010	-	-	-
10:2 FTS	-	<0.001	<0.001	-	<0.001	<0.001	-	-	-	-	-
FPrPA	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0010	-	-	-
EtFOSA	<0.001	<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	<0.0010	-	-	-
FPePA	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0010	-	-	-
FHpPA	-	<0.001	<0.001	<0.001	<0.001	-	-	-	-	-	-
F-53B minor	-	<0.001	<0.001	-	<0.001	-	-	<0.0010	-	-	-
HFPO-DA	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0010	-	-	-
Sum F-53B	-	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.0020	-	-	-
ADONA	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0010	-	-	-
P37DMOA	-	<0.001	<0.001	<0.001	<0.001	-	-	-	-	-	-
F-53B major	-	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.0020	-	-	-

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]

	PFAS in Groundwater								Guidelines		
Sample Name	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											
PFPrS	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	-	-	-
PFBA	0.025	0.02	-	<0.01	-	0.011	0.0053	-	-	-	-
PFPeA	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	-	-	-
PFTeDA	-	-	<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	-	-	-
FPrPA	-	-	-	-	-	<0.001	<0.001	<0.001	-	-	-
EtFOSA	-	-	<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	-	-	-
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. 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]

	PFAS in Groundwater								Guidelines		
Sample Name	OHA_ADJ_GW6_9_280922	OHA_GW6_040423	OHA_GW6_091123	OHA_GW6_100424	OHA_ADJ_GW65_1_210218	OHA_ADJ_GW65_2_170518	OHA_ADJ_GW65_3_11918	OHA_ADJ_GW65_4_290920			
Location	GW6	GW6	GW6	GW6	GW65	GW65	GW65	GW65			
Sample Date	28/09/2022	4/04/2023	9/11/2023	10/04/2024	21/02/2018	17/05/2018	11/09/2018	29/09/2020			
Lab Report Number	3007292	3277674	3521816	24-103826-1	1047797	1142284	1244707	2096328			
Monitoring Zone	On-base	On-base	On-base	On-base	Off-base	Off-base	Off-base	Off-base	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]
Sample Results											
PFPrS	0.0019	0.0028	0.0018	<0.0010	<0.001	<0.001	<0.001	<0.001	-	-	-
PFBS	0.0026	0.0038	0.0026	0.002	<0.001	<0.001	<0.001	<0.001	-	-	-
PFPeS	0.003	0.0081	0.0034	0.0017	<0.001	<0.001	<0.001	<0.001	-	-	-
di-PFHxS	<0.001	<0.001	<0.0010	<0.0010	<0.001	<0.001	<0.001	<0.001	-	-	-
Mono-PFHxS	0.0035	0.0072	0.0032	0.0029	<0.001	<0.001	<0.001	<0.001	-	-	-
L-PFHxS	0.02	0.047	0.017	0.017	<0.001	<0.001	<0.001	<0.001	-	-	-
Total PFHxS[4]	0.024	0.054	0.020	0.020	<0.001	<0.001	<0.001	<0.001	-	-	-
PFHpS	<0.001	0.0022	<0.0010	<0.0010	<0.001	<0.001	<0.001	<0.001	-	-	-
di-PFOS	<0.001	0.0027	<0.0010	<0.0010	<0.001	<0.001	<0.001	<0.001	-	-	-
Mono-PFOS	0.011	0.035	0.0075	0.0077	<0.001	<0.001	<0.001	<0.001	-	-	-
L-PFOS	0.0041	0.041	0.0069	0.0066	<0.001	<0.001	<0.001	<0.001	-	-	-
Total PFOS[4]	**0.015**	**0.079**	**0.014**	**0.014**	<0.001	<0.001	<0.001	<0.001	-	0.0091 [6]	0.48 [6]
Sum of PFHxS and PFOS[5]	0.039	0.13	0.034	0.034	<0.001	<0.001	<0.001	<0.001	0.07	-	-
PFECHS	<0.001	-	<0.0020	<0.0020	-	-	-	-	-	-	-
PFBA	0.0061	0.019	0.0063	0.011	<0.005	<0.01	<0.005	<0.001	-	-	-
PFPeA	0.009	0.039	0.0050	0.0078	<0.001	<0.001	<0.001	<0.001	-	-	-
PFHxA	0.01	0.032	0.0055	0.030	<0.001	<0.001	<0.001	<0.001	-	-	-
PFHpA	0.0047	0.016	0.0033	0.0041	<0.001	<0.001	<0.001	<0.001	-	-	-
PFOA	0.003	0.014	0.0027	0.0036	<0.001	<0.001	<0.001	<0.001	0.56	19	220
PFNA	<0.001	0.0058	<0.0010	0.0013	<0.001	<0.001	<0.001	<0.001	-	-	-
PFDA	<0.001	<0.001	<0.0010	<0.0010	<0.001	<0.001	<0.001	<0.001	-	-	-
PFUnDA	<0.001	<0.001	<0.0010	<0.0010	<0.001	<0.001	<0.001	<0.001	-	-	-
PFTrDA	-	-	-	-	-	<0.025	<0.001	-	-	-	-
PFTeDA	-	-	-	-	-	-	<0.005	-	-	-	-
PFDoDA	<0.001	<0.001	<0.0010	<0.0010	-	<0.025	<0.001	<0.001	-	-	-
FOSA	<0.001	<0.001	<0.0010	<0.0010	<0.001	<0.001	<0.001	<0.001	-	-	-
MeFOSA	<0.001	<0.001	<0.0010	<0.0010	-	<0.005	<0.005	<0.001	-	-	-
MeFOSAA	<0.001	<0.001	<0.0010	<0.0010	<0.005	<0.001	<0.001	<0.001	-	-	-
EtFOSAA	<0.001	<0.001	<0.0010	<0.0010	<0.005	<0.001	<0.001	<0.001	-	-	-
4:2 FTS	-	<0.001	<0.0010	<0.0010	<0.005	<0.001	<0.001	<0.001	-	-	-
6:2 FTS	<0.001	0.0013	<0.0010	<0.0010	<0.005	<0.001	<0.001	<0.001	-	-	-
8:2 FTS	<0.001	<0.001	<0.0010	<0.0010	<0.005	<0.001	<0.001	<0.001	-	-	-
10:2 FTS	<0.001	<0.001	<0.0010	-	-	-	-	-	-	-	-
FPrPA	<0.001	<0.001	<0.0010	<0.0010	-	-	-	-	-	-	-
EtFOSA	<0.001	<0.001	<0.0010	-	-	<0.001	<0.005	<0.001	-	-	-
EtFOSE	<0.001	<0.001	<0.0010	<0.0010	-	<0.005	<0.001	<0.001	-	-	-
FePA	<0.001	<0.001	<0.0010	0.038	-	-	-	-	-	-	-
FHpPA	<0.001	-	<0.0010	-	-	-	-	-	-	-	-
F-53B minor	<0.001	-	<0.0010	<0.0010	-	-	-	-	-	-	-
HFPO-DA	<0.001	<0.001	<0.0010	<0.0010	-	-	-	-	-	-	-
Sum F-53B	<0.001	-	<0.0020	<0.0020	-	-	-	-	-	-	-
ADONA	<0.001	<0.001	<0.0010	<0.0010	-	-	-	-	-	-	-
P37DMOA	<0.001	-	-	-	-	-	-	-	-	-	-
F-53B major	<0.001	-	<0.0020	<0.0020	-	-	-	-	-	-	-

