Levin Landfill April 2024 Quarterly Groundwater, Surface Water and Leachate Monitoring Report

PREPARED FOR HOROWHENUA DISTRICT COUNCIL | MAY 2024

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Revision Schedule

Rev No	Date	Description	Signature of Typed Name			
			Prepared by	**Checked by**	**Reviewed by**	**Approved by**
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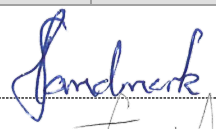
P. Landmark		29/04/2024
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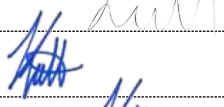
F. Macleod		30/04/2024
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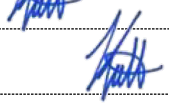
K. Halder		14/05/2024
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Abbreviations

Abbreviation	Name
ANZECC LDW	ANZECC 2000 Livestock Drinking Water
BDL	Below the detection limit
cfu	Colony-forming unit
COD	Chemical Oxygen Demand
DWSNZ GVs	Drinking Water Standards for New Zealand - Guideline Values for aesthetic determinants
DWSNZ MAVs	Drinking Water Standards for New Zealand – Maximum Acceptable Values
EC	Electrical Conductivity
HDC	Horowhenua District Council
Hg	Soluble mercury
HRC	Horizons Regional Council
mbgl	Metres below ground level
NH_3-N	Ammoniacal-nitrogen
NO_3-N	Nitrate nitrogen
ppm	Parts per million
$scBOD_5$	Soluble carbonaceous Biochemical Oxygen Demand (5-day)

Executive Summary

Horowhenua District Council (HDC) is required to carry out quarterly compliance monitoring of groundwater and monthly sampling at selected surface water monitoring locations at the Levin Landfill, as part of the conditions of Resource Consents ATH-2002003982.03 (formerly DP6009), ATH-2002003983.02 (formerly DP6010), ATH-2002003984.02 (formerly DP6011) and ATH-2002009801.02 (formerly DP102259). This report summarises the findings for the monitoring events from the fourth quarter (i.e., February 2024 to April 2024) sampling round and includes results for:

- Background (natural) groundwater (Bores G1S and G1D)
- Landfill leachate (manhole next to leachate pond)
- Groundwater bores, down-gradient of the new landfill (Bores D1, D2, D3rs, D4, D5, D6 and E1S)
- Groundwater bores within the old irrigation area (Bores F1, F2 and F3)
- Shallow aquifers, down-gradient of the old landfill (Bores B1, B2, B3s, C2, C2DS, E2S, G2s, Xs1 and Xs2)
- The deep aquifer (Bores C2DD, D3rd, E1D, E2D and Xd1)
- The Northern Farm Drain (TD1), and
- The Hokio Stream (HS1A, HS1, HS2 and HS3).

Stantec has reviewed the results of this fourth quarter monitoring round on behalf of HDC.

Monitoring results for other aspects of the landfill operations such as for air quality, odour, and stormwater quality are reported annually, as per resource consent requirements.

Samples were collected from 27 groundwater bores from around Levin Landfill during April 2024, and landfill leachate was sampled at a manhole next to the leachate pond. Additionally, five surface water sites were each sampled during February 2024, March 2024, and April 2024. All samples were analysed for the parameters set out in ATH-2002003983.02, and as listed in the results tables presented in this report.

For many of the samples taken during the April 2024 quarter, and particularly for the surface water samples, the recorded time between sampling and reception at the laboratory was longer than the normally accepted timeframe of <24 hours, and on some occasions was close to 3.5 days. The groundwater bore samples were practically all delivered within the accepted timeframe, but two samples had recorded sampling times that were nonsensical, one being in the early morning hours, and the other being recorded ostensibly after it was delivered to the laboratory. These matters will need to be followed up with the sampling contractor and the laboratory.

The resource consent for the landfill (namely, ATH-2002003983.02) establishes compliance limits for the quality of deeper and shallow groundwater which are based upon the Drinking Water Standards for New Zealand – Maximum Acceptable Values (DWSNZ MAVs), Guideline Values for aesthetic determinants (DWSNZ GVs), and the ANZECC 2000 Livestock Drinking Water (ANZECC LDW) trigger values, respectively. Compliance limits for surface water are based on the ANZECC 2000[1] default guideline values (DGV) for 95th percentile species protection for toxicants in freshwater, as required by the revised Resource Consent condition approved in December 2019.

The February 2024 to April 2024 monitoring results have been assessed against these limits, where they are applicable.

Twenty-seven non-compliances with resource consent conditions were recorded across nine monitoring locations, as follows:

- *E. coli* at Xd1 was detected at a level of 3 cfu/100mL which exceeds the DWSNZ MAV of NIL. This is not an unusual occurrence for this bore.
- Dissolved arsenic exceeded the DWSNZ MAV of 0.01 mg/L at bore D3rd (0.019 mg/L). This is characteristic of D3rd.
- Dissolved manganese concentrations exceeded the DWSNZ MAV of 0.4 mg/L in bores C2DD (0.65 mg/L), E2D (0.458 mg/L), Xd1 (0.497 mg/L) and D3rd (0.5 mg/L). The results are within the historical range of concentrations observed. Dissolved manganese is generally elevated in the deep aquifer bores.
- Nitrate-N at TD1 in February 2024 (0.82 mg/L), March 2024 (2.0 mg/L) and April 20234 (0.31 mg/L) exceeded the ANZECC (95%ile) DGV of 0.16 mg/L. This site has commonly presented elevated levels.

[1] Now superseded by the Australian and New Zealand Water Quality Guidelines 2018 (ANZG 2018), however the ANZECC 2000 guideline values are applied in accordance with the resource consent.

- Ammoniacal-N at TD1 in February 2024 (15.4 mg/L), March 2024 (24.9 mg/L), and April 2024 (11.9 mg/L) exceeded the ANZECC (95%ile) DGV of 2.1 mg/L.ScBOD$_5$ exceeded the ANZECC (95%ile) DGV and consent trigger value of 2 mg/L at HS2 in February 2024 with a value of 3 mg/L.
- Nitrate-N exceeded both the ANZECC (95%ile) DGV and consent trigger value of 0.16 mg/L at all Hokio Stream sites in February, March (except for HS1) and April 2024, with values ranging between 0.18 mg/L and 0.39 mg/L.
- Dissolved copper exceeded the ANZECC (95%ile) DGV and consent trigger value of 0.0014 mg/L at HS1A in February 2024 (0.0019 mg/L) and in April 2024 (0.0015 mg/L).
- Dissolved zinc exceeded the ANZECC (95%ile) DGV and consent trigger value of 0.008 mg/L at HS1A in February 2024 (0.012 mg/L).

The February 2024 to April 2024 results were also considered in the context of background water quality, both within the groundwater aquifers (shallow and deep bores) and the surface water receiving environment. For example, low pH at background bore G1S, and elevated iron concentrations in the same bore indicate that groundwater could be being impacted by up-gradient activities unrelated to the landfill operations.

There were sixteen occasions where the leachate effluent quality (at the leachate pond manhole sampling location) was outside of the ranges for typical leachate composition, as recorded generally at Class 1 landfills in New Zealand. Five of these outliers were for parameters having less concentration than the typical minimal concentrations**.** Note that leachate effluent is not subject to any consent limits. Typical leachate concentrations are derived from data originating from seven New Zealand landfills, dating back to between 1998 and 1999. Whilst this information is ostensibly dated, it is what is presented in the latest version of the WasteMINZ Guidelines.

Methane was detected in seven of the bores in April 2024, with the highest reading being at D6 (0.06%). The methane concentrations were well below the explosive limit of 5%, and therefore represent a ‘safe’ level. Methane is commonly detected at the landfill site, and its detection reinforces the need for sampling staff to take the necessary precautions for gas safety, generally applicable at landfill sites. Minor concentrations of carbon dioxide were recorded at all bores, with the highest being 0.2% at bore C2. Hydrogen sulphide was detected at bore Xs1 at 1 ppm.

The possibility of encountering methane (and hydrogen sulphide) in groundwater bores endorses the need for appropriate health and safety measures to be adopted during monitoring.

The following recommendations are made, based on the results of this reporting period:

- Overall, monitoring results at G1S indicate that it is likely modified or impacted by anthropogenic activities, and therefore may not be suitable to use as reliable ‘control’ location for background water quality in the future. This matter should be reviewed as part of the Annual Report.
- Nitrate-N levels at D6 were the maximum value recorded to date, and maximum values were also reached for conductivity, hardness, calcium, magnesium, and potassium. Whilst all levels are below the ANZECC LDW trigger values, it is a matter to keep a check on and may merit an assessment in the future to try and identify the cause.
- *E. coli* at Xd1 was detected at a level of 3 cfu/100mL which exceeded the DWSNZ MAV of NIL. Whilst this is not an unusual occurrence for this bore which has shown presence of *E. coli* since monitoring began, it is recommended that the site be inspected to determine if there is evidence of stock or other animals getting next to the bore.
- Consecutive monthly sampling has occurred at all Hokio Stream sites for since October 2021. It is recommended that HDC assess the results of these 31 sampling events, as required by the conditions of the consent, to determine the significance of the results, and to ascertain, in conjunction with HRC, if a reduction in sampling frequency can be made. If it is permitted for the sampling frequency to be reduced to quarterly, then it is also proposed that the sampling frequency at the Northern Farm Drain (TD1) and the manhole next to the leachate pond be similarly reduced.

1 Introduction

Horowhenua District Council (HDC) first commissioned Stantec New Zealand (then Montgomery Watson) to carry out environmental reporting for the discharge consent monitoring undertaken at the Levin Landfill site in the early 2000s. Monitoring has been undertaken by contractors every three months at 33 locations, as required by the resource consent conditions (namely for discharge permit ATH-2002003983.02). These sampling locations consist of 27 boreholes penetrating the sand and gravel aquifers; four surface water sampling locations within Hokio Stream; one surface sampling location along the Northern Farm Drain (previously referenced as the Tatana Drain), and one leachate sampling point, as shown in the Site Plan in Appendix A.

The Levin Landfill site is comprised of two landfills: one old, closed, and unlined landfill and one new, lined landfill that has now been closed for the disposal of municipal solid waste. The new landfill footprint was developed in stages. The most recent stage was Stage 3C which was developed in 2017, though landfill operations have, until the end of October 2021, occurred over the top of Stages 1A, 2 and 3C. The current landfill has reached capacity and has been capped with a permanent clay capping (0.7 m thick) on all sides.

The Levin Landfill site is located above two identified aquifers, a shallow sand aquifer and a deeper gravel aquifer. The shallow aquifer is unconfined, has a low to moderate permeability, and flows in a northerly direction. The deeper gravel aquifer is a confined to semi-confined aquifer. Horizons Regional Council hydrology staff advises that "*the general confined groundwater flow direction is towards the west*". Groundwater quality in the area is highly variable because of interaction with peat deposits that are prevalent in the area, localised effects such as from grazing activities, droppings from scavenging birds and from nitrogen-fixing plants such as gorse.

Since July 2010 groundwater has been tested for dissolved metals and nutrients, rather than for total concentrations of these parameters.

A review of the resource consent conditions was finalised in December 2019. Changes have been made to some of the surface water and groundwater monitoring conditions and HDC has acted on all the changes. Sampling since the January 2021 sampling round has been in line with previous monitoring, but different reference parameters have been applied to assess the surface water sampling results, as required by the current consent conditions.

This report presents the results for the February 2024 - April 2024 quarterly monitoring period.

Laboratory detection limits are provided for all test results which are attached in Appendix C.

2 Groundwater and Surface Water Monitoring

2.1 Sample Analyses

Surface water samples were collected by Downer (a contractor to HDC) on 12 February 2024, 18 and 19 March 2024, and 11 April 2024, with the samples being received by the Eurofins ELS Ltd laboratory in Lower Hutt, Wellington. The recorded timeframe between sample collection and laboratory reception varied between 6 and 84 hours, with most of the samples being delivered to the laboratory significantly longer than 24 hours after the samples were taken. Many of the laboratory sheets show samples being taken at night, which is strange and calls into question the accuracy of the sample time being recorded on the custody sheets.

Groundwater samples were collected by Downer on 8, 9, and 10 April 2024, with the samples being received by the Eurofins ELS Ltd laboratory in Lower Hutt, Wellington. All the laboratory sheets, except two, recorded a time of less than 24 hours between the sample being taken and it being accepted at the laboratory. The exceptions were sample Xd1, which was recorded as being sampled at 01.42am and delivered to the laboratory some 34 hours after this time, and sample Xs1, which had a recorded sample time that was after the recorded laboratory receipt time, which is nonsensical.

The monitoring schedule for July 2023 - April 2026 is summarised in Appendix B. From July 2019, *E. coli* counts analyses have been included within the indicator and comprehensive analytical suites, as agreed by HDC with Horizons Regional Council (HRC). This means that *E. coli* counts will be assessed more frequently throughout each year, as compared to the past monitoring regime.

Groundwater samples taken at each of the boreholes were analysed for the comprehensive list of parameters which is outlined in Table 2-1. Surface water samples from Hokio Stream, the Northern Farm Drain and the manhole next to the leachate pond, were also analysed for the comprehensive list of parameters.

Note that, following the revision of the resource consent conditions which were approved in December 2019, 5-day soluble carbonaceous Biochemical Oxygen Demand ($scBOD_5$) and soluble mercury (Hg) have each been added to the indicator and comprehensive suites of parameters, and *E. coli* added to the comprehensive suite of parameters. The $scBOD_5$ and *E. coli* parameters replace BOD_5 and faecal coliforms, respectively. Monitoring of these additional parameters began with the April 2020 sampling round.

Table 2-1: Test Parameters

Type	Indicator Parameters	Comprehensive Parameters
Physico-chemical characteristics	pH, Electrical Conductivity (EC)	pH, Electrical Conductivity (EC), Alkalinity, Total Hardness, Suspended Solids
Oxygen demand	Chemical Oxygen Demand (COD), $scBOD_5$**	Chemical Oxygen Demand (COD), soluble carbonaceous Biochemical Oxygen Demand ($scBOD_5$**)
Nutrients*	Nitrate nitrogen (NO_3-N), Ammoniacal-nitrogen (NH_4-N)	Nitrate nitrogen (NO_3-N), Ammoniacal-nitrogen (NH_4-N), Dissolved Reactive Phosphorus (DRP), Sulphate (SO_4)
Metals*	Aluminium (Al), Manganese (Mn), Nickel (Ni), Lead (Pb), Mercury (Hg)**	Aluminium (Al), Arsenic (As), Cadmium (Cd), Chromium (Cr), Copper (Cu), Iron (Fe)***, Magnesium (Mg), Manganese (Mn), Nickel (Ni), Lead (Pb), Zinc (Zn), Mercury (Hg)**
Other elements	Boron (B), Chloride (Cl)	Boron (B), Calcium (Ca), Chloride (Cl), Potassium (K), Sodium (Na)***
Biological+	*E. coli*	*E. coli*
Organics	Not required	Total organic carbon, total phenols, volatile acids

Note:

*Analyses performed for nutrients and metals are for dissolved rather than total concentrations.

** $scBOD_5$ and Soluble Mercury added as per revised consent conditions for Discharge Permit ATH-2002003983.02, December 2019

*** Iron and sodium are tested at certain groundwater bores only.

+ Faecal coliforms added from July 2019 onwards (see Appendix B)

Those chemical constituents for which concentrations were below laboratory detection limits during the reporting period have had results set at 50% of the laboratory detection limit, which is then used to calculate a median value for annual reporting purposes. This is standard practice when dealing with chemical concentrations in water, where the constituent is not detected.

2.2 Background Groundwater Quality

The background (natural) quality of the groundwater water up-gradient from the landfill site is not subject to any consent conditions. However, for comparison purposes, both the ANZECC LDW trigger values and the DWSNZ guidelines are regularly used to benchmark the quality of water up-gradient from the landfill site.

Groundwater samples were collected from the two background bores situated hydraulically up-gradient from both the new and old landfills to the southeast of the site in April 2024 (bores G1S and G1D, see Site Plan, Appendix A). These two bores were constructed in late 2009 to sample background water quality from the two main hydrogeological units. Bore F3 is also included in the background table as it is near the southern boundary of the landfill site (and further west) and is unlikely to be impacted by landfill activities. A full laboratory report containing analytical results is presented in Appendix C and the historical graphs are presented in Appendix D.

The results for the April 2024 monitoring round are presented in Table 2-2.

For bore G1s the following results were outside the range of relevant guidelines:

- pH (6.5) was below the lower DWSNZ limit of 7.0.
- Dissolved aluminium (0.106 mg/L) exceeded the DWSNZ limit of 0.1 mg/L, which has occurred frequently in the past.
- Dissolved iron (1.79 mg/L) exceeded the DWSNZ limit of 0.2 mg/L, in line with historical reporting.

For bore G1d the following results was outside of the range of relevant guidelines:

- Dissolved iron (0.37 mg/L) exceeded the DWSNZ limit of 0.2 mg/L, which has usually occurred for this bore.

For bore F3 the following result was outside of the range of relevant guidelines:

- pH (6.9) was below the DWSNZ limit of 7.0.

E. coli was 'not detected' at any of the background monitoring locations, but it is noted that the laboratory detection level changed between sites – 1 cfu/100mL at G1D and 100 cfu/100mL at G1S and F3. While the DWSNZ MAV for *E. coli* is NIL, this guideline is only applicable to the deep aquifer bore G1D, whereas the ANZECC standard (100 cfu/100mL) is more appropriate for G1S and F3, given their shallow nature. Given this, the difference in laboratory detection limits between the bores are acceptable and compliant.

The monitoring results suggest that the quality of background groundwater may be being impacted by local ground conditions and/or activities up-gradient of the landfill. Background bore G1S consistently records elevated concentrations of a range of parameters. Elevated iron concentrations are likely to be related to hydrogeological conditions found at this site, and this phenomenon is common for groundwater in this area. Results dating to 2010 indicate that low pH values are representative of background water quality in the shallow sand aquifer, whereas the deep gravel aquifer frequently presents higher pH readings. Overall, monitoring results at G1S indicate that it is likely modified or impacted by anthropogenic activities, and therefore may not be suitable to use as reliable 'control' location for background water quality in the future. This matter should be reviewed as part of the Annual Report.

Table 2-2: Background Monitoring Results for April 2024

Determinant	Units	DWSNZ MAV	ANZECC LDW	G1S	G1D	F3
Sampling date				08/04/24	08/04/24	08/04/24
Water Level	mbgl	-	-	14.44	15.04	5.25
pH	pH units	7 to 8.5*	6 to 9	**6.5**	7.0	**6.9**
Suspended Solids	mg/l	-	-	13	8	*2.5*
Phenol	mg/l	-	-	*0.005*	*0.005*	*0.005*
VFA	mg/l	-	-	*2.5*	*2.5*	*2.5*

Determinant	Units	DWSNZ MAV	ANZECC LDW	G1S	G1D	F3
TOC	mg/L	-	-	25.7	1.8	1.1
Alkalinity	mg $CaCO_3$/L	-	-	70	61	52
Conductivity	mS/m	-	-	33.4	26.1	17.8
COD	mg/L	-	-	64	*7.5*	*7.5*
$scBOD_5$	mg/L	-	-	*0.5*	*0.5*	*0.5*
E. coli	CFU/100ml	NIL	100	*50*	*0.5*	*50*
Chloride	mg/L	250*	-	50.2	28.9	14.6
Nitrate-N	mg/L	11.3	90.3	0.01	*0.005*	1.62
Sulphate	mg/L	250*	1000	9.07	18.3	4.69
Ammoniacal-N	mg/L	1.17	-	0.04	0.1	*0.005*
Hardness	mg $CaCO_3$/L	200*	-	39	58	34
Calcium	mg/L	-	1000	7.3	8.9	5.2
Magnesium	mg/L	-	-	5.05	8.66	5.17
Potassium	mg/L	-	-	3.5	5.51	4.34
Sodium	mg/L	200*	-	55.3	33.6	24.9
D.R. Phosphorus	mg/L	-	-	0.097	0.035	0.151
Dissolved Aluminium	mg/L	0.1*	5	**0.106**	*0.001*	0.002
Dissolved Arsenic	mg/L	0.01	0.5	0.002	0.002	0.002
Dissolved Boron	mg/L	1.4	5	0.03	0.05	0.03
Dissolved Cadmium	mg/L	0.004	0.01	*0.0001*	*0.0001*	*0.0001*
Dissolved Chromium (VI)	mg/L	0.05	1	0.002	0.002	0.003
Dissolved Copper	mg/L	2	0.4	0.0072	*0.00025*	0.0011
Dissolved Iron	mg/L	0.2*	-	**1.79**	**0.37**	*0.005*
Dissolved Lead	mg/L	0.01	0.1	*0.00025*	*0.00025*	*0.00025*
Dissolved Manganese	mg/L	0.4	-	0.0355	0.0614	*0.00025*
Dissolved Mercury	mg/L	-	0.002	*0.00025*	*0.00025*	*0.00025*
Dissolved Nickel	mg/L	0.08	1	0.0014	*0.00025*	*0.00025*
Dissolved Zinc	mg/L	1.5*	20	*0.001*	*0.001*	0.003

Notes:

*denotes guideline values for aesthetic determinants (G.V.)

All `<' values have been reported as half the detection limit for statistical purposes and are *expressed in italics*

Values which exceeded the DWSNZ MAV are shown in **bold**

2.3 Groundwater Quality Hydraulically Down-Gradient of the New Landfill

Monitoring is carried out within the two main hydrogeological units for bores hydraulically up-gradient of the old landfill and hydraulically down-gradient of the new landfill.

2.3.1 Shallow Aquifer

Bores D1, D2, D3rs, D4, D6, and E1S (Refer to Site Plan, Appendix A) are located hydraulically up-gradient of the old landfill, but down-gradient of the new landfill. This means they are not influenced by potential leaching from the old landfill and can act as a warning system for any leaching from the new landfill.

Borehole D5 is located at the south-western corner of the site and is expected to provide an indication of shallow background groundwater quality because it is unlikely to be influenced by either landfill.

It is considered unlikely that leachate from the new landfill would significantly affect groundwater quality due to the leachate collection system which is in place at the new landfill; however, these bores would still provide early warning of any potential problems. It is noted that bore D3r was replaced in June 2021 with two bores; D3rs, which is a shallow bore and D3rd, which is a deep bore. Both have been sampled from October 2021 onwards. It is also noted that new bores D3rs and D3rd are required to be monitored for the comprehensive suite of parameters for the first two years following installation.

The results from the April 2024 monitoring round for these bores are presented in Table 2-3 and the results have been compared with the ANZECC LDW trigger values as per the consent conditions. The full laboratory report is included in Appendix C and the historical graphs are presented in Appendix D.

There were **no exceedances of the resource consent conditions during the quarterly (April 2024)** monitoring round in samples from the shallow aquifer.

It is noted, however, that for some inexplicable reason dissolved arsenic was not tested for bores D3rs, D4, D6 and E1s. The maximum recorded value for arsenic at any of these bores is 0.005 mg/L, which is significantly lower than the ANZECC LDW trigger value of 0.5 mg/L. So, this oversight is minor.

It is further noted that the nitrate-N levels at D6 were 50.3 mg/L, which is the maximum value recorded to date. In the same sampling round, maximum values were also reached for conductivity, hardness, calcium, magnesium, and potassium. Whilst all levels are below the ANZECC LDW trigger values, it is a matter to keep a check on and may merit an assessment in the future to try and identify the cause. In the past this was explained because of the presence of nitrogen fixing gorse plants. A website search indicated that it has been recorded that pine trees can also accumulate nitrogen in the soil, so it is possible that the groundwater around bore D6 has been affected by the nearby pine trees.

Table 2-3: D-Series and E1S Monitoring Bore Results for April 2024

Determinant	Units	ANZECC LDW	D1	D2	D3rs	D4	D5	D6	E1S
Sampling date			09/04/24	09/04/24	09/04/24	09/04/24	08/04/24	09/04/24	09/04/24
Water Level	mbgl	-	16.82	21.36	6.14	8.12	9.8	16.42	11.37
pH	pH units	6 to 9	6.5	6.3	6.3	7.0	6.9	6.6	7.0
Suspended Solids	mg/l	-	*2.5*	53	6	*2.5*	*2.5*	*2.5*	*2.5*
Phenol	mg/l	-	*0.005*	*0.005*	*0.005*	*0.005*	*0.005*	*0.005*	*0.005*
VFA	mg/l	-	*2.5*	*2.5*	*2.5*	*2.5*	*2.5*	*2.5*	*2.5*
TOC	mg/L	-	1.1	16.3	21.9	4	1.9	1.1	3.5
Alkalinity	mg $CaCO_3$/L	-	200	187	80	83	73	68	69
Conductivity	mS/m	-	58	67.8	22	27.4	28.8	73.8	24.3
COD	mg/L	-	*7.5*	51	63	28	*7.5*	*7.5*	44
$scBOD_5$	mg/L	-	*0.5*	*1.5*	2	*0.5*	*0.5*	*0.5*	*0.5*
E. coli	CFU/100ml	100	*50*	*50*	*50*	*50*	*50*	*50*	*50*
Chloride	mg/L	-	34.8	94.4	15.8	29.8	27.3	56.6	27.1
Nitrate-N	mg/L	90.3	6.17	*0.005*	*0.05*	*0.005*	1.18	50.3	*0.005*
Sulphate	mg/L	1000	17.9	6.15	0.81	5.61	18	7.85	6.87
Ammoniacal-N	mg/L	-	*0.005*	0.76	0.75	0.24	*0.005*	*0.005*	0.18
Hardness	mg $CaCO_3$/L	-	166	160	43	49	73	186	46
Calcium	mg/L	1000	29.4	26.8	9	9.2	12.3	32.2	7.4
Magnesium	mg/L	-	22.5	22.6	4.89	6.34	10.3	25.7	6.62
Potassium	mg/L	-	12.4	11.7	4.61	5.63	6.85	10.6	5.63
Sodium	mg/L	-	46.3	42.4	23	28.8	23.5	39.2	24.9
D.R. Phosphorus	mg/L	-	0.089	0.033	0.082	0.052	0.107	0.078	0.087
Dissolved Aluminium	mg/L	5	*0.001*	*0.001*	0.055	0.003	0.002	*0.001*	0.005
Dissolved Arsenic	mg/L	0.5	0.001	*0.0005*	n/p	n/p	*0.0005*	n/p	n/p
Dissolved Boron	mg/L	5	0.05	0.04	0.03	*0.015*	0.05	0.06	*0.015*
Dissolved Cadmium	mg/L	0.01	*0.0001*	*0.0001*	*0.0001*	*0.0001*	*0.0001*	*0.0001*	*0.0001*
Dissolved Chromium (VI)	mg/L	1	*0.0005*	*0.0005*	0.003	*0.0005*	*0.0005*	*0.0005*	*0.0005*

Determinant	Units	ANZECC LDW	D1	D2	D3rs	D4	D5	D6	E1S
Dissolved Copper	mg/L	0.4	*0.00025*	*0.00025*	*0.00025*	*0.00025*	0.0007	*0.00025*	*0.00025*
Dissolved Iron	mg/L	-	*0.005*	11.4	14.8	1.9	0.01	*0.005*	3.54
Dissolved Lead	mg/L	0.1	*0.00025*	*0.00025*	*0.00025*	*0.00025*	*0.00025*	*0.00025*	0.0009
Dissolved Manganese	mg/L	-	0.0007	0.607	0.382	0.207	0.0051	0.0015	0.183
Dissolved Mercury	mg/L	0.002	*0.00025*	*0.00025*	*0.00025*	*0.00025*	*0.00025*	*0.00025*	*0.00025*
Dissolved Nickel	mg/L	1	*0.00025*	*0.00025*	*0.00025*	*0.00025*	*0.00025*	*0.00025*	*0.00025*
Dissolved Zinc	mg/L	20	0.011	0.005	0.004	*0.001*	*0.001*	0.004	*0.001*

Notes:

'ND' indicates where *E. coli* were not detected at or above the laboratory detection limit

All `<' values have been reported as half the detection limit for statistical purposes and are expressed in italics

n/p – not provided

2.3.2 Deep Gravel Aquifer

Bores E1D, C2DD, E2D, Xd1, and the new replacement bore D3rd all penetrate the deeper gravel aquifer. Deep groundwater flow is assumed to be towards the northwest.

Boreholes E2D and C2DD are located to the north-northwest of both the landfills and are therefore considered to be hydraulically down-gradient of both landfills.

Borehole E1D is located to the southwest of the old landfill and it is therefore considered that this bore would be unlikely to be affected by either landfill.

Bore Xd1 was installed in late 2020 as a requirement of the reviewed resource consent conditions (December 2019). It is located on the western boundary of the site and slightly downstream of the old landfill.

Results for the quarterly (April 2024) compliance monitoring round are presented in Table 2-4. The results have been compared with the DWSNZ as per the requirements of discharge consent ATH-2002003983.02. The full laboratory report is included in Appendix C and the historical graphs are presented in Appendix D.

There were **six exceedances of the DWSNZ limits** in samples from the deep gravel aquifer during the April 2024 monitoring round, as follows:

- *E. coli* at Xd1 was detected at a level of 3 cfu/100mL which exceeds the DWSNZ MAV of NIL. This is not an unusual occurrence for this bore which has shown presence of *E. coli* since monitoring began in April 2021. It is recommended that the site be inspected to determine if there is evidence of stock or other animals getting next to the bore.
- Dissolved arsenic exceeded the DWSNZ MAV of 0.01 mg/L at bore D3rd (0.019 mg/L). This is characteristic of D3rd with the levels varying between 0.017 and 0.022 mg/L on all sampling occasions.
- Dissolved manganese concentrations exceeded the DWSNZ MAV of 0.4 mg/L in bores C2DD (0.65 mg/L), E2D (0.458 mg/L), Xd1 (0.497 mg/L) and D3rd (0.5 mg/L). The results for C2DD and E2D (from 1997), Xd1 (from March 2021 when sampling started), and D3rd (from October 2021 when sampling started) are within the historical range of concentrations observed. Dissolved manganese is generally elevated in the deep aquifer bores.

Table 2-4: Results for Monitoring Bores within the Deep Aquifer for April 2024

Determinant	Units	DWSNZ MAV	E1D	C2DD	E2D	Xd1	D3rd
Sampling date			08/04/24	08/04/24	09/04/24	10/04/24	09/04/24
Water Level	mbgl	-	11.31	2.975	4.87	3.3	6.49
pH	pH units	7 to 8.5*	7.5	7.3	7.4	7.4	7.5
Suspended Solids	mg/l	-	72	7	*2.5*	6	*2.5*
Phenol	mg/l	-	*0.005*	*0.005*	*0.005*	*0.005*	*0.005*
VFA	mg/l	-	*2.5*	*2.5*	*2.5*	*2.5*	*2.5*
TOC	mg/L	-	2.9	5.5	2.7	4.3	5.8
Alkalinity	mg $CaCO_3$/L	-	164	241	161	184	223
Conductivity	mS/m	-	44.1	59.3	44.2	53.4	53.2
COD	mg/L	-	*7.5*	20	*7.5*	*7.5*	*7.5*
$scBOD_5$	mg/L	-	*0.5*	*0.5*	*0.5*	*0.5*	*0.5*
E. coli	CFU/100ml	NIL	*0.5*	*0.5*	*0.5*	**3**	*0.5*
Chloride	mg/L	250*	39.4	43.8	41.8	57.8	32.6
Nitrate-N	mg/L	11.3	*0.005*	*0.005*	*0.005*	*0.005*	*0.005*
Sulphate	mg/L	250*	*0.01*	0.08	*0.01*	*0.01*	*0.01*
Ammoniacal-N	mg/L	1.17	0.2	0.35	0.23	0.38	0.37
Hardness	mg $CaCO_3$/L	200*	146	197	116	134	186
Calcium	mg/L	-	34.9	46.6	24.8	31	53
Magnesium	mg/L	-	14.3	19.7	13.1	13.8	13
Potassium	mg/L	-	5.08	7.21	6.45	5.06	6.37
Sodium	mg/L	200*	43.1	51.5	39.5	44	20.4
D.R. Phosphorus	mg/L	-	0.421	0.663	0.612	0.115	1.14
Dissolved Aluminium	mg/L	0.1*	*0.001*	0.012	*0.001*	*0.001*	0.003
Dissolved Arsenic	mg/L	0.01	0.007	0.004	0.001	*0.0005*	**0.019**
Dissolved Boron	mg/L	1.4	0.07	0.1	0.04	0.07	*0.015*
Dissolved Cadmium	mg/L	0.004	*0.0001*	*0.0001*	*0.0001*	*0.0001*	*0.0001*
Dissolved Chromium (VI)	mg/L	0.05	0.002	0.002	*0.0005*	*0.0005*	*0.0005*
Dissolved Copper	mg/L	2	*0.00025*	0.0014	*0.00025*	*0.00025*	*0.00025*
Dissolved Iron	mg/L	0.2*	0.03	0.13	0.03	0.03	0.03
Dissolved Lead	mg/L	0.01	*0.00025*	*0.00025*	*0.00025*	*0.00025*	*0.00025*
Dissolved Manganese	mg/L	0.4	0.209	**0.65**	**0.458**	**0.497**	**0.5**
Dissolved Mercury	mg/L	-	*0.00025*	*0.00025*	*0.00025*	*0.00025*	*0.00025*
Dissolved Nickel	mg/L	0.08	*0.00025*	0.0008	*0.00025*	*0.00025*	*0.00025*
Dissolved Zinc	mg/L	1.5*	0.003	0.009	0.003	*0.001*	*0.001*

Notes:

*denotes guideline values for aesthetic determinants (G.V.)

Bold – denotes an exceedance of the DWSNZ MAV

All `<' values have been reported as half the detection limit for statistical purposes and are expressed in italics

2.4 Impact of Old Landfill on Groundwater Quality

Water sampling is carried out to characterise the groundwater quality in a series of shallow bores situated hydraulically down-gradient from the old unlined landfill.

The Series B boreholes are located within 50m of the old landfill in a line along its northern edge.

The Series C boreholes are located further down the hydraulic gradient from the old landfill towards Hokio Beach Road to detect whether leachate is moving off site.

Borehole E2S is located northwest of the old landfill to detect any leachate moving directly towards the nearest house down-stream of the site.

Bore G2S was installed in late 2009 and is located to the north of the landfill site, hydraulically down-gradient of the old landfill by Hokio Road and the entrance road to the landfill.

Bores Xs1 and Xs2 are located along Hokio Beach Road, within the road reserve. Bore Xs1 is adjacent to the Northern Farm property and bore Xs2 is next to the driveway leading to a Council-owned property. Bore Xs2 is hydraulically upgradient of the old landfill (See Site Plan, Appendix A).

The results from the quarterly (April 2024) consent monitoring round for these bores are presented in Table 2-5 and have been compared with the ANZECC LDW trigger values as per the requirements of discharge consent ATH-2002003983.02. The full laboratory report is included in Appendix C and the historical graphs are presented in Appendix D.

For some inexplicable reason dissolved arsenic was not tested for bore E2s. The maximum recorded value for arsenic at this bore is 0.004 mg/L, which is significantly lower than the ANZECC LDW trigger value of 0.5 mg/L. So, this oversight is minor.

There were **no exceedances of the ANZECC LDW trigger values** during the April 2024 monitoring round.

Table 2-5: Monitoring Results for Shallow Boreholes Down-Gradient from the Old Landfill for April 2024

Determinant	Units	ANZECC LDW	E2S	B1	B2	B3s	C1	C2	C2DS	G2S	Xs1	Xs2
Sampling date			09/04/24	10/04/24	10/04/24	10/04/24	10/04/24	10/04/24	10/04/24	08/04/24	11/04/24	10/04/24
Water level	mbgl	-	4.73	1.325	1.61	0.23	1.35	0.49	2.95	2.45	0.48	2.53
pH	pH units	6 to 9	7.7	6.9	6.8	7.0	6.8	6.9	6.7	6.7	6.8	6.6
Suspended Solids	mg/l	-	16	178	201	454	43	173	118	11	76	19
Phenol	mg/l	-	*0.005*	*0.005*	*0.005*	*0.005*	*0.005*	*0.005*	*0.005*	*0.005*	*0.005*	*0.005*
VFA	mg/l	-	*2.5*	*2.5*	*2.5*	*2.5*	*2.5*	*2.5*	*2.5*	*2.5*	*2.5*	*2.5*
TOC	mg/l	-	2.1	27.6	45.3	69.1	21.8	48.8	31	9.7	27	2.5
Alkalinity	mg $CaCO_3$/L	-	92	677	1180	1310	380	1300	918	324	592	65
Conductivity	mS/m	-	33.6	217	265	280	120	292	193	106	143	22.4
COD	mg/L	-	*7.5*	145	102	411	88	43	73	41	54	*7.5*
scBOD5	mg/L	-	*0.5*	*0.5*	1	2	*0.5*	1	1	*0.5*	2	*0.5*
E. coli	CFU/100ml	100	*50*	*50*	*50*	*50*	*50*	*50*	*50*	*50*	*50*	*50*
Chloride	mg/L	-	40.2	286	173	119	137	160	110	140	130	21.3
Nitrate-N	mg/L	90.3	*0.005*	*0.005*	0.25	*0.05*	0.07	*0.05*	*0.005*	*0.005*	0.02	0.73
Sulphate	mg/L	1000	13.4	4.05	19.8	0.21	26.4	0.19	0.04	11.6	0.04	7.61
Ammoniacal-N	mg/L	-	0.3	29.1	90.6	184	13.5	185	1.85	0.03	14	0.01
Hardness	mg $CaCO_3$/L	-	76	309	529	307	180	282	678	224	379	58
Calcium	mg/L	1000	20.5	54.7	128	54.7	33.5	51.3	148	40.5	70	11.1
Magnesium	mg/L	-	6.13	41.8	50.9	41.3	23.4	37.3	74.8	30	49.6	7.25
Potassium	mg/L	-	5.71	41.7	126	109	26.5	82.2	15.8	10.5	29.6	5.44
Sodium	mg/L	-	27	250	105	100	129	136	101	156	92.1	18
D. R. Phosphorus	mg/L	-	0.233	0.112	0.018	0.026	0.014	0.013	0.041	0.022	0.018	0.015
Dissolved Aluminium	mg/L	5	0.003	0.021	0.010	0.006	0.023	0.019	*0.001*	0.005	0.003	0.01
Dissolved Arsenic	mg/L	0.5	n/p	0.001	0.004	0.028	0.001	0.002	0.001	*0.0005*	*0.0005*	*0.0005*
Dissolved Boron	mg/L	5	*0.015*	2.38	2.26	1.59	0.87	1.72	0.89	0.79	0.57	0.04
Dissolved Cadmium	mg/L	0.01	*0.0001*	*0.0001*	*0.0001*	0.0003	*0.0001*	*0.0001*	*0.0001*	*0.0001*	*0.0001*	*0.0001*
Dissolved Chromium (VI)	mg/L	1	*0.0005*	0.002	0.001	0.004	*0.0005*	0.002	*0.0005*	*0.0005*	0.001	*0.0005*
Dissolved Copper	mg/L	0.4	*0.00025*	0.0276	0.0050	0.0491	0.0011	0.0023	*0.00025*	0.0073	*0.00025*	0.0011
Dissolved Iron	mg/L	-	0.07	0.08	0.11	0.36	1.74	0.48	2.54	0.06	4.39	0.06

Determinant	Units	ANZECC LDW	E2S	B1	B2	B3s	C1	C2	C2DS	G2S	Xs1	Xs2
Dissolved Lead	mg/L	0.1	*0.00025*	*0.00025*	*0.00025*	*0.00025*	*0.00025*	*0.00025*	*0.00025*	*0.00025*	*0.00025*	*0.00025*
Dissolved Manganese	mg/L	-	0.251	4.78	6.48	3.97	0.257	0.127	2.93	0.22	0.698	0.126
Dissolved Mercury	mg/L	0.002	*0.00025*	*0.00025*	*0.00025*	*0.00025*	*0.00025*	*0.00025*	*0.00025*	*0.00025*	*0.00025*	*0.00025*
Dissolved Nickel	mg/L	1	*0.00025*	0.0077	0.0034	0.009	0.0011	0.0063	0.0027	0.0031	0.0025	*0.00025*
Dissolved Zinc	mg/L	20	0.002	0.02	0.012	0.006	0.006	0.022	0.003	0.009	0.004	0.016

Notes:

All `<' values represent a non-detection and have been reported as half the detection limit for statistical purposes and are expressed in italics

n/p – not provided

2.5 Groundwater Quality Down-Gradient of the Irrigation Area

The F-series boreholes intersect the shallow aquifer down-gradient of the area that was used to irrigate leachate from 2004 to October 2008. All leachate is now pumped to the Levin Wastewater Treatment Plant. The F1 borehole is located within the area where leachate from the new landfill was irrigated. The F2 and F3 boreholes are in an area that was set aside for leachate irrigation but was never used for that purpose. It is expected that bores F2 and F3 would therefore be representative of background groundwater quality.

The results from the F series boreholes are presented in Table 2-6 and have been compared with the ANZECC LDW trigger values, as per discharge consent ATH-2002003983.02. The full laboratory report is included in Appendix C and the historical graphs are presented in Appendix D.

There were **no exceedances of the resource consent conditions** in samples from these bores during the April 2024 (quarterly) monitoring round.

Table 2-6: Results from Monitoring Bores in the Irrigation Area for April 2024

Determinant	Units	ANZECC LDW	F1	F2	F3
Sampling Date			08/04/24	08/04/24	08/04/24
Water level	mbgl	-	8.15	2.84	5.25
pH	pH units	6 to 9	6.7	7.0	6.9
Suspended Solids	mg/l	-	*2.5*	7	*2.5*
Phenol	mg/l	-	*0.005*	*0.005*	*0.005*
VFA	mg/l	-	*2.5*	*2.5*	*2.5*
TOC	mg/l	-	4.4	1.5	1.1
Alkalinity	mg CaCO3/L	-	134	57	52
Conductivity	mS/m	-	49.3	22.2	17.8
COD	mg/L	-	*7.5*	*7.5*	*7.5*
scBOD5	mg/L	-	*0.5*	*0.5*	*0.5*
E. coli	CFU/100ml	100	*50*	*50*	*50*
Chloride	mg/L	-	62.6	23.3	14.6
Nitrate-N	mg/L	90.3	2.9	0.38	1.62
Sulphate	mg/L	1000	2.97	11.3	4.69
Ammoniacal-N	mg/L	-	*0.005*	*0.005*	*0.005*
Hardness	mg CaCO3/L	-	166	41	34
Calcium	mg/L	1000	24	6.5	5.2
Magnesium	mg/L	-	25.8	5.94	5.17
Potassium	mg/L	-	8.2	5.12	4.34
Sodium	mg/L	-	40.6	25	24.9
D. R. Phosphorus	mg/L	-	0.161	0.144	0.151
Dissolved Aluminium	mg/L	5	0.009	0.004	0.002
Dissolved Arsenic	mg/L	0.5	0.002	0.002	0.002
Dissolved Boron	mg/L	5	0.04	0.05	0.03
Dissolved Cadmium	mg/L	0.01	*0.0001*	*0.0001*	*0.0001*
Dissolved Chromium (VI)	mg/L	1	0.001	0.003	0.003
Dissolved Copper	mg/L	0.4	0.0021	0.0071	0.0011
Dissolved Iron	mg/L	-	0.01	0.03	*0.005*
Dissolved Lead	mg/L	0.1	*0.00025*	*0.00025*	*0.00025*
Dissolved Manganese	mg/L	-	0.0096	0.012	*0.00025*
Dissolved Mercury	mg/L	0.002	*0.00025*	*0.00025*	*0.00025*
Dissolved Nickel	mg/L	1	0.0006	0.0006	*0.00025*

Determinant	Units	ANZECC LDW	F1	F2	F3
Dissolved Zinc	mg/L	20	0.005	0.002	0.003

Notes:

All `<' values have been reported as half the detection limit for statistical purposes and are *expressed in italics*

2.6 Leachate Effluent Results

Leachate effluent from the landfill is not subject to any water quality consent conditions and is sent to the Levin Wastewater Treatment Plant for treatment. However, for comparison purposes, typical leachate characteristics for landfills, as published by the Waste Management Institute New Zealand (*Technical Guidelines for Disposal to Land*, September 2023, WasteMINZ), have been compared against the leachate quality monitoring results (Table 2-7). The full laboratory report is included in Appendix C and the historical graphs are presented in Appendix D

As stated, typical leachate concentrations are derived from tables presented in the WasteMINZ *Technical Guidelines*. The data in those tables originate from seven landfills in New Zealand and date back to between 1998 and 1999. Whilst more updated data could be sought for comparison purposes, the WasteMINZ Guidelines are the latest version, and no updated information has been provided.

Table 2-7 presents the concentrations of monitored parameters for leachate effluent samples collected in February 2024, March 2024, and April 2024.

Up until April 2022, samples of leachate were tested monthly for the comprehensive suite of parameters, as stated in Table C under condition 3H of discharge permit ATH-2002003983.02. This requirement was for 2 years and condition 3P of discharge permit ATH-2002003983.02 allows the monitoring frequency to shift to a conditional sampling frequency (i.e., six monthly comprehensive, quarterly indicator) if water sample analysis results are consistent and there is no decline in water quality over a period of at least four consecutive sampling rounds. The quality of leachate is considered to have met these criteria and so the change in monitoring from April 2022 was justified. The resource consent conditions allowed this change to occur immediately after the four consecutive sampling rounds were completed. However, it was later decided to continue monthly sampling for the duration that monthly sampling at Hokio Stream was required.

There were **sixteen outliers** from the typical leachate characteristics in the February 2024, March 2024, and April 2024 results. Five of these were for parameters having **less** concentration than the typical minimal concentrations**.**

- TOC exceeded the maximum typical concentration in all three months.
- Alkalinity exceeded the maximum typical concentration in all three months.
- Conductivity was less than the minimum typical concentration in February 2024.
- Nitrate-N was less than the minimum typical concentration in March 2024.
- Ammonia-N exceeded the maximum typical concentration in February 2024 and April 2024.
- Dissolved arsenic exceeded the maximum typical concentration in all three months.
- Dissolved cadmium was not detected in all three months and was therefore less than the minimum typical concentrations.

While these results are not reflective of typical conditions at other, similar landfills around New Zealand, it is noted that they are generally consistent with the historical range of results observed at the Levin Landfill site.

Table 2-7: Results from Leachate Effluent Monitoring for February 2024, March 2024, and April 2024

Determinant	Units	Typical Leachate Characteristics* (range)	February 2024	March 2024	April 2024
Sampling Date			12/02/2024	18/03/2024	11/04/24
pH		5.9 - 8.5	7.8	7.9	7.6
Suspended Solids	mg/l	-	89	91	48
Phenol	mg/L	-	n/p	n/p	n/p
VFA	mg/L	-	*2.5*	*2.5*	*2.5*
TOC	mg/L	17.2 - 822	**882**	**828**	**823**
Alkalinity	mg $CaCO_3$/L	264 – 6,820	**7,000**	**6,830**	**7,680**
Conductivity	mS/m	308 – 27,900	**1.9**	1,860	1,900
COD	mg/L	84 – 5,090	3,000	3,910	362

Determinant	Units	Typical Leachate Characteristics* (range)	February 2024	March 2024	April 2024
$scBOD_5$	mg/L	12 – 3,867	94	109	119
E-Coli	CFU/100mL	-	*50*	100	*50*
Chloride	mg/L	45 – 2,584	1,280	1,120	1,180
Nitrate-N	mg/L	0.1 – 50**	*0.5*	***0.05***	0.5
Sulphate	mg/L	1 - 780	27.2	81.8	43.7
Ammonia-N	mg/L	3.4 – 1,440	**1,530**	1,410	**1,520**
Hardness	mg $CaCO_3$/L	300 – 11,500**	458	451	471
Calcium	mg/L	20 – 600***	84.6	86.2	92.9
Magnesium	mg/L	40 – 350***	59.8	57.2	57.9
Potassium	mg/L	10 – 2,500**	714	622	747
Sodium	mg/L	50 – 4,000**	1,120	958	1,090
D.R. Phosphorus	mg/L	-	15.2	13.3	14.2
Dissolved Aluminium	mg/L	-	0.84	0.816	1.08
Dissolved Arsenic	mg/L	0.006 – 0.191	**0.264**	**0.283**	**0.246**
Dissolved Boron	mg/L	0.54 – 20	7.24	7.57	7.74
Dissolved Cadmium	mg/L	0.0005 – 0.140**	***0.0001***	***0.0001***	***0.0001***
Dissolved Chromium	mg/L	0.005 – 50.4	0.78	0.905	0.799
Dissolved Copper	mg/L	0.004 – 1.4**	0.0096	0.0082	0.0078
Dissolved Iron	mg/L	1.6 – 220	8.12	7.98	7.52
Dissolved Lead	mg/L	0.001 - 0.42	0.0016	0.0022	0.0024
Dissolved Manganese	mg/L	0.03 - 45***	1.04	1.22	1.2
Dissolved Mercury	mg/L	0.0002 – 0.05**	*0.00025*	*0.00025*	*0.00025*
Dissolved Nickel	mg/L	0.02 – 2.05**	0.119	0.128	0.13
Dissolved Zinc	mg/L	0.015 – 24.2	0.053	0.079	0.1

Notes:

* for Class 1-type landfills, Table 5-5, p60, Technical Guidelines for Disposal to Land, WasteMINZ September 2023 (same as Table 4.2 of the CAE Landfill Guidelines 2000, but corrections made to Table 5-5 in line with Table 4.2)

**Data taken from Table 5-4, p59 of the same guideline, for parameters for which no differences in concentrations between the phases of landfill development could be observed

***Data taken from Table 5-4, p59 of the same guideline, for parameters during the methanogenic phase

Bold – denotes a deviation from the typical leachate characteristics range

All `<' values have been reported as half the detection limit for statistical purposes and are expressed in italics

n/p – not provided

2.7 Northern Farm Drain (Tatana Property)

A drain is located on the Northern Farm, previously known as the Tatana Property (see Site Plan in Appendix A). Since July 2015 HDC has agreed to sample surface water from this drain for a selection of parameters that were set by HRC. Four sampling points were selected to represent the top of the drain (SW1), middle of the drain (SW2 and SW3) and lower drain (SW4) respectively.