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]

	PFAS in Groundwater								Guidelines		
Sample Name	OHA_ADJ_GW65_5_150321	OHA_ADJ_GW65_6_291021	OHA_ADJ_GW65_7_290322	OHA_ADJ_GW65_8_290922	OHA_GW65_050423	OHA_GW65_091123	OHA_GW65_110424	OHA_ADJ_GW67_1_210218			
Location	GW65	GW65	GW65	GW65	GW65	GW65	GW65	GW67			
Sample Date	15/03/2021	29/10/2021	29/03/2022	29/09/2022	5/04/2023	9/11/2023	11/04/2024	21/02/2018	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]
Lab Report Number	2313647	2593738	2780969	3011675	3283483	3521600	24-103802-1	1047809			
Monitoring Zone	Off-base	Off-base	Off-base	Off-base	Off-base	Off-base	Off-base	Off-base			
Sample Results											
PFPrS	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0010	<0.001	-	-	-
PFBS	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0010	<0.001	-	-	-
PFPeS	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0010	<0.001	-	-	-
di-PFHxS	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0010	<0.001	-	-	-
Mono-PFHxS	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0010	<0.001	-	-	-
L-PFHxS	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0010	0.0016	-	-	-
Total PFHxS[4]	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0010	0.0016	-	-	-
PFHpS	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0010	<0.001	-	-	-
di-PFOS	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0010	<0.001	-	-	-
Mono-PFOS	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0010	<0.001	-	-	-
L-PFOS	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0010	<0.001	-	-	-
Total PFOS[4]	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0010	<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	<0.0010	0.0016	0.07	-	-
PFECHS	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0020	-	-	-	-
PFBA	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0010	-	-	-	-
PFPeA	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0010	<0.001	-	-	-
PFHxA	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0010	<0.001	-	-	-
PFHpA	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0010	<0.001	-	-	-
PFOA	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0010	<0.001	0.56	19	220
PFNA	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0010	<0.001	-	-	-
PFDA	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0010	<0.001	-	-	-
PFUnDA	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.0010	<0.001	-	-	-
PFTrDA	-	-	<0.001	-	-	<0.002	-	-	-	-	-
PFTeDA	-	<0.001	-	-	<0.001	<0.001	-	-	-	-	-
PFDoDA	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0010	-	-	-	-
FOSA	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0010	<0.001	-	-	-
MeFOSA	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0010	-	-	-	-
MeFOSAA	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0010	<0.005	-	-	-
EtFOSAA	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0010	<0.005	-	-	-
4:2 FTS	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0010	<0.005	-	-	-
6:2 FTS	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0010	<0.005	-	-	-
8:2 FTS	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0010	<0.005	-	-	-
10:2 FTS	-	<0.001	<0.001	<0.001	<0.001	-	-	-	-	-	-
FPrPA	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0010	-	-	-	-
EtFOSA	-	<0.001	<0.001	<0.001	-	<0.001	-	-	-	-	-
EtFOSE	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0010	-	-	-	-
FPePA	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0010	-	-	-	-
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	<0.0010	-	-	-	-
HFPO-DA	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0010	-	-	-	-
Sum F-53B	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0010	-	-	-	-
ADONA	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0010	-	-	-	-
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	<0.0020	-	-	-	-