The revised consent conditions have since reduced the extent of sampling to a single location. This is known as 'TD1' and is the same sampling location as for the previously denoted 'SW3'. The resource consent conditions require six monthly comprehensive and quarterly indicator sampling at TD1. However, HDC has been conducting monthly sampling at TD1, in line with the surface water sampling of the Hokio Stream.

Results from the February 2024, March 2024 and April 2024 sampling rounds are presented in Table 2-8 and have been compared with the ANZECC[2] 95%ile DGVs, as per the revised resource consent conditions.

There have been **six exceedances of the resource consent conditions** for two monitored parameters in samples from the Northern Farm property at the TD1 location during the February 2024, March 2024, and April 2024 sampling rounds.

- The concentration of nitrate-N in February 2024 (0.82 mg/L), March 2024 (2.0 mg/L) and April 20234 (0.31 mg/L) exceeded the ANZECC (95%ile) DGV of 0.16 mg/L. This site has commonly presented elevated levels.
- The concentration of ammoniacal-N in February 2024 (15.4 mg/L), March 2024 (24.9 mg/L), and April 2024 (11.9 mg/L) exceeded the ANZECC (95%ile) DGV of 2.1 mg/L.

Whilst relatively high, these results are not uncharacteristic of results within the last two years. Localised conditions, such as having stock in the paddock next to Northern Farm Drain and the slow flow of water in the drain, may contribute to some of the elevated parameters.

Table 2-8 Northern Farm Drain Monitoring Results for February 2024, March 2024, and April 2024.

Determinant	Units	ANZECC DGV (95%ile species protection)	TD1 (formerly SW3)		
			February 2024	March 2024	April 2024
Sampling date			12/02/2024	18/03/2024	11/04/24
pH	pH units	-	7.4	7.8	7.3
Suspended Solids	mg/L	-	594	137	173
Phenol	mg/L	-	*0.005*	*0.005*	*0.005*
VFA	mg/L	-	*2.5*	*2.5*	*2.5*
TOC	mg/L	-	32.1	27.1	22.8
Alkalinity	mg $CaCO_3$/L	-	345	528	273
Conductivity	mS/m	-	92.8	136	82.5
COD	mg/L	-	196	255	37
scBOD5	mg/L	2	2	*1.5*	*0.5*
E-Coli	CFU/100ml	-	*50*	300	200
Chloride	mg/L	-	81.5	96.2	87.2
Nitrate-N	mg/L	0.16	**0.82**	**2.0**	**0.31**
Sulphate	mg/L	-	1.29	0.2	1.66
Ammoniacal-N	mg/L	2.1	**15.4**	**24.9**	**11.9**
Hardness	mg $CaCO_3$/L	-	183	311	231
Calcium	mg/L	-	39.1	72.8	51.1
Magnesium	mg/L	-	20.7	31.4	25.2
Potassium	mg/L	-	26.4	26.3	22.5
Sodium	mg/L	-	48.2	74.4	58.7
D.R. Phosphorus	mg/L	-	0.019	0.035	0.026
Dissolved Aluminium	mg/L	0.055	0.004	0.008	0.009
Dissolved Arsenic	mg/L	0.024	*0.0005*	0.001	0.001
Dissolved Boron	mg/L	-	0.33	0.52	0.35
Dissolved Cadmium	mg/L	0.0002	*0.0001*	*0.0001*	*0.0001*
Dissolved Chromium	mg/L	-	*0.0005*	0.002	*0.0005*
Dissolved Copper	mg/L	0.0014	*0.00025*	0.0009	*0.00025*
Dissolved Iron	mg/L	-	0.07	0.19	0.38
Dissolved Lead	mg/L	0.0034	*0.00025*	*0.00025*	*0.00025*

[2]Australian and New Zealand Guidelines for Fresh and Marine Water Quality - Aquatic Ecosystems (AE), Australian and New Zealand Environment and Conservation Council (ANZECC), Canberra, Australia, 2000

Determinant	Units	ANZECC DGV (95%ile species protection)	TD1 (formerly SW3)		
			February 2024	March 2024	April 2024
Dissolved Manganese	mg/L	1.9	0.0126	1.02	0.411
Dissolved Mercury	mg/L	0.0006	*0.00025*	*0.00025*	*0.00025*
Dissolved Nickel	mg/L	0.011	0.0014	0.0022	0.0017
Dissolved Zinc	mg/L	0.008	*0.001*	0.003	0.005

Notes:
Bold – denotes an exceedance of the ANZECC DGV for 95%ile species protection
All `<' values have been reported as half the detection limit for statistical purposes and are expressed in italics

2.8 Hokio Stream

Surface water grab samples are obtained monthly from Hokio Stream at sites HS1A, HS1, HS2 and HS3 (refer to Appendix A) to investigate whether groundwater containing leachate is having an adverse environmental effect on the stream. Sites HS1A and HS1 are situated up-stream of the old landfill, HS2 is situated alongside the old landfill and up-stream of the Northern Farm Drain discharge, and HS3 is located approximately 50 m down-stream of the landfill site property boundary and the Northern Farm Drain discharge. Samples from these monitoring locations on Hokio Stream are analysed for a comprehensive suite of parameters every month (as shown in Appendix B).

Results from the February 2024, March 2024, and April 2024 monitoring rounds are presented in Table 2-9 and have been compared with the ANZECC AE 95%ile DGVs, as per the revised resource consent conditions (2019). Sampling of HS1A commenced in April 2020.

There were **fifteen exceedances** of the resource consent conditions in samples from the Hokio Stream during the February 2024, March 2024, and April 2024 sampling rounds.

The exceedances are summarised as follows:

- $ScBOD_5$ exceeded the ANZECC (95%ile) DGV and consent trigger value of 2 mg/L at HS2 in February 2024 with a value of 3 mg/L.
- Nitrate-N exceeded both the ANZECC (95%ile) DGV and consent trigger value of 0.16 mg/L at all sites in February, March (except for HS1) and April 2024, with values ranging between 0.18 mg/L and 0.39 mg/L.
- Dissolved copper exceeded the ANZECC (95%ile) DGV and consent trigger value of 0.0014 mg/L at HS1A in February 2024 (0.0019 mg/L) and in April 2024 (0.0015 mg/L).
- Dissolved zinc exceeded the ANZECC (95%ile) DGV and consent trigger value of 0.008 mg/L at HS1A in February 2024 (0.012 mg/L).

For this monitoring period overall, the differences in monitoring results between the sites are generally marginal and for most determinants there is little to no change in concentrations between upstream and downstream sites on the Hokio Stream. *E. coli* counts have shown some significant differences between sites and sampling rounds. However, the *E. coli* counts noted in this report are within the historical range since sampling began in 1994.

Consecutive monthly sampling and testing for the comprehensive suite of parameters has occurred at all Hokio Stream sites since October 2021. It is recommended that HDC assess the results of these 31 sampling events, as required by the conditions of the consent, to determine the significance of the results, and to ascertain, in conjunction with HRC, if a reduction in sampling frequency can be made.

It was noted that in the previous report that in January 2024 testing was done for the indicator suite of parameters. Given the extensive data set available, this was not considered to be a critical matter, though it was recommended that HDC gets agreement from HRC about the frequency and range of test parameters to be applied at the Hokio Stream sampling locations, going forward.

Table 2-9: Hokio Stream Monitoring Results for February 2024, March 2024, and April 2024.

Determinant	Units	ANZECC DGV (95%ile species protection)	Consent Trigger Values (Table C1)	HS1A	HS1	HS2	HS3	HS1A	HS1	HS2	HS3	HS1A	HS1	HS2	HS3
				February 2024				March 2024				April 2024			
Sampling date				12/02/24	12/02/24	12/02/24	12/02/24	19/03/24	19/03/24	19/03/24	19/03/24	11/04/24	11/04/24	11/04/24	11/04/24
pH	pH units	-	-	7.6	7.7	7.7	7.5	7.6	7.5	7.5	7.4	7.4	7.4	7.4	7.6
Suspended Solids	mg/l	-	-	7	*2.5*	6	8	21	*2.5*	*2.5*	7	66	7	*2.5*	76
Phenol	mg/l			*0.005*	*0.005*	*0.005*	*0.005*	*0.005*	*0.005*	*0.005*	*0.005*	*0.005*	*0.005*	*0.005*	*0.005*
VFA	mg/l			*2.5*	*2.5*	*2.5*	*2.5*	*2.5*	*2.5*	*2.5*	*2.5*	*2.5*	*2.5*	*2.5*	*2.5*
TOC	mg/L	-	-	8.1	7.3	7.7	7.2	6.9	7	6.9	7.2	7	6.6	6.4	6.9
Alkalinity	mg $CaCO_3$/L	-	-	50	49	55	57	60	60	66	68	66	66	70	70
Conductivity	mS/m	-	-	23.3	23.5	25.2	25.8	25.3	25.6	27.2	27.7	25.9	26	27	27.6
COD	mg/L	-	-	24	19	31	*7.5*	64	*7.5*	28	*7.5*	30	*7.5*	49	*7.5*
$scBOD_5$	mg/L	2	Monthly Avg. 2	2	*0.5*	**3**	*0.5*	*0.5*	*0.5*	*0.5*	1	*0.5*	*0.5*	*0.5*	*0.5*
E. coli	CFU/100 ml	-	-	500	*50*	*50*	*50*	100	500	700	1400	100	200	100	100
Chloride	mg/L	-	-	26.1	25.9	28.0	28.7	27.5	27.6	29.9	30.1	28.1	28	29	29.6
Nitrate-N	mg/L	0.16	0.16	**0.18**	**0.19**	**0.34**	**0.39**	**0.26**	0.16	**0.29**	**0.36**	**0.2**	**0.19**	**0.3**	**0.36**
Sulphate	mg/L	-	-	19.1	19.2	18.5	18.2	15.3	15.3	15.6	14.9	15.7	15.5	15.4	15.1
Ammoniacal-N	mg/L	2.1	Max. 2.1 Avg. 0.400	0.10	0.04	0.04	0.03	0.08	0.04	0.06	0.14	0.01	0.03	0.04	0.04
Hardness	mg $CaCO_3$/L	-	-	53	55	55	59	67	66	69	73	61	63	61	62
Calcium	mg/L	-	-	10.5	10.9	11.2	12.3	13.8	13.8	14.7	15.5	11.3	11.4	11	11.4
Magnesium	mg/L	-	-	6.57	6.67	6.60	6.91	7.81	7.64	7.87	8.41	8.01	8.29	8	8.1
Potassium	mg/L	-	-	1.73	1.52	1.80	2.00	2.57	2.28	2.46	2.88	3.39	3.2	3.24	3.52
Sodium	mg/L	-	-	23.4	24.2	23.9	24.8	25.5	25.1	25.5	27.3	24.8	25.1	24.5	25.6
D.R. Phosphorus	mg/L	-	-	0.165	0.155	0.139	0.135	0.203	0.173	0.149	0.149	0.145	0.139	0.126	0.125
Dissolved Aluminium	mg/L	0.055	Med. 0.055	0.022	0.019	0.019	0.018	0.027	0.018	0.019	0.018	0.007	0.005	0.008	0.005

Determinant	Units	ANZECC DGV (95%ile species protection)	Consent Trigger Values (Table C1)	HS1A	HS1	HS2	HS3	HS1A	HS1	HS2	HS3	HS1A	HS1	HS2	HS3
				February 2024				March 2024				April 2024			
Dissolved Arsenic	mg/L	0.024	Med. 0.024	0.002	0.002	0.002	0.002	0.003	0.003	0.003	0.003	0.002	0.002	0.002	0.002
Dissolved Boron	mg/L	0.370	-	0.06	0.06	0.06	0.06	0.08	0.08	0.09	0.09	0.06	0.07	0.07	0.07
Dissolved Cadmium	mg/L	0.0002	Med. 0.0002	*0.0001*	*0.0001*	*0.0001*	*0.0001*	*0.0001*	*0.0001*	*0.0001*	*0.0001*	*0.0001*	*0.0001*	*0.0001*	*0.0001*
Dissolved Chromium (VI)	mg/L	0.001	-	*0.0005*	*0.0005*	*0.0005*	*0.0005*	*0.0005*	*0.0005*	*0.0005*	*0.0005*	*0.0005*	*0.0005*	*0.0005*	*0.0005*
Dissolved Copper	mg/L	0.0014	Med. 0.0014	**0.0019**	0.0011	0.0010	0.0009	0.0013	0.0009	0.0011	0.0014	**0.0015**	0.0013	0.001	0.0011
Dissolved Iron	mg/L	-	-	0.13	0.11	0.14	0.14	0.15	0.12	0.18	0.16	0.12	0.07	0.12	0.09
Dissolved Lead	mg/L	0.0034	Med. 0.0034	*0.00025*	*0.00025*	*0.00025*	*0.00025*	*0.00025*	*0.00025*	*0.00025*	*0.00025*	*0.00025*	*0.00025*	*0.00025*	*0.00025*
Dissolved Manganese	mg/L	1.9	-	0.0101	0.0067	0.0110	0.0135	0.0082	0.0156	0.0288	0.0164	0.0243	0.0281	0.0344	0.0326
Dissolved Mercury	mg/L	0.0006	Med. 0.0006	*0.00025*	*0.00025*	*0.00025*	*0.00025*	*0.00025*	*0.00025*	*0.00025*	*0.00025*	*0.00025*	*0.00025*	*0.00025*	*0.00025*
Dissolved Nickel	mg/L	0.011	Med. 0.011	0.0011	*0.00025*	*0.00025*	*0.00025*	0.0005	*0.00025*	*0.00025*	0.0008	0.0006	0.0006	*0.00025*	*0.00025*
Dissolved Zinc	mg/L	0.008	Med. 0.008	**0.012**	*0.001*	0.003	0.006	0.002	*0.001*	0.003	0.007	0.003	0.003	*0.001*	0.002

Notes:

Bold – denotes an exceedance of the ANZECC AE 95% protection level trigger values

Underlined – denotes exceedance of the Consent Trigger Value.

All `<' values have been reported as half the detection limit for statistical purposes and are expressed in italics

3 Landfill Gas Detection in Monitoring Wells

Condition 4 of Discharge Permit ATH-2002003984.02 requires that: "…*groundwater monitoring wells shall be sampled for landfill gas when groundwater samples are taken from the wells. As a minimum, sampling shall be undertaken for methane, carbon dioxide and oxygen…*"

In the past, landfill gas monitoring results were only reported in the Annual Report. A recommendation of the 2019 - 2020 Annual Report was that these results should be included in every quarterly monitoring report so that if any results are unusually high, appropriate action can be promptly undertaken, including putting safeguards in place at the monitoring bores.

Appendix E summarises the results of landfill gas monitoring undertaken on the 5 April 2024. It is noted that this is not the date of sampling of the groundwater bores, which somewhat nullifies part of the reason for doing the gas monitoring when the groundwater sampling is done.

Out of the 27 groundwater monitoring bores:

- Methane was recorded at seven bores – G1s (concentration of 0.02%), D6 (0.06%), D5 (0.04%), E2s (0.02%), E2d (0.03%), C1 (0.04%) and Xs1 (0.01%). These concentrations are well below the explosive limit of 5%, and therefore represent a 'safe' level. Methane is commonly detected at the landfill site, and its detection reinforces the need for sampling staff to take the necessary precautions for gas safety, generally applicable at landfill sites.
- Carbon dioxide was recorded at all bores, but at relatively minor concentrations – the highest being 0.2% at bore C2. Historically, fluctuations have been seen across the bores, and April concentrations are within historical ranges.
- Hydrogen sulphide was detected at one bore (Xs1) – at 1 ppm.
- The landfill gas levels in April 2024 appear to reinforce the previous two sampling rounds' observed reduction in measured gases in comparison to previous quarters. Gas results may be due to season variations (e.g., different ground temperatures and/or groundwater levels), or may be related to prevailing weather conditions (e.g., different air pressures).

The possibility of encountering methane (and hydrogen sulphide) in groundwater bores endorses the need for appropriate health and safety measures to be adopted during monitoring. No smoking should be permitted when personnel undertake groundwater sampling and when in the vicinity of the groundwater monitoring wells, or in fact anywhere else on the Levin Landfill site. For sake of safety a personal gas detector should be worn by all staff when working in the vicinity of the landfill.

4 Sampling Quality Control and Assurance

The landfill extends over a significant area and there are many sampling locations. However, it is important that the time span of the sampling period is kept as short as possible because more infrequent (or erratic) sampling can make it difficult to compare results between rounds and determine trends at individual monitoring locations.

The surface water and groundwater samples were collected within a 7-day period, though most of the surface water samples were received by the laboratory outside the normally accepted 24-hour timeframe between sampling and reception. Twelve of the samples were received approximately between 50 and 80 hours after being sampled which could significantly affect the reliability of the results, which reduces the confidence in comparing the results with historical data.

The laboratory reports for many of the surface water samples showed the recorded “Sampled Time” as being late at night, which is assumed to be incorrect. For one of the groundwater samples the recorded date and time of receipt of the sample at the laboratory was before the recorded date and time of sampling, which is nonsensical.

5 Consent Compliance

Discharge permit ATH-2002003983.02 states that quarterly and annual monitoring results for the shallow groundwater aquifer (sand aquifer) shall comply with the ANZECC LDW trigger values, and samples from the deep groundwater (gravel aquifer) shall comply with the applicable DWSNZ values. Furthermore, samples taken from surface water bodies shall comply with ANZECC AE 95%ile DGVs. Should any parameters exceed these standards, the permit holder shall report to the Regional Council as soon as practicable on the significance of the results and, where the change can be attributed to the influence of landfill leachate, consult with the Regional Council to determine if further investigations or remedial measures are required.

Background Groundwater Quality

The quality of the natural background groundwater up-gradient from the landfill site is not subject to any consent conditions.

Shallow Aquifer and Irrigation Area

There were **no exceedances** of consent conditions hydraulically up-gradient of the old landfill and down-gradient of the new landfill during this quarterly (April 2024) monitoring period.

There were **no exceedances** of consent conditions hydraulically down-gradient of the old landfill during this quarterly (April 2024) monitoring period.

There were **no exceedances** of the resource consent conditions during this quarterly (April 2024) sampling round for samples obtained from bores within the old irrigation area.

Deeper Gravel Aquifer

There were **six exceedances of the DWSNZ limits** in samples from the deep gravel aquifer during the April 2024 monitoring round, as follows:

- *E. coli* at Xd1 was detected at a level of 3 cfu/100mL which exceeds the DWSNZ MAV of NIL. This is not an unusual occurrence for this bore which has shown presence of *E.coli* since monitoring began in April 2021. It is recommended that the site be inspected to determine if there is evidence of stock or other animals getting next to the bore.
- Dissolved arsenic exceeded the DWSNZ MAV of 0.01 mg/L at bore D3rd (0.019 mg/L). This is characteristic of D3rd with the levels varying between 0.017 and 0.022 mg/L on all sampling occasions.
- Dissolved manganese concentrations exceeded the DWSNZ MAV of 0.4 mg/L in bores C2DD (0.65 mg/L), E2D (0.458 mg/L), Xd1 (0.497 mg/L) and D3rd (0.5 mg/L). The results for C2DD and E2D (from 1997), Xd1 (from March 2021 when sampling started), and D3rd (from October 2021 when sampling started) are within the historical range of concentrations observed. Dissolved manganese is generally elevated in the deep aquifer bores.

Leachate Effluent

Leachate effluent from the Levin Landfill is not subject to any water quality consent conditions and is sent to the Levin Wastewater Treatment Plant for treatment.

However, there were sixteen outliers from the typical leachate characteristics in the February 2024, March 2024, and April 2024 results. Five of these outliers were for parameters having less concentration than the typical minimal concentrations**.**

Northern Farm Drain

There were **six exceedances** of the resource consent conditions for samples from the Northern Farm property at the TD1 location during the February 2024, March 2024, and April 2024 sampling.

- The concentration of nitrate-N in February 2024 (0.82 mg/L), March 2024 (2.0 mg/L) and April 20234 (0.31 mg/L) exceeded the ANZECC (95%ile) DGV of 0.16 mg/L. This site has commonly presented elevated levels.
- The concentration of ammoniacal-N in February 2024 (15.4 mg/L), March 2024 (24.9 mg/L), and April 2024 (11.9 mg/L) exceeded the ANZECC (95%ile) DGV of 2.1 mg/L.

Hokio Stream

There were **fifteen exceedances** of the resource consent conditions in samples from the Hokio Stream during the February 2024, March 2024, and April 2024 sampling rounds.

- $ScBOD_5$ exceeded the ANZECC (95%ile) DGV and consent trigger value of 2 mg/L at HS2 in February 2024 with a value of 3 mg/L.
- Nitrate-N exceeded both the ANZECC (95%ile) DGV and consent trigger value of 0.16 mg/L at all sites in February, March (except for HS1) and April 2024, with values ranging between 0.18 mg/L and 0.39 mg/L.
- Dissolved copper exceeded the ANZECC (95%ile) DGV and consent trigger value of 0.0014 mg/L at HS1A in February 2024 (0.0019 mg/L) and in April 2024 (0.0015 mg/L).
- Dissolved zinc exceeded the ANZECC (95%ile) DGV and consent trigger value of 0.008 mg/L at HS1A in February 2024 (0.012 mg/L).

6 Conclusions

Monitoring results obtained in the February 2024 to April 2024 sampling rounds suggest that the groundwater at the background monitoring sites at the Levin Landfill is being impacted by local ground conditions and/or activities up-gradient of the landfill.

During the February 2024 to April 2024 monitoring period, there were twenty-seven exceedances of resource consent conditions: six from the deep gravel aquifer, six in the samples from the Northern Farm Drain (formerly known as Tatana Property Drain), and the remaining fifteen from surface water monitoring locations along the Hokio Stream.

Methane was detected in seven of the bores in April 2024, with the highest reading being at D6 (0.06%). The methane concentrations were well below the explosive limit of 5%, and therefore represent a ‘safe’ level. Methane is commonly detected at the landfill site, and its detection reinforces the need for sampling staff to take the necessary precautions for gas safety, generally applicable at landfill sites. Minor concentrations of carbon dioxide were recorded at all bores, with the highest being 0.2% at bore C2. Hydrogen sulphide was detected at bore Xs1 at 1 ppm.

The possibility of encountering methane (and hydrogen sulphide) in groundwater bores endorses the need for appropriate health and safety measures to be adopted during monitoring.

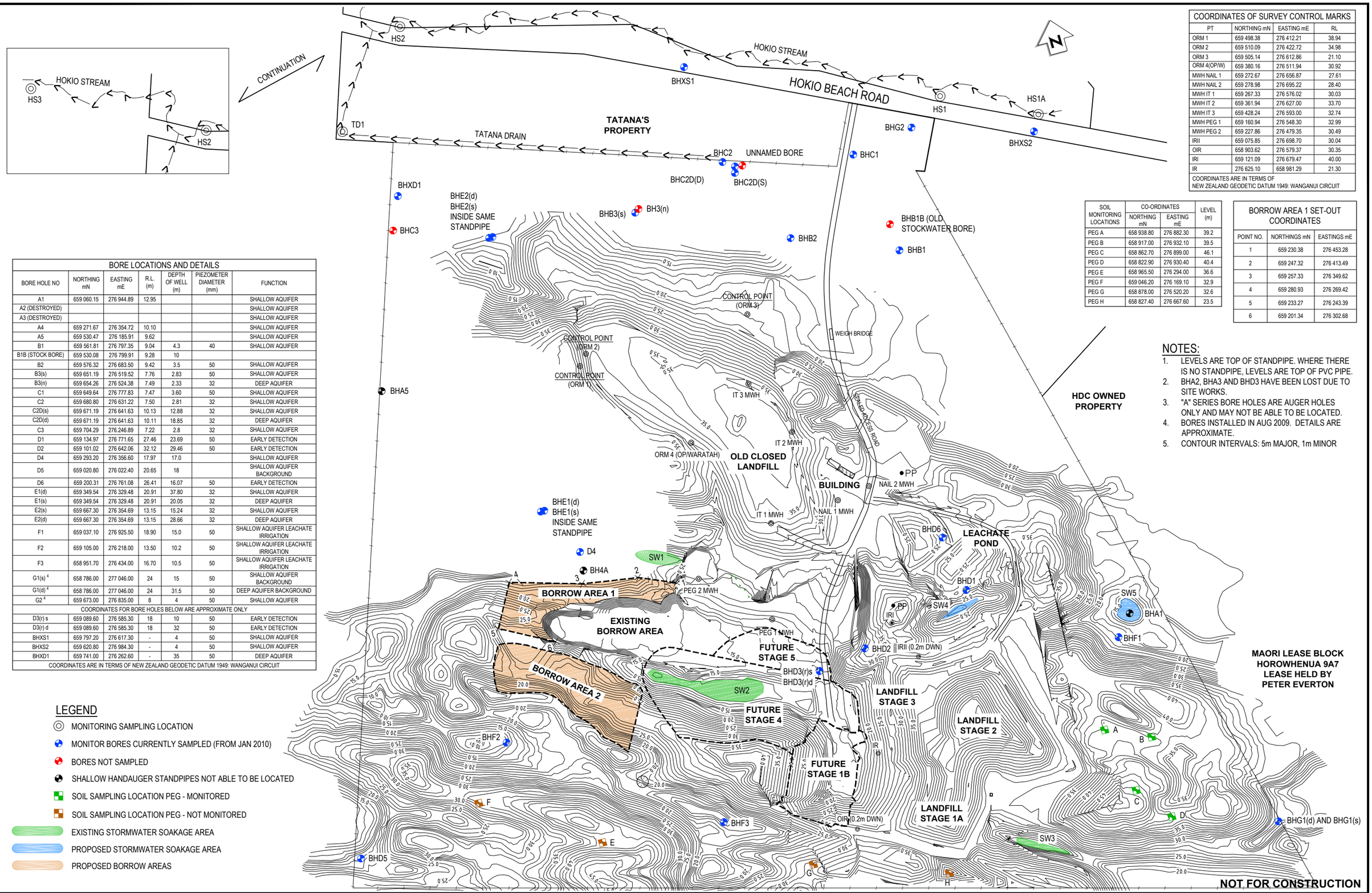
The following recommendations are made, based on the results of this reporting period:

- Overall, monitoring results at G1S indicate that it is likely modified or impacted by anthropogenic activities, and therefore may not be suitable to use as reliable ‘control’ location for background water quality in the future. This matter should be reviewed as part of the Annual Report.
- Nitrate-N levels at D6 were the maximum value recorded to date, and maximum values were also reached for conductivity, hardness, calcium, magnesium, and potassium. Whilst all levels are below the ANZECC LDW trigger values, it is a matter to keep a check on and may merit an assessment in the future to try and identify the cause.
- *E. coli* at Xd1 was detected at a level of 3 cfu/100mL which exceeded the DWSNZ MAV of NIL. Whilst this is not an unusual occurrence for this bore which has shown presence of *E. coli* since monitoring began, it is recommended that the site be inspected to determine if there is evidence of stock or other animals getting next to the bore.
- Consecutive monthly sampling has occurred at all Hokio Stream sites for since October 2021. It is recommended that HDC assess the results of these 31 sampling events, as required by the conditions of the consent, to determine the significance of the results, and to ascertain, in conjunction with HRC, if a reduction in sampling frequency can be made.

Appendices

We design with community in mind

Appendix A Site Plan



COORDINATES OF SURVEY CONTROL MARKS			
PT	NORTHING mN	EASTING mE	RL
ORM 1	659 498.38	276 412.21	38.94
ORM 2	659 510.09	276 422.72	34.98
ORM 3	659 505.14	276 612.86	21.10
ORM 4(OP/W)	659 380.16	276 511.94	30.92
MWH NAIL 1	659 272.67	276 656.87	27.61
MWH NAIL 2	659 278.98	276 695.22	28.40
MWH IT 1	659 267.33	276 576.02	30.03
MWH IT 2	659 361.94	276 627.00	33.70
MWH IT 3	659 428.24	276 593.00	32.74
MWH PEG 1	659 160.94	276 548.30	32.99
MWH PEG 2	659 227.86	276 479.35	30.49
IRII	659 075.85	276 698.70	30.04
OIR	658 903.62	276 579.37	30.35
IRI	659 121.09	276 679.47	40.00
IR	276 625.10	658 981.29	21.30
COORDINATES ARE IN TERMS OF NEW ZEALAND GEODETIC DATUM 1949: WANGANUI CIRCUIT			

SOIL MONITORING LOCATIONS	CO-ORDINATES		LEVEL (m)
	NORTHING mN	EASTING mE	
PEG A	658 938.80	276 882.30	39.2
PEG B	658 917.00	276 932.10	39.5
PEG C	658 862.70	276 899.00	46.1
PEG D	658 822.90	276 930.40	40.4
PEG E	658 965.50	276 294.00	36.6
PEG F	659 046.20	276 169.10	32.9
PEG G	658 878.00	276 520.20	32.6
PEG H	658 827.40	276 667.60	23.5

BORROW AREA 1 SET-OUT COORDINATES		
POINT NO.	NORTHINGS mN	EASTINGS mE
1	659 230.38	276 453.28
2	659 247.32	276 413.49
3	659 257.33	276 349.62
4	659 280.93	276 269.42
5	659 233.27	276 243.39
6	659 201.34	276 302.68

BORE LOCATIONS AND DETAILS						
BORE HOLE NO	NORTHING mN	EASTING mE	R.L. (m)	DEPTH OF WELL (m)	PIEZOMETER DIAMETER (mm)	FUNCTION
A1	659 060.15	276 944.89	12.95			SHALLOW AQUIFER
A2 (DESTROYED)						SHALLOW AQUIFER
A3 (DESTROYED)						SHALLOW AQUIFER
A4	659 271.67	276 354.72	10.10			SHALLOW AQUIFER
A5	659 530.47	276 185.91	9.62			SHALLOW AQUIFER
B1	659 561.81	276 797.35	9.04	4.3	40	SHALLOW AQUIFER
B1B (STOCK BORE)	659 530.08	276 799.91	9.28	10		
B2	659 576.32	276 683.50	9.42	3.5	50	SHALLOW AQUIFER
B3(s)	659 651.19	276 519.52	7.76	2.83	50	SHALLOW AQUIFER
B3(n)	659 654.26	276 524.38	7.49	2.33	32	DEEP AQUIFER
C1	659 649.64	276 777.83	7.47	3.60	50	SHALLOW AQUIFER
C2	659 680.80	276 631.22	7.50	2.81	32	SHALLOW AQUIFER
C2D(s)	659 671.19	276 641.63	10.13	12.88	32	SHALLOW AQUIFER
C2D(d)	659 671.19	276 641.63	10.11	18.85	32	DEEP AQUIFER
C3	659 704.29	276.246.89	7.22	2.8	32	SHALLOW AQUIFER
D1	659 134.97	276 771.65	27.46	23.69	50	EARLY DETECTION
D2	659 101.02	276 642.06	32.12	29.46	50	EARLY DETECTION
D4	659 293.20	276 356.60	17.97	17.0		SHALLOW AQUIFER
D5	659 020.80	276 022.40	20.65	18		SHALLOW AQUIFER BACKGROUND
D6	659 200.31	276 761.08	26.41	16.07	50	EARLY DETECTION
E1(d)	659 349.54	276 329.48	20.91	37.80	32	SHALLOW AQUIFER
E1(s)	659 349.54	276 329.48	20.91	20.05	32	DEEP AQUIFER
E2(s)	659 667.30	276 354.69	13.15	15.24	32	SHALLOW AQUIFER
E2(d)	659 667.30	276 354.69	13.15	28.66	32	DEEP AQUIFER
F1	659 037.10	276 925.50	18.90	15.0	50	SHALLOW AQUIFER LEACHATE IRRIGATION
F2	659 105.00	276 218.00	13.50	10.2	50	SHALLOW AQUIFER LEACHATE IRRIGATION
F3	658 951.70	276 434.00	16.70	10.5	50	SHALLOW AQUIFER LEACHATE IRRIGATION
G1(s) [4]	658 786.00	277 046.00	24	15	50	SHALLOW AQUIFER BACKGROUND
G1(d) [4]	658 786.00	277 046.00	24	31.5	50	DEEP AQUIFER BACKGROUND
G2 [4]	659 673.00	276 835.00	8	4	50	SHALLOW AQUIFER
COORDINATES FOR BORE HOLES BELOW ARE APPROXIMATE ONLY						
D3(r) s	659 089.60	276 585.30	18	10	50	EARLY DETECTION
D3(r) d	659 089.60	276 585.30	18	32	50	EARLY DETECTION
BHXS1	659 797.20	276 617.30	-	4	50	SHALLOW AQUIFER
BHXS2	659 620.80	276 984.30	-	4	50	SHALLOW AQUIFER
BHXD1	659 741.00	276 262.60	-	35	50	DEEP AQUIFER
COORDINATES ARE IN TERMS OF NEW ZEALAND GEODETIC DATUM 1949: WANGANUI CIRCUIT						

LEGEND

- MONITORING SAMPLING LOCATION
- MONITOR BORES CURRENTLY SAMPLED (FROM JAN 2010)
- BORES NOT SAMPLED
- SHALLOW HANDAUGER STANDPIPES NOT ABLE TO BE LOCATED
- SOIL SAMPLING LOCATION PEG - MONITORED
- SOIL SAMPLING LOCATION PEG - NOT MONITORED
- EXISTING STORMWATER SOAKAGE AREA
- PROPOSED STORMWATER SOAKAGE AREA
- PROPOSED BORROW AREAS

NOTES:

1. LEVELS ARE TOP OF STANDPIPE. WHERE THERE IS NO STANDPIPE, LEVELS ARE TOP OF PVC PIPE.
2. BHA2, BHA3 AND BHD3 HAVE BEEN LOST DUE TO SITE WORKS.
3. "A" SERIES BORE HOLES ARE AUGER HOLES ONLY AND MAY NOT BE ABLE TO BE LOCATED.
4. BORES INSTALLED IN AUG 2009. DETAILS ARE APPROXIMATE.
5. CONTOUR INTERVALS: 5m MAJOR, 1m MINOR

NOT FOR CONSTRUCTION

DO NOT SCALE - IF IN DOUBT, ASK

ORIGINAL SIZE A1

REV	REVISIONS	DRN	CHK	APP	DATE
E	FOR INFORMATION - BHD3(r)s AND BHD3(r)d ADDED, AND CONTOURS UPDATED FROM JULY 2021 SURVEY	BCJ	PSL	PSL	24.09.21
D	FOR INFORMATION - BORROW AREA 2 RELOCATED, DEFINED AREAS OF FUTURE STAGES 1B, 4 AND 5	BCJ	PSL	PSL	01.06.21
C	FOR INFORMATION - BORROW AREA AND LANDFILL AREA UPDATES AND BORE HOLES AND SAMPLING LOCATIONS ADDED FOR HOKIO STREAM AND TATANA DRAIN	BCJ	PSL	PSL	24.03.21
B	FOR INFORMATION - BORROW AREA AND LANDFILL AREA UPDATES	BCJ	PSL	PSL	22.09.20
A	FOR INFORMATION	BCJ	PSL	PSL	26.08.19

SURVEYED	MWH	
DESIGNED	N/A	-
DRAWN	Brent James	08.2019
CAD REVIEW	Brent James	23.09.21
APPROVED	Phil Landmark	23.09.21
PROF REGISTRATION:		

Stantec

Client:

HOROWHENUA DISTRICT COUNCIL
LEVIN LANDFILL

MONITORING BORES, SOIL SAMPLING LOCATIONS & BORROW AREAS
SITE PLAN, LOCATION AND DETAILS

Status Stamp: FOR INFORMATION ONLY
Date Stamp: 24.09.21
Scales: 1:2000 (A1) 1:4000 (A3)
Drawing No.: 310101088-19-001-G001
Rev.: E

26/08/2019 9:35 a.m.

pw:\\stantec-ap-pw.bentley.com:stantec-ap-pw-01\Documents\New Zealand Clients\Horowhenua District Council\80500724 (310101088) - Levin Landfill Volumes\2019\General\310101088-19-001-G001

Appendix B Sampling Schedule

LEVIN LANDFILL - SUMMARY OF SURFACE AND GROUNDWATER MONITORING REQUIREMENTS (July 2023 - April 2026).

(The testing regime is based on Consent Conditions following the completion of the 2015 Resource Consent Review process).

Reports Due		Sampling Month	Table A (Condition 3, ATH-2002003983.02, formerly DP 6010)						Table B (Condition 3, ATH-2002003983.02, formerly DP 6010)																				Table C (Condition 3, ATH-2002003983.02, formerly DP 6010)					
			Deep Aquifer Bores						Shallow Aquifer Bores																				Irrigation Bores				Hokio Stream[4], [8]				Northern Farm Drain[9]	Leachate Pond[5]
Annual	Quarterly		C2dd	E1d	E2d	G1d	Xd1	D3rd[1]	C1	C2[6]	C2ds[6]	D4	B1	B2	B3s	E1s	E2s	D1[2]	D2[2]	D3rs[1,2]	D6[2]	G1s	G2s	Xs1[6]	Xs2[6]	D5[3]	F1[3]	F2[3]	F3[3]	HS1	HS1A	HS2	HS3	TD1[7]	
Sep-23	**Aug-23**	**Jul-23**	I	I + SW	I	I	C	C	I	I	I	I + SW	I	I	I	I + SW	I + SW	I	I + SW	C + SW	I	I + SW	I	C	C	I	I	I	I + SW	Monthly Compre.	Monthly Compre.	Monthly Compre.	Monthly Compre.	Monthly Compre.	Monthly Compre.
	Nov-23	**Oct-23**	I	I + SW	I	I	C	C	I	I	I	I + SW	I	I	I	I + SW	I + SW	I	I + SW	C + SW	I	I + SW	I	C	C	I	I	I	I + SW						
	Feb-24	**Jan-24**	I	I + SW	I	I	C	C	I	I	I	I + SW	I	I	I	I + SW	I + SW	I	I + SW	C + SW	I	I + SW	I	C	C	I	I	I	I + SW						
	May-24	**Apr-24**	C + A	C + A	C + A	C + A	C + A	C + A	C + A	C + A	C + A	C + A	C + A	C + A	C + A	C + A	C + A	C + A	C + A	C + A	C + A	C + A	C + A	C + A	C + A	C + A	C + A	C + A	C + A	C	C	C	C	C + A
Sep-24	**Aug-24**	**Jul-24**	I	I + SW	I	I	I	C	I	I	I	I + SW	I	I	I	I + SW	I + SW	I	I + SW	C + SW	I	I + SW	I	I	I	I	I	I	I + SW		I	I	I	I	I
	Nov-24	**Oct-24**	I	I + SW	I	I	I	C	I	I	I	I + SW	I	I	I	I + SW	I + SW	I	I + SW	C + SW	I	I + SW	I	I	I	I	I	I	I + SW		C	C	C	C	C
	Feb-25	**Jan-25**	I	I + SW	I	I	I	C	I	I	I	I + SW	I	I	I	I + SW	I + SW	I	I + SW	C + SW	I	I + SW	I	I	I	I	I	I	I + SW		I	I	I	I	I
	May-25	**Apr-25**	C + A	C + A	C + A	C + A	C + A	C + A	C + A	C + A	C + A	C + A	C + A	C + A	C + A	C + A	C + A	C + A	C + A	C + A	C + A	C + A	C + A	C + A	C + A	C + A	C + A	C + A	C + A	C	C	C	C	C + A
Sep-25	**Aug-25**	**Jul-25**	I	I + SW	I	I	I	I	I	I	I	I + SW	I	I	I	I + SW	I + SW	I	I + SW	I + SW	I	I + SW	I	I	I	I	I	I	I + SW		I	I	I	I	I
	Nov-25	**Oct-25**	I	I + SW	I	I	I	I	I	I	I	I + SW	I	I	I	I + SW	I + SW	I	I + SW	I + SW	I	I + SW	I	I	I	I	I	I	I + SW		C	C	C	C	C
	Feb-26	**Jan-26**	I	I + SW	I	I	I	I	I	I	I	I + SW	I	I	I	I + SW	I + SW	I	I + SW	I + SW	I	I + SW	I	I	I	I	I	I	I + SW		I	I	I	I	I
	May-26	**Apr-26**	C + A	C + A	C + A	C + A	C + A	C + A	C + A	C + A	C + A	C + A	C + A	C + A	C + A	C + A	C + A	C + A	C + A	C + A	C + A	C + A	C + A	C + A	C + A	C + A	C + A	C + A	C + A	C	C	C	C	C + A

Sampling at HS1 to be discontinued when HRC advises.

Measure groundwater level and sample all bores for CH_4, CO_2 and O_2 each time that groundwater is sampled (Condition 4a of DP 6011)

Notes:

(1) Replacement bore D3r consists of two nested piezometers that have been called D3rs and D3rd. Testing for comprehensive to continue to provide 2 year's of comprehensive monitoring.
(2) See table below
(3) If irrigation re-commences then the annual sampling is to change from comprehensive + 3 times indicator to bi-annual comprehensive + indicator (Clause D of Condition 3, DP 6010) .
(4) See table below
(5) See table below
(6) Measure water level at C2, C2ds, Xs1 and Xs2 when taking monthly samples at TD1 and within the Hokio Stream. Testing of X-series bores to continue at comprehensive to provide 2 year's of comprehensive data.
(7) Start taking comprehensive samples at TD1 every month when sampling the Hokio Stream sites. Also note the depth of water in the drain invert at TD1. Continue monthly comprehensive sampling to October 2023 to give 24 month's continuous data.
(8) Start measuring approximately the depth of flow in the Hokio Stream at each sampling site when sampling monthly. Monthly sampling at comprehensive level to continue to, and including, October 2023, to give a full continuous 24 months of data.
(9) Northern Farm Drain is a name change from the former 'Tatana Drain'
C Comprehensive list (see below)
I Indicator list (see below)
A Pesticide and SVOC analysis
SW Add sodium and iron analysis (for stormwater consent 102559)

A reduction in sampling frequency at any **groundwater monitoring point** is conditional on (Clauses A - D of Condition 3, DP 6010):

A. Completion of the initial monitoring program;
B. Good consistency of groundwater sample analysis results, or a clearly identified reason for inconsistent results that excludes the contaminant source being landfill operations, stored waste or leachate;
C. No decline in groundwater quality as determined from indicator parameter trends over a period of four consecutive sampling rounds;
D. If a well being monitored on a conditional frequency becomes non-compliant with condition C, the monitoring frequency for that well should return to the initial monitoring frequency until conditions B and C are again being fulfilled.

(2) If site management planning indicates any **early detection monitoring well** is likely to become buried or otherwise destroyed within the following year as a result of normal operations (Clauses E - H, Condition 3, DP 6010):

E. This must be communicated to the regional council;
F. A replacement well is to be constructed in a position agreed upon with Horizons Regional Council
G. The replacement well should be installed in a position suitable to act as a early detection well and be classed as an early detection well;
H. The replacement well should be constructed as a nested well (or two separate wells) with screens positioned in both shallow and deep aquifers.

(4) A reduction in sampling frequency at the **Hokio Stream monitoring locations (HS1A, HS2 and HS3)** is conditional on (Clauses I - L, Condition 3 of DP 6010):

I. No signficant increases in the concentrations between monitoring sites HS1A and HS3, for parameters exceeding the trigger values contained in Table C1 at Site HS3.
J. A statistical analysis approach is to be used to determine if there is a significant increase in contaminant levels between HS1A and HS3.
K. Following the 24 month monitoring period, there shall be no significant increases in concentrations between monitoring sites HS1A and HS3.
L. If the Hokio Stream monitoring locations are being sampled on a conditional frequency and do not meet condition K, the monitoring frequency for all three monitoring locations (HS1A, HS2 and HS3) shall return to the base case intensive monitoring until conditions J and K are again being fulfilled.

(5) A reduction in sampling frequency at the **leachate pond outlet** is conditional on (Clauses M - P, Condition 3, DP 6010):

M. Completion of the initial 2 year monitoring program;
N. Good consistency of water sample analysis results, or a clearly identified reason for inconsistent results;
O. No decline in water quality over a period of four consecutive sampling rounds;
P. If the leachate pond outlet is being sampled on a conditional frequency and becomes non-compliant with condition O, the monitoring frequency should return to the base case intensive monitoring until conditions N and O are again being fulfilled.