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]

	PFAS in Groundwater								Guidelines		
Sample Name	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	OHA_ADJ_GW67_8_280922	OHA_GW67_091123			
Location	GW67	GW67	GW67	GW67	GW67	GW67	GW67	GW67			
Sample Date	14/05/2018	11/09/2018	30/09/2020	17/03/2021	27/10/2021	29/03/2022	28/09/2022	9/11/2023	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]
Lab Report Number	1134445	1244090	2096741	2317694	2618128	2780991	2999090	3521593			
Monitoring Zone	Off-base	Off-base	Off-base	Off-base	Off-base	Off-base	Off-base	Off-base			
Sample Results											
PFPrS	<0.001	-	<0.001	0.0013	<0.001	<0.001	<0.025	<0.0010	-	-	-
PFBS	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.025	<0.0010	-	-	-
PFPeS	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.025	<0.0010	-	-	-
di-PFHxS	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.025	<0.0010	-	-	-
Mono-PFHxS	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.025	<0.0010	-	-	-
L-PFHxS	0.0018	0.0012	<0.001	<0.001	<0.001	<0.001	<0.025	<0.0010	-	-	-
Total PFHxS[4]	0.0018	0.0012	<0.001	<0.001	<0.001	<0.001	<0.025	<0.0010	-	-	-
PFHpS	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.025	<0.0010	-	-	-
di-PFOS	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.025	<0.0010	-	-	-
Mono-PFOS	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.025	<0.0010	-	-	-
L-PFOS	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.025	<0.0010	-	-	-
Total PFOS[4]	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.025	<0.0010	-	0.0091 [6]	0.48 [6]
Sum of PFHxS and PFOS[5]	0.0018	0.0012	<0.001	<0.001	<0.001	<0.001	<0.025	<0.0010	0.07	-	-
PFECHS	-	-	-	<0.001	<0.001	<0.001	<0.025	<0.0020	-	-	-
PFBA	-	-	<0.001	0.0072	-	0.0087	<0.1	0.011	-	-	-
PFPeA	<0.001	-	<0.001	<0.001	<0.001	<0.001	<0.1	<0.0010	-	-	-
PFHxA	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.025	<0.0010	-	-	-
PFHpA	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.025	<0.0010	-	-	-
PFOA	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.025	<0.0010	0.56	19	220
PFNA	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.025	<0.0010	-	-	-
PFDA	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.025	<0.0010	-	-	-
PFUnDA	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.025	<0.0010	-	-	-
PFTrDA	<0.025	<0.005	-	-	-	<0.001	<0.1	-	-	-	-
PFTeDA	<0.025	<0.005	-	-	<0.001	-	<0.1	<0.0010	-	-	-
PFDoDA	<0.025	<0.001	-	<0.001	<0.001	<0.001	<0.1	<0.0010	-	-	-
FOSA	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.025	<0.0010	-	-	-
MeFOSA	<0.005	<0.005	-	-	<0.001	<0.001	<0.1	<0.0010	-	-	-
MeFOSAA	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.025	<0.0010	-	-	-
EtFOSAA	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.025	<0.0010	-	-	-
4:2 FTS	<0.001	-	-	<0.001	<0.001	-	<0.025	<0.0010	-	-	-
6:2 FTS	<0.01	<0.001	<0.001	<0.001	-	<0.001	<0.05	<0.0010	-	-	-
8:2 FTS	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.1	<0.0010	-	-	-
10:2 FTS	-	-	-	<0.001	<0.001	<0.001	<0.025	<0.0010	-	-	-
FPrPA	-	-	-	<0.001	<0.001	<0.001	<0.1	<0.0010	-	-	-
EtFOSA	<0.001	<0.005	-	-	<0.001	<0.001	<0.1	<0.0010	-	-	-
EtFOSE	<0.005	<0.001	<0.001	-	<0.001	<0.001	<0.1	<0.0010	-	-	-
FPePA	-	-	-	<0.001	<0.001	<0.001	<0.025	<0.0010	-	-	-
FHpPA	-	-	-	<0.001	<0.001	<0.001	<0.025	<0.0010	-	-	-
F-53B minor	-	-	-	<0.001	<0.001	<0.001	<0.05	<0.0010	-	-	-
HFPO-DA	-	-	-	<0.001	<0.001	<0.001	<0.05	<0.0010	-	-	-
Sum F-53B	-	-	-	<0.001	<0.001	<0.001	<0.1	<0.0020	-	-	-
ADONA	-	-	-	<0.001	<0.001	<0.001	<0.025	<0.0010	-	-	-
P37DMOA	-	-	-	<0.001	<0.001	<0.001	<0.05	-	-	-	-
F-53B major	-	-	-	<0.001	<0.001	<0.001	<0.1	<0.0020	-	-	-