COMPREHENSIVE PARAMETER LIST (Table E of Condition 3, DP 6010)

Characterising parameters	pH
	electrical conductivity (EC)
	alkalinity
	total hardness
	suspended solids
Oxygen demand	COD and $scBOD_5$
Nutrients*	NO3-N, NH4-N, DRP and SO_4
Metals*	Al, As, Cd, Cr, Cu, Fe, Mg, Mn, Ni, Pb, Zn and Hg
Other elements	B, Ca, Cl, K and Na
Organics	Total organic carbon, total phenols, volatile acids
Biological	E. coli

* Analyses performed for nutrients and metals are for dissolved rather than total concentrations

INDICATOR PARAMETER LIST (Table F, Condition 3, DP 6010)

Characterising parameters	pH
	electrical conductivity (EC)
Oxygen demand	COD and $scBOD_5$
Nutrients*	NO3-N and NH4-N
Metals*	AL, Mn, Ni, Pb and Hg
Other elements	B and Cl
Biological+	E. coli

* Analyses performed for nutrients and metals are for dissolved rather than total concentrations

+ E. coli added from April 2019 sampling onwards

Appendix C Analytical Results

Food & Water Testing

ANALYTICAL REPORT

REPORT CODE **AR-24-NW-024116-01** REPORT DATE **20/04/2024**

Attention Downer NZ Ltd (EDI Levin)
Horowhenua Admin
P O Box 642
4741 Levin
NEW ZEALAND

Phone (06) 367 2705
Email horowhenuaadmin@downer.co.nz

Copy to: Water and Waste Team (waterandwasteteam@horowhenua.govt.nz), McMillan

Contact for your orders: Gabriela Carvalhaes
Contract: Landfill

Order code: EUNZWE-00177701
Purchase Order Number: Landfill

SAMPLE CODE **812-2024-00052907**

Sample Name	349857-0		
Product:	Ground water		
Sampling Point code:	WIL-B1	**Sampling Point name:**	Levin B1
Reception Date & Time:	10/04/2024 14:30		
Analysis Started on:	10/04/2024	**Analysis Ending Date:**	20/04/2024
Product Type	Ground water	**Sampled Date & Time**	10/04/2024 07:32
Sampler(s)	Client nominated external sampler	**Sampled by Eurofins**	No

		RESULTS	(UNCERTAINTY)	LOQ
NW179	**Ammonia Nitrogen**			
	Ammoniacal nitrogen (N)	29.1	(± 2.91) mg/l	0.01
NW341	**BOD5 - Soluble Carbonaceous**			
	BOD5	<1	mg/l	1
NW020	**Chemical Oxygen Demand**			
	Chemical oxygen demand (COD)	145	(± 15) mg/l	15
NW007	**Chloride**			
	Chloride (Cl)	286	(± 28.6) mg/l	0.02
NW00U	**Chlorophenols**			
	2,3,4,6-Tetrachlorophenol	<0.01	mg/l	0.01
	2,4-Dichlorophenol	<0.01	mg/l	0.01
	2,6-Dichlorophenol	<0.02	mg/l	0.2
	2-Chlorophenol (o-chlorophenol)	<0.01	mg/l	0.01
	3,4,5-Trichlorophenol	<0.01	mg/l	0.01
	4-Chloro-3-cresol	<0.01	mg/l	0.01
	Pentachlorophenol	<0.005	mg/l	0.005
	Phenol	<0.01	mg/l	0.01
	Total of 2,4,5 & 2,4,6 -Trichlorophenol	<0.02	mg/l	0.02
NW023	**Conductivity**			
	Conductivity	217	(± 4.3) mS/m	0.1
NW098	**Dissolved Aluminium**			
	Aluminium	0.021	mg/l	0.002
NW583	**Dissolved Arsenic**			
	Arsenic (As)	0.001	mg/l	0.001
NW103	**Dissolved Boron**			
	Boron (B)	2.38	mg/l	0.03

		RESULTS (UNCERTAINTY)		LOQ
NW104	**Dissolved Cadmium**			
	Cadmium (Cd)	<0.0002	mg/l	0.0002
NW105	**Dissolved Calcium**			
	Calcium (Ca)	54.7	mg/l	0.1
NW106	**Dissolved Chromium**			
	Chromium (Cr)	0.002	mg/l	0.001
NW108	**Dissolved Copper**			
	Copper (Cu)	0.0276	mg/l	0.0005
NW109	**Dissolved Iron**			
	Iron (Fe)	0.08	mg/l	0.01
NW110	**Dissolved Lead**			
	Lead (Pb)	<0.0005	mg/l	0.0005
NW112	**Dissolved Magnesium**			
	Magnesium (Mg)	41.8	mg/l	0.01
NW113	**Dissolved Manganese**			
	Manganese (Mn)	4.78	mg/l	0.0005
NW114	**Dissolved Mercury**			
	Mercury (Hg)	<0.0005	mg/l	0.0005
NW116	**Dissolved Nickel**			
	Nickel (Ni)	0.0077	mg/l	0.0005
NW117	**Dissolved Potassium**			
	Potassium (K)	41.7	mg/l	0.01
NW193	**Dissolved Reactive Phosphorus**			
	Phosphorus (soluble reactive)	0.112	mg/l	0.005
NW120	**Dissolved Sodium**			
	Sodium (Na)	250	mg/l	0.01
NW125	**Dissolved Zinc**			
	Zinc (Zn)	0.020	mg/l	0.002
ZM2GA	**Enumeration of Escherichia coli By Membrane Filtration**			
	Escherichia coli	<100	cfu/100 ml	100
NW010	**Nitrate-N**			
	Nitrate-N	<0.01	(± 0.00) mg/l	0.01
NW195	**pH (Tested beyond 15 minute APHA holding time)**			
	pH	6.9	(± 0.2)	0.1
NW011	**Sulphate**			
	Sulphate	4.05	(± 0.41) mg/l	0.02
NW206	**Suspended Solids**			
	Suspended Solids	178	mg/l	3
NW228	**SVOC (GC-MSMS)**			
	Acenaphthene	<0.0001	mg/l	0.0001
	Acenaphthylene	<0.001	mg/l	0.001
	Adipatic acid, bis-2-ethylhexyl ester (DEHA)	<0.0001	mg/l	0.0001
	Alachlor	<0.0001	mg/l	0.0001
	Aldicarb	<0.1	mg/l	0.1
	Aldrin	<0.001	mg/l	0.001
	Anthracene	<0.001	mg/l	0.001
	Atrazine	<0.0001	mg/l	0.0001

		RESULTS (UNCERTAINTY)		LOQ
NW228	**SVOC (GC-MSMS)**			
	Benz(a)anthracene	<0.0001	mg/l	0.0001
	Benzo(a)pyrene	<0.0001	mg/l	0.0001
	Benzo(g,h,i)perylene	<0.001	mg/l	0.001
	Bromacil	<0.005	mg/l	0.005
	Carbofuran	<0.001	mg/l	0.001
	Chlordane	<0.0001	mg/l	0.0001
	Chlordane, gamma	<0.001	mg/l	0.001
	Chlorpyrifos (-ethyl)	<0.0001	mg/l	0.0001
	Chrysene	<0.0001	mg/l	0.0001
	Cyanazine	<0.005	mg/l	0.005
	d-BHC	<0.0001	mg/l	0.0001
	DDD, p,p'-	<0.0001	mg/l	0.0001
	DDE, p,p-	<0.0001	mg/l	0.0001
	DDT, p,p'-	NotRecovered	mg/l	0.001
	Diazinon	<0.0001	mg/l	0.0001
	Dibenz(a,h)anthracene	<0.0001	mg/l	0.0001
	Dieldrin	<0.0001	mg/l	0.0001
	Dimethoate	<0.001	mg/l	0.001
	Diuron	<0.001	mg/l	0.001
	Endosulfan, alpha-	<0.001	mg/l	0.001
	Endosulfan, beta-	<0.005	mg/l	0.005
	Endosulfan-sulfate	<0.0001	mg/l	0.0001
	Endrin	<0.0001	mg/l	0.0001
	Endrin ketone	NotRecovered	mg/l	0.0001
	Endrin-aldehyde	<0.001	mg/l	0.01
	Fluoranthene	<0.0001	mg/l	0.0001
	Fluorene	<0.0001	mg/l	0.0001
	HCH, alpha-	<0.0001	mg/l	0.0001
	HCH, beta-	<0.0001	mg/l	0.0001
	Heptachlor	<0.0001	mg/l	0.0001
	Heptachlor epoxide, cis-	<0.0001	mg/l	0.0001
	Hexachlorobenzene (HCB)	<0.0001	mg/l	0.0001
	Hexazinone	<0.001	mg/l	0.001
	Indeno(1,2,3-cd)pyrene	<0.0001	mg/l	0.0001
	Lindane (gamma-HCH)	<0.0001	mg/l	0.0001
	Metalaxyl and metalaxyl-M (metalaxyl including other mixtures of constituent isomers including metalaxyl-M (sum of isomers))	<0.001	mg/l	0.001
	Methoxychlor	<0.0001	mg/l	0.0001
	Metolachlor	<0.0001	mg/l	0.0001
	Metribuzin	<0.0001	mg/l	0.0001
	Molinate	<0.0001	mg/l	0.0001
	Naphthalene	<0.0001	mg/l	0.0001
	Oxadiazon	<0.0001	mg/l	0.0001
	PCB 101	<0.0001	mg/l	0.0001
	PCB 138	<0.001	mg/l	0.001
	PCB 183	<0.0001	mg/l	0.0001

		RESULTS	(UNCERTAINTY)	LOQ
NW228	**SVOC (GC-MSMS)**			
	PCB 28	<0.0001	mg/l	0.0001
	PCB 7	<0.0001	mg/l	0.0001
	Pendimethalin	<0.002	mg/l	0.002
	Permethrin (sum of isomers)	<0.0001	mg/l	0.0001
	Phenanthrene	<0.0001	mg/l	0.0001
	Pirimiphos-methyl	<0.0001	mg/l	0.0001
	Procymidone	<0.0001	mg/l	0.0001
	Propanil	<0.001	mg/l	0.001
	Propazine	<0.0001	mg/l	0.0001
	Pyrene	<0.0001	mg/l	0.0001
	Pyriproxyfen	<0.0001	mg/l	0.0001
	Simazine	<0.0001	mg/l	0.0001
	Terbuthylazine	<0.0001	mg/l	0.0001
	Total Benzo(b) and Benzo(k) fluoranthene	<0.001	mg/l	0.001
	Trifluralin	<0.0001	mg/l	0.0001
NW003	**Total Alkalinity**			
	Alkalinity total	677	(± 68) mg CaCO3/l	1
NW030	**Total Hardness**			
	Hardness	309	mg CaCO3/l	1
NW210	**Total Non-Purgeable Organic Carbon**			
	Total Organic Carbon	27.6	(± 2.8) mg/l	0.1
NW229	**VOC (GC-MS)**			
	1,1,1,2-Tetrachloroethane	<0.0005	mg/l	0.0005
	1,1,1-Trichloroethane	<0.0005	mg/l	0.0005
	1,1,2,2-tetrachloroethane	<0.0005	mg/l	0.0005
	1,1,2-Trichloroethane	<0.0005	mg/l	0.0005
	1,1-Dichloroethane	<0.0005	mg/l	0.0005
	1,1-Dichloroethene	<0.0005	mg/l	0.0005
	1,1-Dichloropropene	<0.0005	mg/l	0.0005
	1,2,3-Trichlorobenzene	<0.0005	mg/l	0.0005
	1,2,3-Trichloropropane	<0.0005	mg/l	0.0005
	1,2,4 trimethylbenzen	<0.0005	mg/l	0.0005
	1,2,4-Trichlorobenzene	<0.0005	mg/l	0.0005
	1,2-Dibromo-3-chloropropane	<0.001	mg/l	0.002
	1,2-Dibromoethane	<0.0002	mg/l	0.0002
	1,2-Dichlorobenzene (2)	<0.0005	mg/l	0.0005
	1,2-Dichloroethane	<0.0005	mg/l	0.0005
	1,2-Dichloropropane	<0.0005	mg/l	0.0005
	1,3,5-Trichlorobenzene	<0.0005	mg/l	0.0005
	1,3,5-Trimethylbenzene	<0.0005	mg/l	0.0005
	1,3-Dichlorobenzene	<0.0005	mg/l	0.0005
	1,3-Dichloropropane	<0.0005	mg/l	0.0005
	1,4-dichlorobenzene	<0.0005	mg/l	0.0005
	2,2-Dichloropropane	<0.0005	mg/l	0.0005
	2-Chlorotoluene	<0.0005	mg/l	0.0005
	3-chloropropene	<0.0020	mg/l	0.0005
	4-Chlorotoluene	<0.0005	mg/l	0.0005

		RESULTS (UNCERTAINTY)		LOQ
NW229	**VOC (GC-MS)**			
	4-methyl-2-pentanone	<0.0005	mg/l	0.0005
	Benzene	<0.0005	mg/l	0.0005
	Bromobenzene	<0.0005	mg/l	0.0005
	Bromochloromethane	<0.0012	mg/l	0.0012
	Bromodichloromethane	<0.0005	mg/l	0.0005
	Bromoform	<0.0005	mg/l	0.0005
	Bromomethane (zone 2)	<0.001	mg/l	0.001
	Carbon tetrachloride	<0.0005	mg/l	0.0005
	Carbondisulphide (CS2)	<0.0005	mg/l	0.0005
	Chlorobenzene	<0.0005	mg/l	0.0005
	Chloroethane	<0.001	mg/l	0.001
	Chloroform	<0.0005	mg/l	0.0005
	Chloromethane	<0.006	mg/l	0.006
	cis-1,2-Dichloroethene	0.0005	mg/l	0.0005
	cis-1,3-Dichloropropene	<0.0005	mg/l	0.0005
	Dibromochloromethane	<0.0005	mg/l	0.0005
	Dibromomethane	<0.0005	mg/l	0.0005
	Dichlorodifluoromethane	NotRecovered	mg/l	0.001
	Dichloromethane	<0.005	mg/l	0.005
	Hexachlorobutadiene	<0.0002	mg/l	0.0002
	Isopropylbenzene (Cumene)	<0.0005	mg/l	0.0005
	m,p-Xylene, Ethylbenzene	<0.0015	mg/l	0.0015
	Naphthalene	<0.0005	mg/l	0.0005
	n-Butylbenzene	<0.0005	mg/l	0.0005
	n-Propylbenzene	<0.0005	mg/l	0.0005
	p-Isopropyltoluene	<0.0005	mg/l	0.0005
	sec-Butylbenzene	<0.0005	mg/l	0.0005
	Styrene	<0.0005	mg/l	0.0005
	tert-Butylbenzene	<0.0005	mg/l	0.0005
	Tetrachloroethene	<0.0005	mg/l	0.0005
	Toluene	<0.0005	mg/l	0.0005
	trans-1,2-Dichloroethene	<0.0005	mg/l	0.0005
	trans-1,3-Dichloropropene	<0.0005	mg/l	0.0005
	Trichloroethene	<0.0005	mg/l	0.0005
	Trichlorofluoromethane	<0.0005	mg/l	0.0005
	Vinyl chloride	<0.0003	mg/l	0.0003
	Xylene (ortho-)	<0.0005	mg/l	0.0005
①**NWWG6**	**Volatile Fatty Acids (VFA)**			
	Acetic acid	<5	mg/l	5
	Butyric acid	<5	mg/l	5
	Heptanoic acid	<5	mg/l	5
	Hexanoic acid	<5	mg/l	5
	Isobutyric acid	<5	mg/l	5
	Isocaproic acid	<5	mg/l	5
	Isovaleric acid	<5	mg/l	5
	Propionic acid	<5	mg/l	5
	Valeric acid	<5	mg/l	5
	Volatile fatty acids as acetic acid	<5	mg/l	5

RESULTS (UNCERTAINTY)	LOQ

LIST OF METHODS

NW003	**Total Alkalinity:** APHA Online Edition 2320 B
NW00U	**Chlorophenols:** Internal Method, LC-MS/MS
NW011	**Sulphate:** APHA Online Edition 4110 B
NW023	**Conductivity:** APHA 24th Edition 2510 B
NW098	**Dissolved Aluminium:** APHA Online Edition 3125 B mod.
NW104	**Dissolved Cadmium:** APHA Online Edition 3125 B mod.
NW106	**Dissolved Chromium:** APHA Online Edition 3125 B mod.
NW109	**Dissolved Iron:** APHA Online Edition 3125 B mod.
NW112	**Dissolved Magnesium:** APHA Online Edition 3125 B mod.
NW114	**Dissolved Mercury:** APHA Online Edition 3125 B mod.
NW117	**Dissolved Potassium:** APHA Online Edition 3125 B mod.
NW125	**Dissolved Zinc:** APHA Online Edition 3125 B mod.
NW193	**Dissolved Reactive Phosphorus:** APHA Online Edition 4500-P G
NW206	**Suspended Solids:** APHA Online Edition 2540 D
NW228	**SVOC (GC-MSMS):** Internal Method, GC-MS/MS
NW341	**BOD5 - Soluble Carbonaceous:** APHA Online Edition 5210 B
NWWG6	**Volatile Fatty Acids (VFA):** APHA 24th Edition 5560 D mod.
NW007	**Chloride:** APHA Online Edition 4110 B
NW010	**Nitrate-N:** APHA Online Edition 4110 B
NW020	**Chemical Oxygen Demand:** APHA Online Edition 5220 D
NW030	**Total Hardness:** APHA Online Edition 2340 B
NW103	**Dissolved Boron:** APHA Online Edition 3125 B mod.
NW105	**Dissolved Calcium:** APHA Online Edition 3125 B mod.
NW108	**Dissolved Copper:** APHA Online Edition 3125 B mod.
NW110	**Dissolved Lead:** APHA Online Edition 3125 B mod.
NW113	**Dissolved Manganese:** APHA Online Edition 3125 B mod.
NW116	**Dissolved Nickel:** APHA Online Edition 3125 B mod.
NW120	**Dissolved Sodium:** APHA Online Edition 3125 B mod.
NW179	**Ammonia Nitrogen:** APHA Online Edition 4500-NH3 H
NW195	**pH (Tested beyond 15 minute APHA holding time):** APHA 24th Edition 4500-H B
NW210	**Total Non-Purgeable Organic Carbon:** APHA Online Edition 5310 B
NW229	**VOC (GC-MS):** Internal Method, HS-GC-MS
NW583	**Dissolved Arsenic:** APHA Online Edition 3125 B mod.
ZM2GA	**Escherichia coli E (Water) [NZ] <100 >6 000 000 /100 ml (0-3) m-FC Agar-F:** SMEWW 9222I; APHA 24th Edition

Signature

Marylou Cabral	Laboratory Manager Eurofins ELS Limited	**Jennifer Mont**	Supervisor Eurofins ELS Limited	**Divina Cunanan Lagazon**	Supervisor Eurofins ELS Limited
Gordon McArthur	Senior Laboratory Analyst Eurofins ELS Limited	**Ganesh Ilancko**	Supervisor Eurofins ELS Limited	**Arvinder Singh**	Laboratory Supervisor Microbiology
Gabriela Carvalhaes	Manager Food and Water Testing Chemistry	**Cody Forbes**	Laboratory Analyst Laboratory Analyst		

EXPLANATORY NOTE

① Test is not accredited
② Test is subcontracted within Eurofins group and is accredited
③ Test is subcontracted within Eurofins group and is not accredited
④ Test is subcontracted outside Eurofins group and is accredited
⑤ Test is subcontracted outside Eurofins group and is not accredited
⑥ Test result is provided by the customer and is not accredited
⑦ Tested at the sampling point by Eurofins and is not accredited
⑧ Tested at the sampling point by Eurofins and is accredited
⑨ Test is RLP accredited
⑩ Test is subcontracted within Eurofins group and is RLP accredited

N/A means Not Applicable
Not Detected means not detected at or above the Limit of Quantification (LOQ)
LOQ means Limit of Quantification and the unit of LOQ is the same as the result unit
✗ (Unsatisfactory) means does not meet the specification
✓ (Satisfactory) means meets the specification

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END OF REPORT

Food & Water Testing

ANALYTICAL REPORT

REPORT CODE	AR-24-NW-023587-01	REPORT DATE	19/04/2024

Attention Downer NZ Ltd (EDI Levin)
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Copy to: Water and Waste Team (waterandwasteteam@horowhenua.govt.nz), McMillan

Contact for your orders: Gabriela Carvalhaes
Contract: Landfill

Order code: EUNZWE-00177701
Purchase Order Number: Landfill

SAMPLE CODE	812-2024-00052887		
Sample Name	349858-0		
Product:	Ground water		
Sampling Point code:	WIL-B2	**Sampling Point name:**	Levin B2
Reception Date & Time:	10/04/2024 14:30		
Analysis Started on:	10/04/2024	**Analysis Ending Date:**	19/04/2024
Product Type	Ground water	**Sampled Date & Time**	10/04/2024 08:27
Sampler(s)	Client nominated external sampler	**Sampled by Eurofins**	No

		RESULTS	(UNCERTAINTY)	LOQ
NW179	**Ammonia Nitrogen**			
	Ammoniacal nitrogen (N)	90.6	(± 9.06) mg/l	0.01
NW341	**BOD5 - Soluble Carbonaceous**			
	BOD5	1	mg/l	1
NW020	**Chemical Oxygen Demand**			
	Chemical oxygen demand (COD)	102	(± 11) mg/l	15
NW007	**Chloride**			
	Chloride (Cl)	173	(± 17.3) mg/l	0.02
NW00U	**Chlorophenols**			
	2,3,4,6-Tetrachlorophenol	<0.01	mg/l	0.01
	2,4-Dichlorophenol	<0.01	mg/l	0.01
	2,6-Dichlorophenol	<0.02	mg/l	0.2
	2-Chlorophenol (o-chlorophenol)	<0.01	mg/l	0.01
	3,4,5-Trichlorophenol	<0.01	mg/l	0.01
	4-Chloro-3-cresol	<0.01	mg/l	0.01
	Pentachlorophenol	<0.005	mg/l	0.005
	Phenol	<0.01	mg/l	0.01
	Total of 2,4,5 & 2,4,6 -Trichlorophenol	<0.02	mg/l	0.02
NW023	**Conductivity**			
	Conductivity	265	(± 5.3) mS/m	0.1
NW098	**Dissolved Aluminium**			
	Aluminium	0.010	mg/l	0.002
NW583	**Dissolved Arsenic**			
	Arsenic (As)	0.004	mg/l	0.001
NW103	**Dissolved Boron**			
	Boron (B)	2.26	mg/l	0.03

		RESULTS (UNCERTAINTY)		LOQ
NW104	**Dissolved Cadmium**			
	Cadmium (Cd)	<0.0002	mg/l	0.0002
NW105	**Dissolved Calcium**			
	Calcium (Ca)	128	mg/l	0.1
NW106	**Dissolved Chromium**			
	Chromium (Cr)	0.001	mg/l	0.001
NW108	**Dissolved Copper**			
	Copper (Cu)	0.0050	mg/l	0.0005
NW109	**Dissolved Iron**			
	Iron (Fe)	0.11	mg/l	0.01
NW110	**Dissolved Lead**			
	Lead (Pb)	<0.0005	mg/l	0.0005
NW112	**Dissolved Magnesium**			
	Magnesium (Mg)	50.9	mg/l	0.01
NW113	**Dissolved Manganese**			
	Manganese (Mn)	6.48	mg/l	0.0005
NW114	**Dissolved Mercury**			
	Mercury (Hg)	<0.0005	mg/l	0.0005
NW116	**Dissolved Nickel**			
	Nickel (Ni)	0.0034	mg/l	0.0005
NW117	**Dissolved Potassium**			
	Potassium (K)	126	mg/l	0.01
NW193	**Dissolved Reactive Phosphorus**			
	Phosphorus (soluble reactive)	0.018	mg/l	0.005
NW120	**Dissolved Sodium**			
	Sodium (Na)	105	mg/l	0.01
NW125	**Dissolved Zinc**			
	Zinc (Zn)	0.012	mg/l	0.002
ZM2GA	**Enumeration of Escherichia coli By Membrane Filtration**			
	Escherichia coli	<100	cfu/100 ml	100
NW010	**Nitrate-N**			
	Nitrate-N	0.25	(± 0.03) mg/l	0.01
NW195	**pH (Tested beyond 15 minute APHA holding time)**			
	pH	6.8	(± 0.2)	0.1
NW011	**Sulphate**			
	Sulphate	19.8	(± 1.98) mg/l	0.02
NW206	**Suspended Solids**			
	Suspended Solids	201	mg/l	3
NW228	**SVOC (GC-MSMS)**			
	Acenaphthene	<0.0001	mg/l	0.0001
	Acenaphthylene	<0.001	mg/l	0.001
	Adipatic acid, bis-2-ethylhexyl ester (DEHA)	<0.0001	mg/l	0.0001
	Alachlor	<0.0001	mg/l	0.0001
	Aldicarb	<0.1	mg/l	0.1
	Aldrin	<0.001	mg/l	0.001
	Anthracene	<0.001	mg/l	0.001
	Atrazine	<0.0001	mg/l	0.0001

		RESULTS (UNCERTAINTY)		LOQ
NW228	**SVOC (GC-MSMS)**			
	Benz(a)anthracene	<0.0001	mg/l	0.0001
	Benzo(a)pyrene	<0.0001	mg/l	0.0001
	Benzo(g,h,i)perylene	<0.001	mg/l	0.001
	Bromacil	<0.005	mg/l	0.005
	Carbofuran	<0.001	mg/l	0.001
	Chlordane	<0.0001	mg/l	0.0001
	Chlordane, gamma	<0.001	mg/l	0.001
	Chlorpyrifos (-ethyl)	<0.0001	mg/l	0.0001
	Chrysene	<0.0001	mg/l	0.0001
	Cyanazine	<0.005	mg/l	0.005
	d-BHC	<0.0001	mg/l	0.0001
	DDD, p,p'-	<0.0001	mg/l	0.0001
	DDE, p,p-	<0.0001	mg/l	0.0001
	DDT, p,p'-	NotRecovered	mg/l	0.001
	Diazinon	<0.0001	mg/l	0.0001
	Dibenz(a,h)anthracene	<0.0001	mg/l	0.0001
	Dieldrin	<0.0001	mg/l	0.0001
	Dimethoate	<0.001	mg/l	0.001
	Diuron	<0.001	mg/l	0.001
	Endosulfan, alpha-	<0.001	mg/l	0.001
	Endosulfan, beta-	<0.005	mg/l	0.005
	Endosulfan-sulfate	<0.0001	mg/l	0.0001
	Endrin	<0.0001	mg/l	0.0001
	Endrin ketone	NotRecovered	mg/l	0.0001
	Endrin-aldehyde	<0.001	mg/l	0.01
	Fluoranthene	<0.0001	mg/l	0.0001
	Fluorene	<0.0001	mg/l	0.0001
	HCH, alpha-	<0.0001	mg/l	0.0001
	HCH, beta-	<0.0001	mg/l	0.0001
	Heptachlor	<0.0001	mg/l	0.0001
	Heptachlor epoxide, cis-	<0.0001	mg/l	0.0001
	Hexachlorobenzene (HCB)	<0.0001	mg/l	0.0001
	Hexazinone	<0.001	mg/l	0.001
	Indeno(1,2,3-cd)pyrene	<0.0001	mg/l	0.0001
	Lindane (gamma-HCH)	<0.0001	mg/l	0.0001
	Metalaxyl and metalaxyl-M (metalaxyl including other mixtures of constituent isomers including metalaxyl-M (sum of isomers))	<0.001	mg/l	0.001
	Methoxychlor	<0.0001	mg/l	0.0001
	Metolachlor	<0.0001	mg/l	0.0001
	Metribuzin	<0.0001	mg/l	0.0001
	Molinate	<0.0001	mg/l	0.0001
	Naphthalene	<0.0001	mg/l	0.0001
	Oxadiazon	<0.0001	mg/l	0.0001
	PCB 101	<0.0001	mg/l	0.0001
	PCB 138	<0.001	mg/l	0.001
	PCB 183	<0.0001	mg/l	0.0001

		RESULTS	(UNCERTAINTY)	LOQ
NW228	**SVOC (GC-MSMS)**			
	PCB 28	<0.0001	mg/l	0.0001
	PCB 7	<0.0001	mg/l	0.0001
	Pendimethalin	<0.002	mg/l	0.002
	Permethrin (sum of isomers)	<0.0001	mg/l	0.0001
	Phenanthrene	<0.0001	mg/l	0.0001
	Pirimiphos-methyl	<0.0001	mg/l	0.0001
	Procymidone	<0.0001	mg/l	0.0001
	Propanil	<0.001	mg/l	0.001
	Propazine	<0.0001	mg/l	0.0001
	Pyrene	<0.0001	mg/l	0.0001
	Pyriproxyfen	<0.0001	mg/l	0.0001
	Simazine	<0.0001	mg/l	0.0001
	Terbuthylazine	<0.0001	mg/l	0.0001
	Total Benzo(b) and Benzo(k) fluoranthene	<0.001	mg/l	0.001
	Trifluralin	<0.0001	mg/l	0.0001
NW003	**Total Alkalinity**			
	Alkalinity total	1180	(± 120) mg CaCO3/l	1
NW030	**Total Hardness**			
	Hardness	529	mg CaCO3/l	1
NW210	**Total Non-Purgeable Organic Carbon**			
	Total Organic Carbon	45.3	(± 4.5) mg/l	0.1
NW229	**VOC (GC-MS)**			
	1,1,1,2-Tetrachloroethane	<0.0005	mg/l	0.0005
	1,1,1-Trichloroethane	<0.0005	mg/l	0.0005
	1,1,2,2-tetrachloroethane	<0.0005	mg/l	0.0005
	1,1,2-Trichloroethane	<0.0005	mg/l	0.0005
	1,1-Dichloroethane	<0.0005	mg/l	0.0005
	1,1-Dichloroethene	<0.0005	mg/l	0.0005
	1,1-Dichloropropene	<0.0005	mg/l	0.0005
	1,2,3-Trichlorobenzene	<0.0005	mg/l	0.0005
	1,2,3-Trichloropropane	<0.0005	mg/l	0.0005
	1,2,4 trimethylbenzen	<0.0005	mg/l	0.0005
	1,2,4-Trichlorobenzene	<0.0005	mg/l	0.0005
	1,2-Dibromo-3-chloropropane	<0.001	mg/l	0.002
	1,2-Dibromoethane	<0.0002	mg/l	0.0002
	1,2-Dichlorobenzene (2)	<0.0005	mg/l	0.0005
	1,2-Dichloroethane	<0.0005	mg/l	0.0005
	1,2-Dichloropropane	<0.0005	mg/l	0.0005
	1,3,5-Trichlorobenzene	<0.0005	mg/l	0.0005
	1,3,5-Trimethylbenzene	<0.0005	mg/l	0.0005
	1,3-Dichlorobenzene	<0.0005	mg/l	0.0005
	1,3-Dichloropropane	<0.0005	mg/l	0.0005
	1,4-dichlorobenzene	<0.0005	mg/l	0.0005
	2,2-Dichloropropane	<0.0005	mg/l	0.0005
	2-Chlorotoluene	<0.0005	mg/l	0.0005
	3-chloropropene	<0.0020	mg/l	0.0005
	4-Chlorotoluene	<0.0005	mg/l	0.0005

		RESULTS (UNCERTAINTY)		LOQ
NW229	**VOC (GC-MS)**			
	4-methyl-2-pentanone	<0.0005	mg/l	0.0005
	Benzene	0.0012	mg/l	0.0005
	Bromobenzene	<0.0005	mg/l	0.0005
	Bromochloromethane	<0.0012	mg/l	0.0012
	Bromodichloromethane	<0.0005	mg/l	0.0005
	Bromoform	<0.0005	mg/l	0.0005
	Bromomethane (zone 2)	<0.001	mg/l	0.001
	Carbon tetrachloride	<0.0005	mg/l	0.0005
	Carbondisulphide (CS2)	<0.0005	mg/l	0.0005
	Chlorobenzene	0.0180	mg/l	0.0005
	Chloroethane	<0.001	mg/l	0.001
	Chloroform	<0.0005	mg/l	0.0005
	Chloromethane	<0.006	mg/l	0.006
	cis-1,2-Dichloroethene	0.0007	mg/l	0.0005
	cis-1,3-Dichloropropene	<0.0005	mg/l	0.0005
	Dibromochloromethane	<0.0005	mg/l	0.0005
	Dibromomethane	<0.0005	mg/l	0.0005
	Dichlorodifluoromethane	NotRecovered	mg/l	0.001
	Dichloromethane	<0.005	mg/l	0.005
	Hexachlorobutadiene	<0.0002	mg/l	0.0002
	Isopropylbenzene (Cumene)	<0.0005	mg/l	0.0005
	m,p-Xylene, Ethylbenzene	<0.0015	mg/l	0.0015
	Naphthalene	<0.0005	mg/l	0.0005
	n-Butylbenzene	<0.0005	mg/l	0.0005
	n-Propylbenzene	<0.0005	mg/l	0.0005
	p-Isopropyltoluene	<0.0005	mg/l	0.0005
	sec-Butylbenzene	<0.0005	mg/l	0.0005
	Styrene	<0.0005	mg/l	0.0005
	tert-Butylbenzene	<0.0005	mg/l	0.0005
	Tetrachloroethene	<0.0005	mg/l	0.0005
	Toluene	<0.0005	mg/l	0.0005
	trans-1,2-Dichloroethene	<0.0005	mg/l	0.0005
	trans-1,3-Dichloropropene	<0.0005	mg/l	0.0005
	Trichloroethene	<0.0005	mg/l	0.0005
	Trichlorofluoromethane	<0.0005	mg/l	0.0005
	Vinyl chloride	<0.0003	mg/l	0.0003
	Xylene (ortho-)	<0.0005	mg/l	0.0005
①**NWWG6**	**Volatile Fatty Acids (VFA)**			
	Acetic acid	<5	mg/l	5
	Butyric acid	<5	mg/l	5
	Heptanoic acid	<5	mg/l	5
	Hexanoic acid	<5	mg/l	5
	Isobutyric acid	<5	mg/l	5
	Isocaproic acid	<5	mg/l	5
	Isovaleric acid	<5	mg/l	5
	Propionic acid	<5	mg/l	5
	Valeric acid	<5	mg/l	5
	Volatile fatty acids as acetic acid	<5	mg/l	5

RESULTS (UNCERTAINTY)	LOQ

LIST OF METHODS

NW003	**Total Alkalinity:** APHA Online Edition 2320 B
NW00U	**Chlorophenols:** Internal Method, LC-MS/MS
NW011	**Sulphate:** APHA Online Edition 4110 B
NW023	**Conductivity:** APHA 24th Edition 2510 B
NW098	**Dissolved Aluminium:** APHA Online Edition 3125 B mod.
NW104	**Dissolved Cadmium:** APHA Online Edition 3125 B mod.
NW106	**Dissolved Chromium:** APHA Online Edition 3125 B mod.
NW109	**Dissolved Iron:** APHA Online Edition 3125 B mod.
NW112	**Dissolved Magnesium:** APHA Online Edition 3125 B mod.
NW114	**Dissolved Mercury:** APHA Online Edition 3125 B mod.
NW117	**Dissolved Potassium:** APHA Online Edition 3125 B mod.
NW125	**Dissolved Zinc:** APHA Online Edition 3125 B mod.
NW193	**Dissolved Reactive Phosphorus:** APHA Online Edition 4500-P G
NW206	**Suspended Solids:** APHA Online Edition 2540 D
NW228	**SVOC (GC-MSMS):** Internal Method, GC-MS/MS
NW341	**BOD5 - Soluble Carbonaceous:** APHA Online Edition 5210 B
NWWG6	**Volatile Fatty Acids (VFA):** APHA 24th Edition 5560 D mod.
NW007	**Chloride:** APHA Online Edition 4110 B
NW010	**Nitrate-N:** APHA Online Edition 4110 B
NW020	**Chemical Oxygen Demand:** APHA Online Edition 5220 D
NW030	**Total Hardness:** APHA Online Edition 2340 B
NW103	**Dissolved Boron:** APHA Online Edition 3125 B mod.
NW105	**Dissolved Calcium:** APHA Online Edition 3125 B mod.
NW108	**Dissolved Copper:** APHA Online Edition 3125 B mod.
NW110	**Dissolved Lead:** APHA Online Edition 3125 B mod.
NW113	**Dissolved Manganese:** APHA Online Edition 3125 B mod.
NW116	**Dissolved Nickel:** APHA Online Edition 3125 B mod.
NW120	**Dissolved Sodium:** APHA Online Edition 3125 B mod.
NW179	**Ammonia Nitrogen:** APHA Online Edition 4500-NH3 H
NW195	**pH (Tested beyond 15 minute APHA holding time):** APHA 24th Edition 4500-H B
NW210	**Total Non-Purgeable Organic Carbon:** APHA Online Edition 5310 B
NW229	**VOC (GC-MS):** Internal Method, HS-GC-MS
NW583	**Dissolved Arsenic:** APHA Online Edition 3125 B mod.
ZM2GA	**Escherichia coli E (Water) [NZ] <100 >6 000 000 /100 ml (0-3) m-FC Agar-F:** SMEWW 9222I; APHA 24th Edition

Signature

Marylou Cabral	Laboratory Manager Eurofins ELS Limited	**Jennifer Mont**	Supervisor Eurofins ELS Limited	**Divina Cunanan Lagazon**	Supervisor Eurofins ELS Limited
Gordon McArthur	Senior Laboratory Analyst Eurofins ELS Limited	**Ganesh Ilancko**	Supervisor Eurofins ELS Limited	**Arvinder Singh**	Laboratory Supervisor Microbiology
Gabriela Carvalhaes	Manager Food and Water Testing Chemistry	**Cody Forbes**	Laboratory Analyst Laboratory Analyst		

EXPLANATORY NOTE

① Test is not accredited
② Test is subcontracted within Eurofins group and is accredited
③ Test is subcontracted within Eurofins group and is not accredited
④ Test is subcontracted outside Eurofins group and is accredited
⑤ Test is subcontracted outside Eurofins group and is not accredited
⑥ Test result is provided by the customer and is not accredited
⑦ Tested at the sampling point by Eurofins and is not accredited
⑧ Tested at the sampling point by Eurofins and is accredited
⑨ Test is RLP accredited
⑩ Test is subcontracted within Eurofins group and is RLP accredited

N/A means Not Applicable
Not Detected means not detected at or above the Limit of Quantification (LOQ)
LOQ means Limit of Quantification and the unit of LOQ is the same as the result unit
✗ (Unsatisfactory) means does not meet the specification
✓ (Satisfactory) means meets the specification

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END OF REPORT

Food & Water Testing

ANALYTICAL REPORT

REPORT CODE **AR-24-NW-024103-01** REPORT DATE **20/04/2024**

Attention Downer NZ Ltd (EDI Levin)
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Copy to: Water and Waste Team (waterandwasteteam@horowhenua.govt.nz), McMillan

Contact for your orders: Gabriela Carvalhaes
Contract: Landfill

Order code: EUNZWE-00177701

Purchase Order Number: Landfill

SAMPLE CODE **812-2024-00052905**

Sample Name	349859-0		
Product:	Ground water		
Sampling Point code:	WIL-B3	**Sampling Point name:**	Levin B3s
Reception Date & Time:	10/04/2024 14:30		
Analysis Started on:	10/04/2024	**Analysis Ending Date:**	20/04/2024
Product Type	Ground water	**Sampled Date & Time**	10/04/2024 11:24
Sampler(s)	Client nominated external sampler	**Sampled by Eurofins**	No

		RESULTS	(UNCERTAINTY)	LOQ
NW179	**Ammonia Nitrogen**			
	Ammoniacal nitrogen (N)	184	(± 18.4) mg/l	0.01
NW341	**BOD5 - Soluble Carbonaceous**			
	BOD5	2	mg/l	1
NW020	**Chemical Oxygen Demand**			
	Chemical oxygen demand (COD)	411	(± 41) mg/l	15
NW007	**Chloride**			
	Chloride (Cl)	119	(± 11.9) mg/l	0.02
NW00U	**Chlorophenols**			
	2,3,4,6-Tetrachlorophenol	<0.01	mg/l	0.01
	2,4-Dichlorophenol	<0.01	mg/l	0.01
	2,6-Dichlorophenol	<0.02	mg/l	0.2
	2-Chlorophenol (o-chlorophenol)	<0.01	mg/l	0.01
	3,4,5-Trichlorophenol	<0.01	mg/l	0.01
	4-Chloro-3-cresol	<0.01	mg/l	0.01
	Pentachlorophenol	<0.005	mg/l	0.005
	Phenol	<0.01	mg/l	0.01
	Total of 2,4,5 & 2,4,6 -Trichlorophenol	<0.02	mg/l	0.02
NW023	**Conductivity**			
	Conductivity	280	(± 5.6) mS/m	0.1
NW098	**Dissolved Aluminium**			
	Aluminium	0.006	mg/l	0.002
NW583	**Dissolved Arsenic**			
	Arsenic (As)	0.028	mg/l	0.001
NW103	**Dissolved Boron**			
	Boron (B)	1.59	mg/l	0.03

		RESULTS (UNCERTAINTY)		LOQ
NW104	**Dissolved Cadmium**			
	Cadmium (Cd)	0.0003	mg/l	0.0002
NW105	**Dissolved Calcium**			
	Calcium (Ca)	54.7	mg/l	0.1
NW106	**Dissolved Chromium**			
	Chromium (Cr)	0.004	mg/l	0.001
NW108	**Dissolved Copper**			
	Copper (Cu)	0.0491	mg/l	0.0005
NW109	**Dissolved Iron**			
	Iron (Fe)	0.36	mg/l	0.01
NW110	**Dissolved Lead**			
	Lead (Pb)	<0.0005	mg/l	0.0005
NW112	**Dissolved Magnesium**			
	Magnesium (Mg)	41.3	mg/l	0.01
NW113	**Dissolved Manganese**			
	Manganese (Mn)	3.97	mg/l	0.0005
NW114	**Dissolved Mercury**			
	Mercury (Hg)	<0.0005	mg/l	0.0005
NW116	**Dissolved Nickel**			
	Nickel (Ni)	0.0090	mg/l	0.0005
NW117	**Dissolved Potassium**			
	Potassium (K)	109	mg/l	0.01
NW193	**Dissolved Reactive Phosphorus**			
	Phosphorus (soluble reactive)	0.026	mg/l	0.005
NW120	**Dissolved Sodium**			
	Sodium (Na)	100	mg/l	0.01
NW125	**Dissolved Zinc**			
	Zinc (Zn)	0.006	mg/l	0.002
ZM2GA	**Enumeration of Escherichia coli By Membrane Filtration**			
	Escherichia coli	<100	cfu/100 ml	100
NW010	**Nitrate-N**			
	Nitrate-N	<0.1	mg/l	0.01
NW195	**pH (Tested beyond 15 minute APHA holding time)**			
	pH	7.0	(± 0.2)	0.1
NW011	**Sulphate**			
	Sulphate	0.21	(± 0.02) mg/l	0.02
NW206	**Suspended Solids**			
	Suspended Solids	454	mg/l	3
NW228	**SVOC (GC-MSMS)**			
	Acenaphthene	<0.0001	mg/l	0.0001
	Acenaphthylene	<0.001	mg/l	0.001
	Adipatic acid, bis-2-ethylhexyl ester (DEHA)	<0.0001	mg/l	0.0001
	Alachlor	<0.0001	mg/l	0.0001
	Aldicarb	<0.1	mg/l	0.1
	Aldrin	<0.001	mg/l	0.001
	Anthracene	<0.001	mg/l	0.001
	Atrazine	<0.0001	mg/l	0.0001

		RESULTS (UNCERTAINTY)		LOQ
NW228	**SVOC (GC-MSMS)**			
	Benz(a)anthracene	<0.0001	mg/l	0.0001
	Benzo(a)pyrene	<0.0001	mg/l	0.0001
	Benzo(g,h,i)perylene	<0.001	mg/l	0.001
	Bromacil	<0.005	mg/l	0.005
	Carbofuran	<0.001	mg/l	0.001
	Chlordane	<0.0001	mg/l	0.0001
	Chlordane, gamma	<0.001	mg/l	0.001
	Chlorpyrifos (-ethyl)	<0.0001	mg/l	0.0001
	Chrysene	<0.0001	mg/l	0.0001
	Cyanazine	<0.005	mg/l	0.005
	d-BHC	<0.0001	mg/l	0.0001
	DDD, p,p'-	<0.0001	mg/l	0.0001
	DDE, p,p-	<0.0001	mg/l	0.0001
	DDT, p,p'-	NotRecovered	mg/l	0.001
	Diazinon	<0.0001	mg/l	0.0001
	Dibenz(a,h)anthracene	<0.0001	mg/l	0.0001
	Dieldrin	<0.0001	mg/l	0.0001
	Dimethoate	<0.001	mg/l	0.001
	Diuron	<0.001	mg/l	0.001
	Endosulfan, alpha-	<0.001	mg/l	0.001
	Endosulfan, beta-	<0.005	mg/l	0.005
	Endosulfan-sulfate	<0.0001	mg/l	0.0001
	Endrin	<0.0001	mg/l	0.0001
	Endrin ketone	NotRecovered	mg/l	0.0001
	Endrin-aldehyde	<0.001	mg/l	0.01
	Fluoranthene	<0.0001	mg/l	0.0001
	Fluorene	<0.0001	mg/l	0.0001
	HCH, alpha-	<0.0001	mg/l	0.0001
	HCH, beta-	<0.0001	mg/l	0.0001
	Heptachlor	<0.0001	mg/l	0.0001
	Heptachlor epoxide, cis-	<0.0001	mg/l	0.0001
	Hexachlorobenzene (HCB)	<0.0001	mg/l	0.0001
	Hexazinone	<0.001	mg/l	0.001
	Indeno(1,2,3-cd)pyrene	<0.0001	mg/l	0.0001
	Lindane (gamma-HCH)	<0.0001	mg/l	0.0001
	Metalaxyl and metalaxyl-M (metalaxyl including other mixtures of constituent isomers including metalaxyl-M (sum of isomers))	<0.001	mg/l	0.001
	Methoxychlor	<0.0001	mg/l	0.0001
	Metolachlor	<0.0001	mg/l	0.0001
	Metribuzin	<0.0001	mg/l	0.0001
	Molinate	<0.0001	mg/l	0.0001
	Naphthalene	<0.0001	mg/l	0.0001
	Oxadiazon	<0.0001	mg/l	0.0001
	PCB 101	<0.0001	mg/l	0.0001
	PCB 138	<0.001	mg/l	0.001
	PCB 183	<0.0001	mg/l	0.0001

		RESULTS	(UNCERTAINTY)	LOQ
NW228	**SVOC (GC-MSMS)**			
	PCB 28	<0.0001	mg/l	0.0001
	PCB 7	<0.0001	mg/l	0.0001
	Pendimethalin	<0.002	mg/l	0.002
	Permethrin (sum of isomers)	<0.0001	mg/l	0.0001
	Phenanthrene	<0.0001	mg/l	0.0001
	Pirimiphos-methyl	<0.0001	mg/l	0.0001
	Procymidone	<0.0001	mg/l	0.0001
	Propanil	<0.001	mg/l	0.001
	Propazine	<0.0001	mg/l	0.0001
	Pyrene	<0.0001	mg/l	0.0001
	Pyriproxyfen	<0.0001	mg/l	0.0001
	Simazine	<0.0001	mg/l	0.0001
	Terbuthylazine	<0.0001	mg/l	0.0001
	Total Benzo(b) and Benzo(k) fluoranthene	<0.001	mg/l	0.001
	Trifluralin	<0.0001	mg/l	0.0001
NW003	**Total Alkalinity**			
	Alkalinity total	1310	(± 130) mg CaCO3/l	1
NW030	**Total Hardness**			
	Hardness	307	mg CaCO3/l	1
NW210	**Total Non-Purgeable Organic Carbon**			
	Total Organic Carbon	69.1	(± 6.9) mg/l	0.1
NW229	**VOC (GC-MS)**			
	1,1,1,2-Tetrachloroethane	<0.0005	mg/l	0.0005
	1,1,1-Trichloroethane	<0.0005	mg/l	0.0005
	1,1,2,2-tetrachloroethane	<0.0005	mg/l	0.0005
	1,1,2-Trichloroethane	<0.0005	mg/l	0.0005
	1,1-Dichloroethane	<0.0005	mg/l	0.0005
	1,1-Dichloroethene	<0.0005	mg/l	0.0005
	1,1-Dichloropropene	<0.0005	mg/l	0.0005
	1,2,3-Trichlorobenzene	<0.0005	mg/l	0.0005
	1,2,3-Trichloropropane	<0.0005	mg/l	0.0005
	1,2,4 trimethylbenzen	<0.0005	mg/l	0.0005
	1,2,4-Trichlorobenzene	<0.0005	mg/l	0.0005
	1,2-Dibromo-3-chloropropane	<0.001	mg/l	0.002
	1,2-Dibromoethane	<0.0002	mg/l	0.0002
	1,2-Dichlorobenzene (2)	<0.0005	mg/l	0.0005
	1,2-Dichloroethane	<0.0005	mg/l	0.0005
	1,2-Dichloropropane	<0.0005	mg/l	0.0005
	1,3,5-Trichlorobenzene	<0.0005	mg/l	0.0005
	1,3,5-Trimethylbenzene	<0.0005	mg/l	0.0005
	1,3-Dichlorobenzene	<0.0005	mg/l	0.0005
	1,3-Dichloropropane	<0.0005	mg/l	0.0005
	1,4-dichlorobenzene	<0.0005	mg/l	0.0005
	2,2-Dichloropropane	<0.0005	mg/l	0.0005
	2-Chlorotoluene	<0.0005	mg/l	0.0005
	3-chloropropene	<0.0020	mg/l	0.0005
	4-Chlorotoluene	<0.0005	mg/l	0.0005