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]

	PFAS Samples in Surface Water							Guidelines	
Field_ID	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]
Location_Code	SW33	SW33	SW33	SW33	SW33	SW33	SW33		
Sampled_Date_Time	19/02/2018	22/05/2018	12/09/2018	29/09/2020	16/03/2021	29/10/2021	28/03/2022		
Lab_Report_Number	1047510	1147417	1248198	2094714	2316431	2590572	2785715		
Sample Results									
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]	**0.11**	0.0013	**0.058**	<0.025	**0.09**	**0.089**	**0.04**	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]

	PFAS Samples in Surface Water							Guidelines	
Field_ID	OHA_ADJ_SW33_8_280922	OHA_SW33_050423	OHA_SW33_081123	OHA_SW33_090424	OHA_ADJ_SW36_1_220218	OHA_ADJ_SW36_2_170518	OHA_ADJ_SW36_3_120918	ANZECC 95% Species Protection - Technical Draft Default Guideline Values [2]	ANZ WQG for 99% Species Protection - Technical Draft Default Guideline Values [2]
Location_Code	OHA_ADJ_SW33	OHA_ADJ_SW33	SW33	SW33	SW36	SW36	SW36		
Sampled_Date_Time	28/09/2022	5/04/2023	8/11/2023	9/04/2024	22/02/2018	17/05/2018	12/09/2018		
Lab_Report_Number	3019751	3283482	3519861	24-100840-1	1047802	1142104	1251329		
Sample Results									
PFPrS	0.0022	0.0017	0.0017	0.0034	<0.001	<0.001	<0.001	-	-
PFBS	0.0051	0.0051	0.0059	0.0085	<0.001	<0.001	<0.001	-	-
PFPeS	0.0052	0.0048	0.0058	0.0093	<0.001	<0.001	<0.001	-	-
di-PFHxS	<0.001	<0.001	<0.0010	<0.0010	<0.001	<0.001	<0.001	-	-
Mono-PFHxS	0.008	0.0076	0.010	0.013	<0.001	<0.001	<0.001	-	-
L-PFHxS	0.044	0.049	0.056	0.075	<0.001	<0.001	<0.001	-	-
Total PFHxS [4]	0.052	0.057	0.066	0.088	<0.001	<0.001	<0.001	-	-
PFHpS	0.0012	0.0018	0.0022	0.0029	<0.001	<0.001	<0.001	-	-
di-PFOS	0.0016	0.0022	0.0025	0.0033	<0.001	<0.001	<0.001	-	-
Mono-PFOS	0.029	0.037	0.040	0.057	<0.001	<0.001	<0.001	-	-
L-PFOS	0.017	0.06	0.066	0.078	<0.001	<0.001	<0.001	-	-
Total PFOS [4]	**0.048**	**0.099**	**0.11**	**0.14**	<0.001	<0.001	<0.001	0.48 [3]	0.0091 [3]
Sum of PFHxS and PFOS [5]	0.1	0.16	0.18	0.23	<0.001	<0.001	<0.001	-	-
PFECHS	<0.001	<0.001	<0.0010	<0.0050	-	-	-	-	-
PFBA	0.034	0.037	-	0.056	<0.005	<0.01	<0.005	-	-
PFPeA	0.13	0.16	0.15	0.23	<0.001	<0.001	<0.001	-	-
PFHxA	0.091	0.11	0.11	0.15	<0.001	<0.001	<0.001	-	-
PFHpA	0.037	0.043	0.047	0.070	<0.001	<0.001	<0.001	-	-
PFOA	0.015	0.023	0.022	0.030	<0.001	<0.001	<0.001	220	19
PFNA	0.0044	0.0087	0.0086	0.024	<0.001	<0.001	<0.001	-	-
PFDA	<0.001	<0.001	<0.0010	<0.0010	<0.001	<0.001	<0.001	-	-
PFUnDA	<0.001	<0.001	-	<0.0010	<0.001	<0.001	<0.005	-	-
PFTrDA	-	-	-	<0.0010	-	<0.025	<0.005	-	-
PFTeDA	-	<0.001	-	<0.0010	-	<0.1	-	-	-
PFDoDA	<0.001	<0.001	-	<0.0010	-	<0.025	<0.005	-	-
FOSA	<0.001	<0.001	<0.0010	<0.0010	<0.001	<0.001	<0.001	-	-
MeFOSA	<0.001	<0.001	<0.0010	<0.0010	-	<0.005	<0.005	-	-
MeFOSAA	<0.001	<0.001	-	<0.0010	<0.005	<0.001	<0.005	-	-
EtFOSAA	<0.001	<0.001	-	<0.0010	<0.005	<0.001	<0.005	-	-
4:2 FTS	-	<0.001	<0.0010	<0.0010	<0.005	<0.001	<0.001	-	-
6:2 FTS	0.0034	<0.001	0.0024	<0.0010	<0.005	<0.001	<0.001	-	-
8:2 FTS	<0.001	<0.001	<0.0010	<0.0010	<0.005	<0.001	<0.005	-	-
10:2 FTS	<0.001	<0.001	-	<0.0010	-	-	-	-	-
FPrPA	<0.001	<0.001	<0.0010	<0.0010	-	-	-	-	-
EtFOSA	<0.001	<0.001	<0.0010	<0.0010	-	<0.001	<0.005	-	-
EtFOSE	<0.001	<0.001	<0.0010	<0.0010	-	<0.005	<0.005	-	-
FPePA	<0.001	<0.001	<0.0010	<0.0010	-	-	-	-	-
FHpPA	<0.001	<0.001	-	<0.0010	-	-	-	-	-
F-53B minor	<0.001	<0.001	-	<0.0010	-	-	-	-	-
HFPO-DA	<0.001	<0.001	<0.0010	<0.0010	-	-	-	-	-
Sum F-53B	<0.001	<0.001	<0.0010	<0.0010	-	-	-	-	-
ADONA	<0.001	<0.001	<0.0010	<0.0010	-	-	-	-	-
P37DMOA	<0.001	<0.001	-	<0.0010	-	-	-	-	-
F-53B major	<0.001	<0.001	<0.0010	<0.0010	-	-	-	-	-