		RESULTS (UNCERTAINTY)		LOQ
NW229	**VOC (GC-MS)**			
	4-methyl-2-pentanone	<0.0005	mg/l	0.0005
	Benzene	0.0020	mg/l	0.0005
	Bromobenzene	<0.0005	mg/l	0.0005
	Bromochloromethane	<0.0012	mg/l	0.0012
	Bromodichloromethane	<0.0005	mg/l	0.0005
	Bromoform	<0.0005	mg/l	0.0005
	Bromomethane (zone 2)	<0.001	mg/l	0.001
	Carbon tetrachloride	<0.0005	mg/l	0.0005
	Carbondisulphide (CS2)	<0.0005	mg/l	0.0005
	Chlorobenzene	0.0033	mg/l	0.0005
	Chloroethane	<0.001	mg/l	0.001
	Chloroform	<0.0005	mg/l	0.0005
	Chloromethane	<0.006	mg/l	0.006
	cis-1,2-Dichloroethene	0.0007	mg/l	0.0005
	cis-1,3-Dichloropropene	<0.0005	mg/l	0.0005
	Dibromochloromethane	<0.0005	mg/l	0.0005
	Dibromomethane	<0.0005	mg/l	0.0005
	Dichlorodifluoromethane	NotRecovered	mg/l	0.001
	Dichloromethane	<0.005	mg/l	0.005
	Hexachlorobutadiene	<0.0002	mg/l	0.0002
	Isopropylbenzene (Cumene)	0.0012	mg/l	0.0005
	m,p-Xylene, Ethylbenzene	<0.0015	mg/l	0.0015
	Naphthalene	<0.0005	mg/l	0.0005
	n-Butylbenzene	<0.0005	mg/l	0.0005
	n-Propylbenzene	<0.0005	mg/l	0.0005
	p-Isopropyltoluene	<0.0005	mg/l	0.0005
	sec-Butylbenzene	<0.0005	mg/l	0.0005
	Styrene	<0.0005	mg/l	0.0005
	tert-Butylbenzene	<0.0005	mg/l	0.0005
	Tetrachloroethene	<0.0005	mg/l	0.0005
	Toluene	<0.0005	mg/l	0.0005
	trans-1,2-Dichloroethene	<0.0005	mg/l	0.0005
	trans-1,3-Dichloropropene	<0.0005	mg/l	0.0005
	Trichloroethene	<0.0005	mg/l	0.0005
	Trichlorofluoromethane	<0.0005	mg/l	0.0005
	Vinyl chloride	<0.0003	mg/l	0.0003
	Xylene (ortho-)	<0.0005	mg/l	0.0005
①**NWWG6**	**Volatile Fatty Acids (VFA)**			
	Acetic acid	<5	mg/l	5
	Butyric acid	<5	mg/l	5
	Heptanoic acid	<5	mg/l	5
	Hexanoic acid	<5	mg/l	5
	Isobutyric acid	<5	mg/l	5
	Isocaproic acid	<5	mg/l	5
	Isovaleric acid	<5	mg/l	5
	Propionic acid	<5	mg/l	5
	Valeric acid	<5	mg/l	5
	Volatile fatty acids as acetic acid	<5	mg/l	5

RESULTS (UNCERTAINTY)	LOQ

LIST OF METHODS

NW003	**Total Alkalinity:** APHA Online Edition 2320 B
NW00U	**Chlorophenols:** Internal Method, LC-MS/MS
NW011	**Sulphate:** APHA Online Edition 4110 B
NW023	**Conductivity:** APHA 24th Edition 2510 B
NW098	**Dissolved Aluminium:** APHA Online Edition 3125 B mod.
NW104	**Dissolved Cadmium:** APHA Online Edition 3125 B mod.
NW106	**Dissolved Chromium:** APHA Online Edition 3125 B mod.
NW109	**Dissolved Iron:** APHA Online Edition 3125 B mod.
NW112	**Dissolved Magnesium:** APHA Online Edition 3125 B mod.
NW114	**Dissolved Mercury:** APHA Online Edition 3125 B mod.
NW117	**Dissolved Potassium:** APHA Online Edition 3125 B mod.
NW125	**Dissolved Zinc:** APHA Online Edition 3125 B mod.
NW193	**Dissolved Reactive Phosphorus:** APHA Online Edition 4500-P G
NW206	**Suspended Solids:** APHA Online Edition 2540 D
NW228	**SVOC (GC-MSMS):** Internal Method, GC-MS/MS
NW341	**BOD5 - Soluble Carbonaceous:** APHA Online Edition 5210 B
NWWG6	**Volatile Fatty Acids (VFA):** APHA 24th Edition 5560 D mod.
NW007	**Chloride:** APHA Online Edition 4110 B
NW010	**Nitrate-N:** APHA Online Edition 4110 B
NW020	**Chemical Oxygen Demand:** APHA Online Edition 5220 D
NW030	**Total Hardness:** APHA Online Edition 2340 B
NW103	**Dissolved Boron:** APHA Online Edition 3125 B mod.
NW105	**Dissolved Calcium:** APHA Online Edition 3125 B mod.
NW108	**Dissolved Copper:** APHA Online Edition 3125 B mod.
NW110	**Dissolved Lead:** APHA Online Edition 3125 B mod.
NW113	**Dissolved Manganese:** APHA Online Edition 3125 B mod.
NW116	**Dissolved Nickel:** APHA Online Edition 3125 B mod.
NW120	**Dissolved Sodium:** APHA Online Edition 3125 B mod.
NW179	**Ammonia Nitrogen:** APHA Online Edition 4500-NH3 H
NW195	**pH (Tested beyond 15 minute APHA holding time):** APHA 24th Edition 4500-H B
NW210	**Total Non-Purgeable Organic Carbon:** APHA Online Edition 5310 B
NW229	**VOC (GC-MS):** Internal Method, HS-GC-MS
NW583	**Dissolved Arsenic:** APHA Online Edition 3125 B mod.
ZM2GA	**Escherichia coli E (Water) [NZ] <100 >6 000 000 /100 ml (0-3) m-FC Agar-F:** SMEWW 9222I; APHA 24th Edition

Signature

Marylou Cabral	Laboratory Manager Eurofins ELS Limited	**Jennifer Mont**	Supervisor Eurofins ELS Limited	**Divina Cunanan Lagazon**	Supervisor Eurofins ELS Limited
Gordon McArthur	Senior Laboratory Analyst Eurofins ELS Limited	**Ganesh Ilancko**	Supervisor Eurofins ELS Limited	**Arvinder Singh**	Laboratory Supervisor Microbiology
Gabriela Carvalhaes	Manager Food and Water Testing Chemistry	**Cody Forbes**	Laboratory Analyst Laboratory Analyst		

EXPLANATORY NOTE

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⑥ Test result is provided by the customer and is not accredited
⑦ Tested at the sampling point by Eurofins and is not accredited
⑧ Tested at the sampling point by Eurofins and is accredited
⑨ Test is RLP accredited
⑩ Test is subcontracted within Eurofins group and is RLP accredited

N/A means Not Applicable
Not Detected means not detected at or above the Limit of Quantification (LOQ)
LOQ means Limit of Quantification and the unit of LOQ is the same as the result unit
✗ (Unsatisfactory) means does not meet the specification
✓ (Satisfactory) means meets the specification

END OF REPORT

Food & Water Testing

ANALYTICAL REPORT

REPORT CODE	AR-24-NW-023554-01	REPORT DATE	19/04/2024

Attention Downer NZ Ltd (EDI Levin)
Horowhenua Admin
P O Box 642
4741 Levin
NEW ZEALAND

Phone (06) 367 2705
Email horowhenuaadmin@downer.co.nz

Copy to: Water and Waste Team (waterandwasteteam@horowhenua.govt.nz), McMillan

Contact for your orders: Gabriela Carvalhaes
Contract: Landfill

Order code: EUNZWE-00177701
Purchase Order Number: Landfill

SAMPLE CODE	812-2024-00052886		
Sample Name	349860-0		
Product:	Ground water		
Sampling Point code:	WIL-C1	**Sampling Point name:**	Levin C1
Reception Date & Time:	10/04/2024 14:30		
Analysis Started on:	10/04/2024	**Analysis Ending Date:**	19/04/2024
Product Type	Ground water	**Sampled Date & Time**	10/04/2024 05:03
Sampler(s)	Client nominated external sampler	**Sampled by Eurofins**	No

		RESULTS	(UNCERTAINTY)	LOQ
NW179	**Ammonia Nitrogen**			
	Ammoniacal nitrogen (N)	13.5	(± 1.35) mg/l	0.01
NW341	**BOD5 - Soluble Carbonaceous**			
	BOD5	<1	mg/l	1
NW020	**Chemical Oxygen Demand**			
	Chemical oxygen demand (COD)	88	(± 14) mg/l	15
NW007	**Chloride**			
	Chloride (Cl)	137	(± 13.7) mg/l	0.02
NW00U	**Chlorophenols**			
	2,3,4,6-Tetrachlorophenol	<0.01	mg/l	0.01
	2,4-Dichlorophenol	<0.01	mg/l	0.01
	2,6-Dichlorophenol	<0.02	mg/l	0.2
	2-Chlorophenol (o-chlorophenol)	<0.01	mg/l	0.01
	3,4,5-Trichlorophenol	<0.01	mg/l	0.01
	4-Chloro-3-cresol	<0.01	mg/l	0.01
	Pentachlorophenol	<0.005	mg/l	0.005
	Phenol	<0.01	mg/l	0.01
	Total of 2,4,5 & 2,4,6 -Trichlorophenol	<0.02	mg/l	0.02
NW023	**Conductivity**			
	Conductivity	120	(± 2.4) mS/m	0.1
NW098	**Dissolved Aluminium**			
	Aluminium	0.023	mg/l	0.002
NW583	**Dissolved Arsenic**			
	Arsenic (As)	0.001	mg/l	0.001
NW103	**Dissolved Boron**			
	Boron (B)	0.87	mg/l	0.03

		RESULTS (UNCERTAINTY)		LOQ
NW104	**Dissolved Cadmium**			
	Cadmium (Cd)	<0.0002	mg/l	0.0002
NW105	**Dissolved Calcium**			
	Calcium (Ca)	33.5	mg/l	0.1
NW106	**Dissolved Chromium**			
	Chromium (Cr)	<0.001	mg/l	0.001
NW108	**Dissolved Copper**			
	Copper (Cu)	0.0011	mg/l	0.0005
NW109	**Dissolved Iron**			
	Iron (Fe)	1.74	mg/l	0.01
NW110	**Dissolved Lead**			
	Lead (Pb)	<0.0005	mg/l	0.0005
NW112	**Dissolved Magnesium**			
	Magnesium (Mg)	23.4	mg/l	0.01
NW113	**Dissolved Manganese**			
	Manganese (Mn)	0.257	mg/l	0.0005
NW114	**Dissolved Mercury**			
	Mercury (Hg)	<0.0005	mg/l	0.0005
NW116	**Dissolved Nickel**			
	Nickel (Ni)	0.0011	mg/l	0.0005
NW117	**Dissolved Potassium**			
	Potassium (K)	26.5	mg/l	0.01
NW193	**Dissolved Reactive Phosphorus**			
	Phosphorus (soluble reactive)	0.014	mg/l	0.005
NW120	**Dissolved Sodium**			
	Sodium (Na)	129	mg/l	0.01
NW125	**Dissolved Zinc**			
	Zinc (Zn)	0.006	mg/l	0.002
ZM2GA	**Enumeration of Escherichia coli By Membrane Filtration**			
	Escherichia coli	<100	cfu/100 ml	100
NW010	**Nitrate-N**			
	Nitrate-N	0.07	(± 0.01) mg/l	0.01
NW195	**pH (Tested beyond 15 minute APHA holding time)**			
	pH	6.8	(± 0.2)	0.1
NW011	**Sulphate**			
	Sulphate	26.4	(± 2.64) mg/l	0.02
NW206	**Suspended Solids**			
	Suspended Solids	43	mg/l	3
NW228	**SVOC (GC-MSMS)**			
	Acenaphthene	<0.0001	mg/l	0.0001
	Acenaphthylene	<0.001	mg/l	0.001
	Adipatic acid, bis-2-ethylhexyl ester (DEHA)	<0.0001	mg/l	0.0001
	Alachlor	<0.0001	mg/l	0.0001
	Aldicarb	<0.1	mg/l	0.1
	Aldrin	<0.001	mg/l	0.001
	Anthracene	<0.001	mg/l	0.001
	Atrazine	<0.0001	mg/l	0.0001

		RESULTS (UNCERTAINTY)		LOQ
NW228	**SVOC (GC-MSMS)**			
	Benz(a)anthracene	<0.0001	mg/l	0.0001
	Benzo(a)pyrene	<0.0001	mg/l	0.0001
	Benzo(g,h,i)perylene	<0.001	mg/l	0.001
	Bromacil	<0.005	mg/l	0.005
	Carbofuran	<0.001	mg/l	0.001
	Chlordane	<0.0001	mg/l	0.0001
	Chlordane, gamma	<0.001	mg/l	0.001
	Chlorpyrifos (-ethyl)	<0.0001	mg/l	0.0001
	Chrysene	<0.0001	mg/l	0.0001
	Cyanazine	<0.005	mg/l	0.005
	d-BHC	<0.0001	mg/l	0.0001
	DDD, p,p'-	<0.0001	mg/l	0.0001
	DDE, p,p-	<0.0001	mg/l	0.0001
	DDT, p,p'-	<0.001	mg/l	0.001
	Diazinon	<0.0001	mg/l	0.0001
	Dibenz(a,h)anthracene	<0.0001	mg/l	0.0001
	Dieldrin	<0.0001	mg/l	0.0001
	Dimethoate	<0.001	mg/l	0.001
	Diuron	<0.001	mg/l	0.001
	Endosulfan, alpha-	<0.001	mg/l	0.001
	Endosulfan, beta-	<0.005	mg/l	0.005
	Endosulfan-sulfate	<0.0001	mg/l	0.0001
	Endrin	<0.0001	mg/l	0.0001
	Endrin ketone	<0.0001	mg/l	0.0001
	Endrin-aldehyde	<0.001	mg/l	0.01
	Fluoranthene	<0.0001	mg/l	0.0001
	Fluorene	<0.0001	mg/l	0.0001
	HCH, alpha-	<0.0001	mg/l	0.0001
	HCH, beta-	<0.0001	mg/l	0.0001
	Heptachlor	<0.0001	mg/l	0.0001
	Heptachlor epoxide, cis-	<0.0001	mg/l	0.0001
	Hexachlorobenzene (HCB)	<0.0001	mg/l	0.0001
	Hexazinone	<0.001	mg/l	0.001
	Indeno(1,2,3-cd)pyrene	<0.0001	mg/l	0.0001
	Lindane (gamma-HCH)	<0.0001	mg/l	0.0001
	Metalaxyl and metalaxyl-M (metalaxyl including other mixtures of constituent isomers including metalaxyl-M (sum of isomers))	<0.001	mg/l	0.001
	Methoxychlor	<0.0001	mg/l	0.0001
	Metolachlor	<0.0001	mg/l	0.0001
	Metribuzin	<0.0001	mg/l	0.0001
	Molinate	<0.0001	mg/l	0.0001
	Naphthalene	<0.0001	mg/l	0.0001
	Oxadiazon	<0.0001	mg/l	0.0001
	PCB 101	<0.0001	mg/l	0.0001
	PCB 138	<0.001	mg/l	0.001
	PCB 183	<0.0001	mg/l	0.0001

		RESULTS (UNCERTAINTY)		LOQ
NW228	**SVOC (GC-MSMS)**			
	PCB 28	<0.0001	mg/l	0.0001
	PCB 7	<0.0001	mg/l	0.0001
	Pendimethalin	<0.002	mg/l	0.002
	Permethrin (sum of isomers)	<0.0001	mg/l	0.0001
	Phenanthrene	<0.0001	mg/l	0.0001
	Pirimiphos-methyl	<0.0001	mg/l	0.0001
	Procymidone	<0.0001	mg/l	0.0001
	Propanil	<0.001	mg/l	0.001
	Propazine	<0.0001	mg/l	0.0001
	Pyrene	<0.0001	mg/l	0.0001
	Pyriproxyfen	<0.0001	mg/l	0.0001
	Simazine	<0.0001	mg/l	0.0001
	Terbuthylazine	<0.0001	mg/l	0.0001
	Total Benzo(b) and Benzo(k) fluoranthene	<0.001	mg/l	0.001
	Trifluralin	<0.0001	mg/l	0.0001
NW003	**Total Alkalinity**			
	Alkalinity total	380	(± 38) mg CaCO3/l	1
NW030	**Total Hardness**			
	Hardness	180	mg CaCO3/l	1
NW210	**Total Non-Purgeable Organic Carbon**			
	Total Organic Carbon	21.8	(± 2.2) mg/l	0.1
NW229	**VOC (GC-MS)**			
	1,1,1,2-Tetrachloroethane	<0.0005	mg/l	0.0005
	1,1,1-Trichloroethane	<0.0005	mg/l	0.0005
	1,1,2,2-tetrachloroethane	<0.0005	mg/l	0.0005
	1,1,2-Trichloroethane	<0.0005	mg/l	0.0005
	1,1-Dichloroethane	<0.0005	mg/l	0.0005
	1,1-Dichloroethene	<0.0005	mg/l	0.0005
	1,1-Dichloropropene	<0.0005	mg/l	0.0005
	1,2,3-Trichlorobenzene	<0.0005	mg/l	0.0005
	1,2,3-Trichloropropane	<0.0005	mg/l	0.0005
	1,2,4 trimethylbenzen	<0.0005	mg/l	0.0005
	1,2,4-Trichlorobenzene	<0.0005	mg/l	0.0005
	1,2-Dibromo-3-chloropropane	<0.001	mg/l	0.002
	1,2-Dibromoethane	<0.0002	mg/l	0.0002
	1,2-Dichlorobenzene (2)	<0.0005	mg/l	0.0005
	1,2-Dichloroethane	<0.0005	mg/l	0.0005
	1,2-Dichloropropane	<0.0005	mg/l	0.0005
	1,3,5-Trichlorobenzene	<0.0005	mg/l	0.0005
	1,3,5-Trimethylbenzene	<0.0005	mg/l	0.0005
	1,3-Dichlorobenzene	<0.0005	mg/l	0.0005
	1,3-Dichloropropane	<0.0005	mg/l	0.0005
	1,4-dichlorobenzene	<0.0005	mg/l	0.0005
	2,2-Dichloropropane	<0.0005	mg/l	0.0005
	2-Chlorotoluene	<0.0005	mg/l	0.0005
	3-chloropropene	<0.0020	mg/l	0.0005
	4-Chlorotoluene	<0.0005	mg/l	0.0005

		RESULTS (UNCERTAINTY)		LOQ
NW229	**VOC (GC-MS)**			
	4-methyl-2-pentanone	<0.0005	mg/l	0.0005
	Benzene	<0.0005	mg/l	0.0005
	Bromobenzene	<0.0005	mg/l	0.0005
	Bromochloromethane	<0.0012	mg/l	0.0012
	Bromodichloromethane	<0.0005	mg/l	0.0005
	Bromoform	<0.0005	mg/l	0.0005
	Bromomethane (zone 2)	<0.001	mg/l	0.001
	Carbon tetrachloride	<0.0005	mg/l	0.0005
	Carbondisulphide (CS2)	<0.0005	mg/l	0.0005
	Chlorobenzene	<0.0005	mg/l	0.0005
	Chloroethane	<0.001	mg/l	0.001
	Chloroform	<0.0005	mg/l	0.0005
	Chloromethane	<0.006	mg/l	0.006
	cis-1,2-Dichloroethene	0.0006	mg/l	0.0005
	cis-1,3-Dichloropropene	<0.0005	mg/l	0.0005
	Dibromochloromethane	<0.0005	mg/l	0.0005
	Dibromomethane	<0.0005	mg/l	0.0005
	Dichlorodifluoromethane	NotRecovered	mg/l	0.001
	Dichloromethane	<0.005	mg/l	0.005
	Hexachlorobutadiene	<0.0002	mg/l	0.0002
	Isopropylbenzene (Cumene)	<0.0005	mg/l	0.0005
	m,p-Xylene, Ethylbenzene	<0.0015	mg/l	0.0015
	Naphthalene	<0.0005	mg/l	0.0005
	n-Butylbenzene	<0.0005	mg/l	0.0005
	n-Propylbenzene	<0.0005	mg/l	0.0005
	p-Isopropyltoluene	<0.0005	mg/l	0.0005
	sec-Butylbenzene	<0.0005	mg/l	0.0005
	Styrene	<0.0005	mg/l	0.0005
	tert-Butylbenzene	<0.0005	mg/l	0.0005
	Tetrachloroethene	<0.0005	mg/l	0.0005
	Toluene	<0.0005	mg/l	0.0005
	trans-1,2-Dichloroethene	<0.0005	mg/l	0.0005
	trans-1,3-Dichloropropene	<0.0005	mg/l	0.0005
	Trichloroethene	<0.0005	mg/l	0.0005
	Trichlorofluoromethane	<0.0005	mg/l	0.0005
	Vinyl chloride	<0.0003	mg/l	0.0003
	Xylene (ortho-)	<0.0005	mg/l	0.0005
①**NWWG6**	**Volatile Fatty Acids (VFA)**			
	Acetic acid	<5	mg/l	5
	Butyric acid	<5	mg/l	5
	Heptanoic acid	<5	mg/l	5
	Hexanoic acid	<5	mg/l	5
	Isobutyric acid	<5	mg/l	5
	Isocaproic acid	<5	mg/l	5
	Isovaleric acid	<5	mg/l	5
	Propionic acid	<5	mg/l	5
	Valeric acid	<5	mg/l	5
	Volatile fatty acids as acetic acid	<5	mg/l	5

RESULTS (UNCERTAINTY)	LOQ

LIST OF METHODS

NW003	**Total Alkalinity:** APHA Online Edition 2320 B
NW00U	**Chlorophenols:** Internal Method, LC-MS/MS
NW011	**Sulphate:** APHA Online Edition 4110 B
NW023	**Conductivity:** APHA 24th Edition 2510 B
NW098	**Dissolved Aluminium:** APHA Online Edition 3125 B mod.
NW104	**Dissolved Cadmium:** APHA Online Edition 3125 B mod.
NW106	**Dissolved Chromium:** APHA Online Edition 3125 B mod.
NW109	**Dissolved Iron:** APHA Online Edition 3125 B mod.
NW112	**Dissolved Magnesium:** APHA Online Edition 3125 B mod.
NW114	**Dissolved Mercury:** APHA Online Edition 3125 B mod.
NW117	**Dissolved Potassium:** APHA Online Edition 3125 B mod.
NW125	**Dissolved Zinc:** APHA Online Edition 3125 B mod.
NW193	**Dissolved Reactive Phosphorus:** APHA Online Edition 4500-P G
NW206	**Suspended Solids:** APHA Online Edition 2540 D
NW228	**SVOC (GC-MSMS):** Internal Method, GC-MS/MS
NW341	**BOD5 - Soluble Carbonaceous:** APHA Online Edition 5210 B
NWWG6	**Volatile Fatty Acids (VFA):** APHA 24th Edition 5560 D mod.
NW007	**Chloride:** APHA Online Edition 4110 B
NW010	**Nitrate-N:** APHA Online Edition 4110 B
NW020	**Chemical Oxygen Demand:** APHA Online Edition 5220 D
NW030	**Total Hardness:** APHA Online Edition 2340 B
NW103	**Dissolved Boron:** APHA Online Edition 3125 B mod.
NW105	**Dissolved Calcium:** APHA Online Edition 3125 B mod.
NW108	**Dissolved Copper:** APHA Online Edition 3125 B mod.
NW110	**Dissolved Lead:** APHA Online Edition 3125 B mod.
NW113	**Dissolved Manganese:** APHA Online Edition 3125 B mod.
NW116	**Dissolved Nickel:** APHA Online Edition 3125 B mod.
NW120	**Dissolved Sodium:** APHA Online Edition 3125 B mod.
NW179	**Ammonia Nitrogen:** APHA Online Edition 4500-NH3 H
NW195	**pH (Tested beyond 15 minute APHA holding time):** APHA 24th Edition 4500-H B
NW210	**Total Non-Purgeable Organic Carbon:** APHA Online Edition 5310 B
NW229	**VOC (GC-MS):** Internal Method, HS-GC-MS
NW583	**Dissolved Arsenic:** APHA Online Edition 3125 B mod.
ZM2GA	**Escherichia coli E (Water) [NZ] <100 >6 000 000 /100 ml (0-3) m-FC Agar-F:** SMEWW 9222I; APHA 24th Edition

Signature

Marylou Cabral	Laboratory Manager Eurofins ELS Limited	**Jennifer Mont**	Supervisor Eurofins ELS Limited	**Divina Cunanan Lagazon**	Supervisor Eurofins ELS Limited
Gordon McArthur	Senior Laboratory Analyst Eurofins ELS Limited	**Ganesh Ilancko**	Supervisor Eurofins ELS Limited	**Arvinder Singh**	Laboratory Supervisor Microbiology
Gabriela Carvalhaes	Manager Food and Water Testing Chemistry	**Cody Forbes**	Laboratory Analyst Laboratory Analyst		

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⑤ Test is subcontracted outside Eurofins group and is not accredited
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⑦ Tested at the sampling point by Eurofins and is not accredited
⑧ Tested at the sampling point by Eurofins and is accredited
⑨ Test is RLP accredited
⑩ Test is subcontracted within Eurofins group and is RLP accredited

N/A means Not Applicable
Not Detected means not detected at or above the Limit of Quantification (LOQ)
LOQ means Limit of Quantification and the unit of LOQ is the same as the result unit
✗ (Unsatisfactory) means does not meet the specification
✓ (Satisfactory) means meets the specification

The Customer acknowledges and accepts that: (a) where Eurofins is not responsible for sampling, the test result(s) in this report apply only to the sample as received. Customer is solely responsible for the sampling process and warrants that the sample provided to Eurofins is representative of the lot / batch from which the samples were drawn; and (b) Eurofins expresses no opinion and accepts no liability in respect of the Customer's production process or homogeneity of the product.
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The tests are identified by a five-digit code, their description is available on request.
Accreditation does not apply to comments or graphical representations.
Unless otherwise stated, all tests in this analytical report (except for subcontracted tests) are performed at 85 Port Road, Seaview, Lower Hutt, Wellington, NEW ZEALAND.
The laboratory is not responsible for the information provided by the customer which can affect the validity of the results, for example: sampling information such as date/time, field data etc.
Eurofins may subcontract the performance of part or all of the Services to a third party and the Customer authorises the release of all information necessary to the third party for the provision of the Services.
All samples become the property of Eurofins to the extent necessary for the performance of the Services.
Eurofins will not be required to store samples and may destroy or otherwise dispose of the samples or return the samples to the Customer (at the Customer's cost in all respects) immediately following analysis of the samples.
If the Customer pays for storage of the samples Eurofins will take commercially reasonable steps to store the samples for the agreed period in terms of industry practice.
The Eurofins water sampling service follows methodology based on AS/NZS 5667 and / or best practice to collect and transport samples that are fit for the purpose of analytical testing. The laboratory is not responsible for sampling activities unless explicitly indicated by the statement "Sampled by Eurofins" on the report for water samples.
The Customer acknowledges that the Services are provided using the current state of technology and methods developed and generally applied by Eurofins and involve analysis, interpretations, consulting work and conclusions. Eurofins shall use commercially reasonable degree of care in providing the Services.
This report is produced and issued on the basis of information, documents and/or samples provided by, or on behalf of, the Customer and solely for the benefit of the Customer who is responsible for acting as it sees fit on the basis of this report. Neither Eurofins nor any of its officers, employees, agents or subcontractors shall be liable to the Customer nor any third party for any actions taken or not taken on the basis of this report nor for any incorrect results arising from unclear, erroneous, incomplete, misleading or false information provided to Eurofins.
Eurofins shall have no liability for any indirect or consequential loss including, without limitation, loss of production, loss of contracts, loss of profits, loss of business or costs incurred from business interruption, loss of opportunity, loss of goodwill or damage to reputation and cost of product recall (including any losses suffered as a result of distribution of the Customer's products subject of the Services prior to the report being released by Eurofins). It shall further have no liability for any loss, damage or expenses arising from the claims of any third party (including, without limitation, product liability claims) that may be incurred by the Customer.
Eurofins General Terms and Conditions apply.