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]

	PFAS Samples in Surface Water							Guidelines	
Field_ID	OHA_ADJ_SW36_4_290920	OHA_ADJ_SW36_5_160321	OHA_ADJ_SW36_7_291021	OHA_ADJ_SW36_8_280322	OHA_ADJ_SW36_9_290922	OHA_SW36_050423	OHA_SW36_081123	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	SW36	SW36	SW36	OHA_ADJ_SW36	OHA_ADJ_SW36	SW36		
Sampled_Date_Time	29/09/2020	16/03/2021	29/10/2021	28/03/2022	29/09/2022	5/04/2023	8/11/2023		
Lab_Report_Number	2094717	2370192	2590570	2785749	3041553	3288819	3519864		
Sample Results									
PFPrS	<0.025	<0.001	0.0014	<0.001	0.0013	<0.001	<0.0010	-	-
PFBS	<0.025	0.0017	0.0026	0.0016	0.0029	0.0027	0.0025	-	-
PFPeS	<0.025	0.0019	0.0028	0.0015	0.003	0.0026	0.0025	-	-
di-PFHxS	<0.025	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0010	-	-
Mono-PFHxS	<0.025	0.003	0.0039	0.0022	0.0047	0.0043	0.0045	-	-
L-PFHxS	<0.025	0.018	0.023	0.012	0.027	0.022	0.025	-	-
Total PFHxS [4]	<0.025	0.021	0.027	0.014	0.032	0.026	0.030	-	-
PFHpS	<0.025	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0010	-	-
di-PFOS	<0.025	<0.001	<0.001	<0.001	<0.001	<0.001	0.0011	-	-
Mono-PFOS	<0.025	0.017	0.011	0.0061	0.015	0.01	0.015	-	-
L-PFOS	<0.025	0.016	0.0095	0.0058	0.0086	0.0075	0.016	-	-
Total PFOS [4]	<0.025	**0.033**	**0.02**	**0.012**	**0.024**	**0.018**	**0.032**	0.48 [3]	0.0091 [3]
Sum of PFHxS and PFOS [5]	<0.025	0.054	0.047	0.026	0.056	0.044	0.062	-	-
PFECHS	-	<0.001	<0.001	<0.001	<0.001	-	<0.0010	-	-
PFBA	<0.2	0.019	0.017	0.013	0.017	0.014	-	-	-
PFPeA	<0.1	0.072	0.06	0.024	0.051	0.051	0.046	-	-
PFHxA	<0.025	0.05	0.039	0.018	0.038	0.036	0.032	-	-
PFHpA	<0.025	0.026	0.018	0.0073	0.018	0.016	0.014	-	-
PFOA	<0.025	0.012	0.0079	0.0031	0.0079	0.0064	0.0088	220	19
PFNA	<0.025	0.0048	0.0026	0.0011	0.0022	0.0029	0.0032	-	-
PFDA	<0.025	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0010	-	-
PFUnDA	<0.025	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-
PFTrDA	<0.1	-	<0.001	<0.001	-	-	-	-	-
PFTeDA	<0.1	-	<0.001	<0.001	-	-	-	-	-
PFDoDA	<0.1	<0.001	<0.001	<0.001	-	<0.001	-	-	-
FOSA	<0.025	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0010	-	-
MeFOSA	<0.1	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0010	-	-
MeFOSAA	<0.025	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-
EtFOSAA	<0.025	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-
4:2 FTS	<0.025	<0.001	-	-	-	<0.001	<0.0010	-	-
6:2 FTS	<0.05	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0010	-	-
8:2 FTS	<0.1	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0010	-	-
10:2 FTS	-	<0.001	<0.001	<0.001	-	<0.001	-	-	-
FPrPA	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0010	-	-
EtFOSA	<0.1	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-
EtFOSE	<0.1	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0010	-	-
FPePA	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0010	-	-
FHpPA	-	<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	<0.0010	-	-
Sum F-53B	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0010	-	-
ADONA	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0010	-	-
P37DMOA	-	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-
F-53B major	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0010	-	-

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]

	PFAS Samples in Surface Water							Guidelines	
Field_ID	OHA_SW36_100424	SW6	SW6	SW6	OHA_DPB_SW6_4_290920	OHA_DPB_SW6_6_291021	OHA_DPB_SW6_7_280322	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	SW6	SW6	SW6	SW6	SW6	SW6		
Sampled_Date_Time	10/04/2024	4/08/2017	1/11/2017	3/07/2018	29/09/2020	29/10/2021	28/03/2022		
Lab_Report_Number	24-102531-1	841470	937355	1186578	2094713	2590926	2785776		
Sample Results									
PFPrS	<0.0010	0.023	0.042	0.013	<0.025	<0.025	0.029	-	-
PFBS	0.0023	0.079	0.12	0.037	<0.025	0.053	0.063	-	-
PFPeS	0.0021	0.083	0.18	0.045	<0.025	0.057	0.092	-	-
di-PFHxS	<0.0010	0.002	0.0039	<0.001	<0.025	<0.025	0.0021	-	-
Mono-PFHxS	0.0031	0.3	0.28	0.073	0.03	0.11	0.16	-	-
L-PFHxS	0.016	1.6	1.8	0.48	0.19	0.86	0.95	-	-
Total PFHxS [4]	0.019	1.9	2.1	0.55	0.22	0.97	1.1	-	-
PFHpS	<0.0010	0.066	0.13	0.027	<0.025	0.046	0.05	-	-
di-PFOS	<0.0010	0.036	0.096	0.013	<0.025	0.039	0.051	-	-
Mono-PFOS	0.0088	0.52	0.82	0.15	0.093	0.58	0.64	-	-
L-PFOS	0.0084	0.86	1	0.21	0.13	0.83	0.69	-	-
Total PFOS [4]	**0.017**	**1.4**	**1.9**	**0.37**	**0.22**	**1.4**	**1.4**	0.48 [3]	0.0091 [3]
Sum of PFHxS and PFOS [5]	0.036	-	-	0.92	0.44	2.4	2.5	-	-
PFECHS	<0.0020	-	-	-	-	<0.025	<0.001	-	-
PFBA	0.016	0.23	0.32	0.11	<0.2	0.16	0.22	-	-
PFPeA	0.052	1.1	1.5	0.44	0.22	0.62	0.86	-	-
PFHxA	0.035	1	0.96	0.32	0.14	0.39	0.62	-	-
PFHpA	0.015	0.32	0.47	0.16	0.073	0.23	0.31	-	-
PFOA	0.0067	0.61	0.73	0.19	0.065	0.34	0.36	220	19
PFNA	0.0015	0.15	0.32	0.092	0.029	0.18	0.17	-	-
PFDA	<0.0010	0.0012	0.002	0.0011	<0.025	<0.025	0.0014	-	-
PFUnDA	<0.0010	<0.005	0.0012	<0.001	<0.025	<0.025	0.0011	-	-
PFTrDA	<0.0010	-	-	<0.025	<0.1	<0.1	<0.001	-	-
PFTeDA	-	-	-	<0.1	<0.1	<0.1	<0.001	-	-
PFDoDA	<0.0010	<0.005	<0.001	<0.025	<0.1	<0.1	<0.001	-	-
FOSA	<0.0010	<0.001	0.0012	<0.001	<0.025	<0.025	<0.001	-	-
MeFOSA	-	<0.005	<0.005	<0.005	<0.1	<0.1	<0.001	-	-
MeFOSAA	<0.0010	<0.005	<0.005	<0.001	<0.025	<0.025	<0.001	-	-
EtFOSAA	<0.0010	<0.005	<0.005	<0.001	<0.025	<0.025	<0.001	-	-
4:2 FTS	<0.0010	0.0059	0.0053	<0.001	<0.025	<0.025	-	-	-
6:2 FTS	<0.0010	0.81	1.5	0.33	0.053	0.62	0.44	-	-
8:2 FTS	<0.0010	<0.005	0.0054	<0.001	<0.1	<0.1	<0.001	-	-
10:2 FTS	<0.0010	-	-	-	-	<0.025	<0.001	-	-
FPrPA	<0.0010	-	-	-	-	<0.1	0.0022	-	-
EtFOSA	-	<0.005	<0.005	<0.005	<0.1	<0.1	<0.001	-	-
EtFOSE	<0.0010	<0.005	<0.005	<0.005	<0.1	<0.1	<0.001	-	-
FPePA	<0.0010	-	-	-	-	<0.025	0.005	-	-
FHpPA	<0.0010	-	-	-	-	<0.025	<0.001	-	-
F-53B minor	<0.0010	-	-	-	-	<0.05	<0.001	-	-
HFPO-DA	<0.0010	-	-	-	-	<0.05	<0.001	-	-
Sum F-53B	<0.0020	-	-	-	-	<0.1	<0.001	-	-
ADONA	<0.0010	-	-	-	-	<0.025	<0.001	-	-
P37DMOA	<0.0010	-	-	-	-	<0.05	<0.001	-	-
F-53B major	<0.0020		-		<0.001	<0.1	<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]

	PFAS Samples in Surface Water							Guidelines	
Field_ID	OHA_DPB_SW6_8_280922	OHA_SW6_030423	OHA_SW6_071123	SW4	OHA_SHW_SW4_2_021020	OHA_SHW_SW4_3_180321	OHA_SHW_SW4_4_271021	ANZECC 95% Species Protection - Technical Draft Default Guideline Values [2]	ANZ WQG for 99% Species Protection - Technical Draft Default Guideline Values [2]
Location_Code	OHA_DPB_SW6	OHA_DPB_SW6	SW6	SW4	SW4	SW4	SW4		
Sampled_Date_Time	28/09/2022	3/04/2023	7/11/2023	4/08/2017	2/10/2020	18/03/2021	27/10/2021		
Lab_Report_Number	3008365	3276244	3518234	841470	2094371	2327926	2576268		
Sample Results									
PFPrS	0.026	<0.025	<0.025	<0.001	<0.001	<0.001	<0.001	-	-
PFBS	0.089	0.03	0.069	<0.001	<0.001	0.0012	<0.001	-	-
PFPeS	0.12	0.034	0.077	<0.001	<0.001	<0.001	<0.001	-	-
di-PFHxS	<0.025	<0.025	<0.025	<0.001	<0.001	<0.001	<0.001	-	-
Mono-PFHxS	0.23	0.053	0.16	<0.001	<0.001	<0.001	<0.001	-	-
L-PFHxS	1.4	0.42	0.92	<0.001	<0.001	0.005	<0.001	-	-
Total PFHxS [4]	1.6	0.47	1.1	<0.001	<0.001	0.005	<0.001	-	-
PFHpS	0.061	<0.025	0.041	<0.001	<0.001	<0.001	<0.001	-	-
di-PFOS	0.059	<0.025	0.027	<0.001	<0.001	<0.001	<0.001	-	-
Mono-PFOS	0.89	0.38	0.50	<0.001	<0.001	0.0029	<0.001	-	-
L-PFOS	0.82	0.52	0.69	<0.001	<0.001	0.0036	<0.001	-	-
Total PFOS [4]	**1.8**	**0.9**	**1.2**	<0.001	<0.001	0.0065	<0.001	0.48 [3]	0.0091 [3]
Sum of PFHxS and PFOS [5]	3.4	1.4	2.3	-	<0.001	0.012	<0.001	-	-
PFECHS	<0.025	<0.025	<0.025	-	-	<0.001	<0.001	-	-
PFBA	0.24	<0.1	0.24	0.0054	0.0095	0.037	0.0085	-	-
PFPeA	0.9	0.34	0.78	<0.001	<0.001	0.096	0.0035	-	-
PFHxA	0.68	0.24	0.57	<0.001	0.001	0.079	0.0016	-	-
PFHpA	0.38	0.15	0.28	<0.001	<0.001	0.048	0.0011	-	-
PFOA	0.51	0.17	0.34	<0.001	<0.001	0.013	<0.001	220	19
PFNA	0.22	0.12	0.14	<0.001	<0.001	0.0039	<0.001	-	-
PFDA	<0.025	<0.025	<0.025	<0.001	<0.001	<0.001	<0.001	-	-
PFUnDA	<0.025	<0.025	<0.025	<0.005	<0.001	<0.001	<0.001	-	-
PFTrDA	<0.1	<0.1	<0.10	-	<0.001	<0.005	-	-	-
PFTeDA	<0.1	<0.1	<0.10	-	<0.001	-	-	-	-
PFDoDA	<0.1	<0.1	<0.10	<0.005	<0.001	<0.005	<0.001	-	-
FOSA	<0.025	<0.025	<0.025	<0.001	<0.001	<0.001	<0.001	-	-
MeFOSA	<0.1	<0.1	<0.10	-	-	<0.005	<0.001	-	-
MeFOSAA	<0.025	<0.025	<0.025	<0.005	<0.001	<0.001	<0.001	-	-
EtFOSAA	<0.025	<0.025	<0.025	<0.005	<0.001	<0.001	<0.001	-	-
4:2 FTS	<0.025	<0.025	<0.025	<0.005	-	<0.001	-	-	-
6:2 FTS	0.7	0.14	0.35	<0.005	<0.001	0.0096	-	-	-
8:2 FTS	<0.1	<0.1	<0.10	<0.005	<0.001	<0.001	<0.001	-	-
10:2 FTS	<0.025	<0.025	<0.025	-	-	<0.001	<0.001	-	-
FPrPA	<0.1	<0.1	<0.10	-	-	<0.001	<0.001	-	-
EtFOSA	<0.1	<0.1	<0.10	-	-	<0.005	<0.001	-	-
EtFOSE	<0.1	<0.1	<0.10	<0.005	-	<0.005	<0.001	-	-
FPePA	<0.025	<0.025	<0.025	-	-	<0.001	<0.001	-	-
FHpPA	<0.025	<0.025	<0.025	-	-	<0.001	<0.001	-	-
F-53B minor	<0.05	<0.05	<0.050	-	-	<0.001	<0.001	-	-
HFPO-DA	<0.05	<0.05	<0.050	-	-	<0.001	<0.001	-	-
Sum F-53B	<0.1	<0.1	<0.10	-	-	<0.001	<0.001	-	-
ADONA	<0.025	<0.025	<0.025	-	-	<0.001	<0.001	-	-
P37DMOA	<0.05	<0.05	<0.050	-	-	<0.001	<0.001	-	-
F-53B major	<0.1	<0.1	<0.10	-	-	-	<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]

	PFAS Samples in Surface Water							Guidelines	
Field_ID	OHA_SHW_SW4_5_300322	OHA_SHW_SW4_6_280922	OHA_SW4_050423	OHA_SW4_081123	OHA_SW4_100424			ANZECC 95% Species Protection - Technical Draft Default Guideline Values [2]	ANZ WQG for 99% Species Protection - Technical Draft Default Guideline Values [2]
Location_Code	SW4	OHA_SHW_SW4	OHA_SHW_SW4	SW4	SW4				
Sampled_Date_Time	30/03/2022	28/09/2022	5/04/2023	8/11/2023	10/04/2024				
Lab_Report_Number	2786753	3009070	3283471	3519870	24-103822-1				
Sample Results									
PFPrS	<0.001	<0.001	<0.001	<0.0010	<0.0010			-	-
PFBS	<0.001	<0.001	<0.001	<0.0010	<0.0010			-	-
PFPeS	<0.001	<0.001	<0.001	<0.0010	<0.0010			-	-
di-PFHxS	<0.001	<0.001	<0.001	<0.0010	<0.0010			-	-
Mono-PFHxS	<0.001	<0.001	<0.001	<0.0010	<0.0010			-	-
L-PFHxS	<0.001	<0.001	0.0017	<0.0010	0.0022			-	-
Total PFHxS [4]	<0.001	<0.001	0.0017	<0.0010	0.0022			-	-
PFHpS	<0.001	<0.001	<0.001	<0.0010	<0.0010			-	-
di-PFOS	<0.001	<0.001	<0.001	<0.0010	<0.0010			-	-
Mono-PFOS	<0.001	<0.001	0.0015	<0.0010	0.0029			-	-
L-PFOS	<0.001	<0.001	0.0024	<0.0010	0.0072			-	-
Total PFOS[4]	<0.001	<0.001	0.0039	<0.0010	**0.010**			0.48 [3]	0.0091 [3]
Sum of PFHxS and PFOS [5]	<0.001	<0.001	0.0056	<0.0010	0.012			-	-
PFECHS	<0.001	<0.001	<0.001	<0.0010	0.0077			-	-
PFBA	0.0061	0.008	0.0091	-	0.019			-	-
PFPeA	0.0013	0.0018	0.014	<0.0010	0.023			-	-
PFHxA	<0.001	<0.001	0.0096	<0.0010	0.012			-	-
PFHpA	<0.001	<0.001	0.0054	<0.0010	0.0063			-	-
PFOA	<0.001	<0.001	0.0022	<0.0010	0.0038			220	19
PFNA	<0.001	<0.001	0.0014	<0.0010	0.0029			-	-
PFDA	<0.001	<0.001	<0.001	<0.0010	<0.0010			-	-
PFUnDA	<0.001	<0.001	<0.001	-	<0.0010			-	-
PFTrDA	<0.001	-	-	-	-			-	-
PFTeDA	<0.001	-	-	-	-			-	-
PFDoDA	<0.001	<0.001	-	-	<0.0010			-	-
FOSA	<0.001	<0.001	<0.001	<0.0010	<0.0010			-	-
MeFOSA	<0.001	<0.001	<0.001	<0.0010	<0.0010			-	-
MeFOSAA	<0.001	<0.001	<0.001	-	<0.0010			-	-
EtFOSAA	<0.001	<0.001	<0.001	-	<0.0010			-	-
4:2 FTS	-	-	-	<0.0010	<0.0010			-	-
6:2 FTS	<0.001	<0.001	<0.001	<0.0010	<0.0010			-	-
8:2 FTS	<0.001	<0.001	<0.001	<0.0010	<0.0010			-	-
10:2 FTS	<0.001	<0.001	-	-	-			-	-
FPrPA	<0.001	<0.001	<0.001	<0.0010	<0.0010			-	-
EtFOSA	<0.001	<0.001	<0.001	<0.0010	-			-	-
EtFOSE	<0.001	<0.001	<0.001	<0.0010	<0.0010			-	-
FPePA	<0.001	<0.001	<0.001	<0.0010	<0.0010			-	-
FHpPA	<0.001	<0.001	<0.001	-	-			-	-
F-53B minor	<0.001	<0.001	-	-	<0.0010			-	-
HFPO-DA	<0.001	<0.001	<0.001	<0.0010	<0.0010			-	-
Sum F-53B	<0.001	<0.001	<0.001	<0.0010	<0.0020			-	-
ADONA	<0.001	<0.001	<0.001	<0.0010	<0.0010			-	-
P37DMOA	<0.001	<0.001	<0.001	-	-			-	-
F-53B major	<0.001	<0.001	<0.001	<0.0010	<0.0020			-	-

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.

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24 hour freephone 0508 800 800
fax 06 952 2929 | **email** help@horizons.govt.nz
Private Bag 11025, Manawatu Mail Centre, Palmerston North 4442