END OF REPORT

Food & Water Testing

ANALYTICAL REPORT

REPORT CODE	AR-24-NW-024102-01	REPORT DATE	20/04/2024

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Copy to: Water and Waste Team (waterandwasteteam@horowhenua.govt.nz), McMillan

Contact for your orders: Gabriela Carvalhaes
Contract: Landfill

Order code: EUNZWE-00177701
Purchase Order Number: Landfill

SAMPLE CODE	812-2024-00052885		
Sample Name	349861-0		
Product:	Ground water		
Sampling Point code:	WIL-C2	**Sampling Point name:**	Levin C2
Reception Date & Time:	10/04/2024 14:30		
Analysis Started on:	10/04/2024	**Analysis Ending Date:**	20/04/2024
Product Type	Ground water	**Sampled Date & Time**	10/04/2024 05:34
Sampler(s)	Client nominated external sampler	**Sampled by Eurofins**	No

		RESULTS	(UNCERTAINTY)	LOQ
NW179	**Ammonia Nitrogen**			
	Ammoniacal nitrogen (N)	185	(± 18.5) mg/l	0.01
NW341	**BOD5 - Soluble Carbonaceous**			
	BOD5	1	mg/l	1
NW020	**Chemical Oxygen Demand**			
	Chemical oxygen demand (COD)	43	(± 8) mg/l	15
NW007	**Chloride**			
	Chloride (Cl)	160	(± 16.0) mg/l	0.02
NW00U	**Chlorophenols**			
	2,3,4,6-Tetrachlorophenol	<0.01	mg/l	0.01
	2,4-Dichlorophenol	<0.01	mg/l	0.01
	2,6-Dichlorophenol	<0.02	mg/l	0.2
	2-Chlorophenol (o-chlorophenol)	<0.01	mg/l	0.01
	3,4,5-Trichlorophenol	<0.01	mg/l	0.01
	4-Chloro-3-cresol	<0.01	mg/l	0.01
	Pentachlorophenol	<0.005	mg/l	0.005
	Phenol	<0.01	mg/l	0.01
	Total of 2,4,5 & 2,4,6 -Trichlorophenol	<0.02	mg/l	0.02
NW023	**Conductivity**			
	Conductivity	292	(± 5.8) mS/m	0.1
NW098	**Dissolved Aluminium**			
	Aluminium	0.019	mg/l	0.002
NW583	**Dissolved Arsenic**			
	Arsenic (As)	0.002	mg/l	0.001
NW103	**Dissolved Boron**			
	Boron (B)	1.72	mg/l	0.03

		RESULTS (UNCERTAINTY)		LOQ
NW104	**Dissolved Cadmium**			
	Cadmium (Cd)	<0.0002	mg/l	0.0002
NW105	**Dissolved Calcium**			
	Calcium (Ca)	51.3	mg/l	0.1
NW106	**Dissolved Chromium**			
	Chromium (Cr)	0.002	mg/l	0.001
NW108	**Dissolved Copper**			
	Copper (Cu)	0.0023	mg/l	0.0005
NW109	**Dissolved Iron**			
	Iron (Fe)	0.48	mg/l	0.01
NW110	**Dissolved Lead**			
	Lead (Pb)	<0.0005	mg/l	0.0005
NW112	**Dissolved Magnesium**			
	Magnesium (Mg)	37.3	mg/l	0.01
NW113	**Dissolved Manganese**			
	Manganese (Mn)	0.127	mg/l	0.0005
NW114	**Dissolved Mercury**			
	Mercury (Hg)	<0.0005	mg/l	0.0005
NW116	**Dissolved Nickel**			
	Nickel (Ni)	0.0063	mg/l	0.0005
NW117	**Dissolved Potassium**			
	Potassium (K)	82.2	mg/l	0.01
NW193	**Dissolved Reactive Phosphorus**			
	Phosphorus (soluble reactive)	0.013	mg/l	0.005
NW120	**Dissolved Sodium**			
	Sodium (Na)	136	mg/l	0.01
NW125	**Dissolved Zinc**			
	Zinc (Zn)	0.022	mg/l	0.002
ZM2GA	**Enumeration of Escherichia coli By Membrane Filtration**			
	Escherichia coli	<100	cfu/100 ml	100
NW010	**Nitrate-N**			
	Nitrate-N	<0.1	mg/l	0.01
NW195	**pH (Tested beyond 15 minute APHA holding time)**			
	pH	6.9	(± 0.2)	0.1
NW011	**Sulphate**			
	Sulphate	0.19	(± 0.02) mg/l	0.02
NW206	**Suspended Solids**			
	Suspended Solids	173	mg/l	3
NW228	**SVOC (GC-MSMS)**			
	Acenaphthene	<0.0001	mg/l	0.0001
	Acenaphthylene	<0.001	mg/l	0.001
	Adipatic acid, bis-2-ethylhexyl ester (DEHA)	<0.0001	mg/l	0.0001
	Alachlor	<0.0001	mg/l	0.0001
	Aldicarb	<0.1	mg/l	0.1
	Aldrin	<0.001	mg/l	0.001
	Anthracene	<0.001	mg/l	0.001
	Atrazine	<0.0001	mg/l	0.0001

		RESULTS (UNCERTAINTY)		LOQ
NW228	**SVOC (GC-MSMS)**			
	Benz(a)anthracene	<0.0001	mg/l	0.0001
	Benzo(a)pyrene	<0.0001	mg/l	0.0001
	Benzo(g,h,i)perylene	<0.001	mg/l	0.001
	Bromacil	<0.005	mg/l	0.005
	Carbofuran	<0.001	mg/l	0.001
	Chlordane	<0.0001	mg/l	0.0001
	Chlordane, gamma	<0.001	mg/l	0.001
	Chlorpyrifos (-ethyl)	<0.0001	mg/l	0.0001
	Chrysene	<0.0001	mg/l	0.0001
	Cyanazine	<0.005	mg/l	0.005
	d-BHC	<0.0001	mg/l	0.0001
	DDD, p,p'-	<0.0001	mg/l	0.0001
	DDE, p,p-	<0.0001	mg/l	0.0001
	DDT, p,p'-	<0.001	mg/l	0.001
	Diazinon	<0.0001	mg/l	0.0001
	Dibenz(a,h)anthracene	<0.0001	mg/l	0.0001
	Dieldrin	<0.0001	mg/l	0.0001
	Dimethoate	<0.001	mg/l	0.001
	Diuron	<0.001	mg/l	0.001
	Endosulfan, alpha-	<0.001	mg/l	0.001
	Endosulfan, beta-	<0.005	mg/l	0.005
	Endosulfan-sulfate	<0.0001	mg/l	0.0001
	Endrin	<0.0001	mg/l	0.0001
	Endrin ketone	<0.0001	mg/l	0.0001
	Endrin-aldehyde	<0.001	mg/l	0.01
	Fluoranthene	<0.0001	mg/l	0.0001
	Fluorene	<0.0001	mg/l	0.0001
	HCH, alpha-	<0.0001	mg/l	0.0001
	HCH, beta-	<0.0001	mg/l	0.0001
	Heptachlor	<0.0001	mg/l	0.0001
	Heptachlor epoxide, cis-	<0.0001	mg/l	0.0001
	Hexachlorobenzene (HCB)	<0.0001	mg/l	0.0001
	Hexazinone	<0.001	mg/l	0.001
	Indeno(1,2,3-cd)pyrene	<0.0001	mg/l	0.0001
	Lindane (gamma-HCH)	<0.0001	mg/l	0.0001
	Metalaxyl and metalaxyl-M (metalaxyl including other mixtures of constituent isomers including metalaxyl-M (sum of isomers))	<0.001	mg/l	0.001
	Methoxychlor	<0.0001	mg/l	0.0001
	Metolachlor	<0.0001	mg/l	0.0001
	Metribuzin	<0.0001	mg/l	0.0001
	Molinate	<0.0001	mg/l	0.0001
	Naphthalene	<0.0001	mg/l	0.0001
	Oxadiazon	<0.0001	mg/l	0.0001
	PCB 101	<0.0001	mg/l	0.0001
	PCB 138	<0.001	mg/l	0.001
	PCB 183	<0.0001	mg/l	0.0001

		RESULTS	(UNCERTAINTY)	LOQ
NW228	**SVOC (GC-MSMS)**			
	PCB 28	<0.0001	mg/l	0.0001
	PCB 7	<0.0001	mg/l	0.0001
	Pendimethalin	<0.002	mg/l	0.002
	Permethrin (sum of isomers)	<0.0001	mg/l	0.0001
	Phenanthrene	<0.0001	mg/l	0.0001
	Pirimiphos-methyl	<0.0001	mg/l	0.0001
	Procymidone	<0.0001	mg/l	0.0001
	Propanil	<0.001	mg/l	0.001
	Propazine	<0.0001	mg/l	0.0001
	Pyrene	<0.0001	mg/l	0.0001
	Pyriproxyfen	<0.0001	mg/l	0.0001
	Simazine	<0.0001	mg/l	0.0001
	Terbuthylazine	<0.0001	mg/l	0.0001
	Total Benzo(b) and Benzo(k) fluoranthene	<0.001	mg/l	0.001
	Trifluralin	<0.0001	mg/l	0.0001
NW003	**Total Alkalinity**			
	Alkalinity total	1300	(± 130) mg CaCO3/l	1
NW030	**Total Hardness**			
	Hardness	282	mg CaCO3/l	1
NW210	**Total Non-Purgeable Organic Carbon**			
	Total Organic Carbon	48.8	(± 4.9) mg/l	0.1
NW229	**VOC (GC-MS)**			
	1,1,1,2-Tetrachloroethane	<0.0005	mg/l	0.0005
	1,1,1-Trichloroethane	<0.0005	mg/l	0.0005
	1,1,2,2-tetrachloroethane	<0.0005	mg/l	0.0005
	1,1,2-Trichloroethane	<0.0005	mg/l	0.0005
	1,1-Dichloroethane	<0.0005	mg/l	0.0005
	1,1-Dichloroethene	<0.0005	mg/l	0.0005
	1,1-Dichloropropene	<0.0005	mg/l	0.0005
	1,2,3-Trichlorobenzene	<0.0005	mg/l	0.0005
	1,2,3-Trichloropropane	<0.0005	mg/l	0.0005
	1,2,4 trimethylbenzen	<0.0005	mg/l	0.0005
	1,2,4-Trichlorobenzene	<0.0005	mg/l	0.0005
	1,2-Dibromo-3-chloropropane	<0.001	mg/l	0.002
	1,2-Dibromoethane	<0.0002	mg/l	0.0002
	1,2-Dichlorobenzene (2)	<0.0005	mg/l	0.0005
	1,2-Dichloroethane	<0.0005	mg/l	0.0005
	1,2-Dichloropropane	<0.0005	mg/l	0.0005
	1,3,5-Trichlorobenzene	<0.0005	mg/l	0.0005
	1,3,5-Trimethylbenzene	<0.0005	mg/l	0.0005
	1,3-Dichlorobenzene	<0.0005	mg/l	0.0005
	1,3-Dichloropropane	<0.0005	mg/l	0.0005
	1,4-dichlorobenzene	<0.0005	mg/l	0.0005
	2,2-Dichloropropane	<0.0005	mg/l	0.0005
	2-Chlorotoluene	<0.0005	mg/l	0.0005
	3-chloropropene	<0.0020	mg/l	0.0005
	4-Chlorotoluene	<0.0005	mg/l	0.0005

		RESULTS (UNCERTAINTY)		LOQ
NW229	**VOC (GC-MS)**			
	4-methyl-2-pentanone	<0.0005	mg/l	0.0005
	Benzene	0.0010	mg/l	0.0005
	Bromobenzene	<0.0005	mg/l	0.0005
	Bromochloromethane	<0.0012	mg/l	0.0012
	Bromodichloromethane	<0.0005	mg/l	0.0005
	Bromoform	<0.0005	mg/l	0.0005
	Bromomethane (zone 2)	<0.001	mg/l	0.001
	Carbon tetrachloride	<0.0005	mg/l	0.0005
	Carbondisulphide (CS2)	<0.0005	mg/l	0.0005
	Chlorobenzene	<0.0005	mg/l	0.0005
	Chloroethane	<0.001	mg/l	0.001
	Chloroform	<0.0005	mg/l	0.0005
	Chloromethane	<0.006	mg/l	0.006
	cis-1,2-Dichloroethene	0.0008	mg/l	0.0005
	cis-1,3-Dichloropropene	<0.0005	mg/l	0.0005
	Dibromochloromethane	<0.0005	mg/l	0.0005
	Dibromomethane	<0.0005	mg/l	0.0005
	Dichlorodifluoromethane	NotRecovered	mg/l	0.001
	Dichloromethane	<0.005	mg/l	0.005
	Hexachlorobutadiene	<0.0002	mg/l	0.0002
	Isopropylbenzene (Cumene)	<0.0005	mg/l	0.0005
	m,p-Xylene, Ethylbenzene	<0.0015	mg/l	0.0015
	Naphthalene	<0.0005	mg/l	0.0005
	n-Butylbenzene	<0.0005	mg/l	0.0005
	n-Propylbenzene	<0.0005	mg/l	0.0005
	p-Isopropyltoluene	<0.0005	mg/l	0.0005
	sec-Butylbenzene	<0.0005	mg/l	0.0005
	Styrene	<0.0005	mg/l	0.0005
	tert-Butylbenzene	<0.0005	mg/l	0.0005
	Tetrachloroethene	<0.0005	mg/l	0.0005
	Toluene	<0.0005	mg/l	0.0005
	trans-1,2-Dichloroethene	<0.0005	mg/l	0.0005
	trans-1,3-Dichloropropene	<0.0005	mg/l	0.0005
	Trichloroethene	<0.0005	mg/l	0.0005
	Trichlorofluoromethane	<0.0005	mg/l	0.0005
	Vinyl chloride	<0.0003	mg/l	0.0003
	Xylene (ortho-)	<0.0005	mg/l	0.0005
①**NWWG6**	**Volatile Fatty Acids (VFA)**			
	Acetic acid	<5	mg/l	5
	Butyric acid	<5	mg/l	5
	Heptanoic acid	<5	mg/l	5
	Hexanoic acid	<5	mg/l	5
	Isobutyric acid	<5	mg/l	5
	Isocaproic acid	<5	mg/l	5
	Isovaleric acid	<5	mg/l	5
	Propionic acid	<5	mg/l	5
	Valeric acid	<5	mg/l	5
	Volatile fatty acids as acetic acid	<5	mg/l	5

RESULTS (UNCERTAINTY)	LOQ

LIST OF METHODS

NW003	**Total Alkalinity:** APHA Online Edition 2320 B
NW00U	**Chlorophenols:** Internal Method, LC-MS/MS
NW011	**Sulphate:** APHA Online Edition 4110 B
NW023	**Conductivity:** APHA 24th Edition 2510 B
NW098	**Dissolved Aluminium:** APHA Online Edition 3125 B mod.
NW104	**Dissolved Cadmium:** APHA Online Edition 3125 B mod.
NW106	**Dissolved Chromium:** APHA Online Edition 3125 B mod.
NW109	**Dissolved Iron:** APHA Online Edition 3125 B mod.
NW112	**Dissolved Magnesium:** APHA Online Edition 3125 B mod.
NW114	**Dissolved Mercury:** APHA Online Edition 3125 B mod.
NW117	**Dissolved Potassium:** APHA Online Edition 3125 B mod.
NW125	**Dissolved Zinc:** APHA Online Edition 3125 B mod.
NW193	**Dissolved Reactive Phosphorus:** APHA Online Edition 4500-P G
NW206	**Suspended Solids:** APHA Online Edition 2540 D
NW228	**SVOC (GC-MSMS):** Internal Method, GC-MS/MS
NW341	**BOD5 - Soluble Carbonaceous:** APHA Online Edition 5210 B
NWWG6	**Volatile Fatty Acids (VFA):** APHA 24th Edition 5560 D mod.
NW007	**Chloride:** APHA Online Edition 4110 B
NW010	**Nitrate-N:** APHA Online Edition 4110 B
NW020	**Chemical Oxygen Demand:** APHA Online Edition 5220 D
NW030	**Total Hardness:** APHA Online Edition 2340 B
NW103	**Dissolved Boron:** APHA Online Edition 3125 B mod.
NW105	**Dissolved Calcium:** APHA Online Edition 3125 B mod.
NW108	**Dissolved Copper:** APHA Online Edition 3125 B mod.
NW110	**Dissolved Lead:** APHA Online Edition 3125 B mod.
NW113	**Dissolved Manganese:** APHA Online Edition 3125 B mod.
NW116	**Dissolved Nickel:** APHA Online Edition 3125 B mod.
NW120	**Dissolved Sodium:** APHA Online Edition 3125 B mod.
NW179	**Ammonia Nitrogen:** APHA Online Edition 4500-NH3 H
NW195	**pH (Tested beyond 15 minute APHA holding time):** APHA 24th Edition 4500-H B
NW210	**Total Non-Purgeable Organic Carbon:** APHA Online Edition 5310 B
NW229	**VOC (GC-MS):** Internal Method, HS-GC-MS
NW583	**Dissolved Arsenic:** APHA Online Edition 3125 B mod.
ZM2GA	**Escherichia coli E (Water) [NZ] <100 >6 000 000 /100 ml (0-3) m-FC Agar-F:** SMEWW 9222I; APHA 24th Edition

Signature

Marylou Cabral	Laboratory Manager Eurofins ELS Limited	**Jennifer Mont**	Supervisor Eurofins ELS Limited	**Divina Cunanan Lagazon**	Supervisor Eurofins ELS Limited
Gordon McArthur	Senior Laboratory Analyst Eurofins ELS Limited	**Ganesh Ilancko**	Supervisor Eurofins ELS Limited	**Arvinder Singh**	Laboratory Supervisor Microbiology
Gabriela Carvalhaes	Manager Food and Water Testing Chemistry	**Cody Forbes**	Laboratory Analyst Laboratory Analyst		

EXPLANATORY NOTE

① Test is not accredited
② Test is subcontracted within Eurofins group and is accredited
③ Test is subcontracted within Eurofins group and is not accredited
④ Test is subcontracted outside Eurofins group and is accredited
⑤ Test is subcontracted outside Eurofins group and is not accredited
⑥ Test result is provided by the customer and is not accredited
⑦ Tested at the sampling point by Eurofins and is not accredited
⑧ Tested at the sampling point by Eurofins and is accredited
⑨ Test is RLP accredited
⑩ Test is subcontracted within Eurofins group and is RLP accredited

N/A means Not Applicable
Not Detected means not detected at or above the Limit of Quantification (LOQ)
LOQ means Limit of Quantification and the unit of LOQ is the same as the result unit
✗ (Unsatisfactory) means does not meet the specification
✓ (Satisfactory) means meets the specification

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END OF REPORT

Food & Water Testing

ANALYTICAL REPORT

REPORT CODE	AR-24-NW-023906-01	REPORT DATE	19/04/2024

Attention Downer NZ Ltd (EDI Levin)
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Copy to: Water and Waste Team (waterandwasteteam@horowhenua.govt.nz), McMillan

Contact for your orders: Gabriela Carvalhaes
Contract: Landfill

Order code: EUNZWE-00177376
Purchase Order Number: Landfill

SAMPLE CODE	812-2024-00051384		
Sample Name	349862-0		
Product:	Ground water		
Sampling Point code:	WIL-C2dd	**Sampling Point name:**	Levin C2dd
Reception Date & Time:	08/04/2024 16:45		
Analysis Started on:	08/04/2024	**Analysis Ending Date:**	19/04/2024
Product Type	Ground water	**Sampled Date & Time**	08/04/2024 11:59
Sampler(s)	Client nominated external sampler	**Sampled by Eurofins**	No

		RESULTS	(UNCERTAINTY)	LOQ
NW179	**Ammonia Nitrogen**			
	Ammoniacal nitrogen (N)	0.35	(± 0.04) mg/l	0.01
NW341	**BOD5 - Soluble Carbonaceous**			
	BOD5	<1	mg/l	1
NW020	**Chemical Oxygen Demand**			
	Chemical oxygen demand (COD)	20	(± 6) mg/l	15
NW007	**Chloride**			
	Chloride (Cl)	43.8	(± 4.38) mg/l	0.02
NW00U	**Chlorophenols**			
	2,3,4,6-Tetrachlorophenol	<0.01	mg/l	0.01
	2,4-Dichlorophenol	<0.01	mg/l	0.01
	2,6-Dichlorophenol	<0.2	mg/l	0.2
	2-Chlorophenol (o-chlorophenol)	<0.01	mg/l	0.01
	3,4,5-Trichlorophenol	<0.01	mg/l	0.01
	4-Chloro-3-cresol	<0.01	mg/l	0.01
	Pentachlorophenol	<0.005	mg/l	0.005
	Phenol	<0.01	mg/l	0.01
	Total of 2,4,5 & 2,4,6 -Trichlorophenol	<0.02	mg/l	0.02
NW023	**Conductivity**			
	Conductivity	59.3	(± 1.2) mS/m	0.1
NW098	**Dissolved Aluminium**			
	Aluminium	0.012	mg/l	0.002
NW583	**Dissolved Arsenic**			
	Arsenic (As)	0.004	mg/l	0.001
NW103	**Dissolved Boron**			
	Boron (B)	0.10	mg/l	0.03

		RESULTS (UNCERTAINTY)		LOQ
NW104	**Dissolved Cadmium**			
	Cadmium (Cd)	<0.0002	mg/l	0.0002
NW105	**Dissolved Calcium**			
	Calcium (Ca)	46.6	mg/l	0.1
NW106	**Dissolved Chromium**			
	Chromium (Cr)	0.002	mg/l	0.001
NW108	**Dissolved Copper**			
	Copper (Cu)	0.0014	mg/l	0.0005
NW109	**Dissolved Iron**			
	Iron (Fe)	0.13	mg/l	0.01
NW110	**Dissolved Lead**			
	Lead (Pb)	<0.0005	mg/l	0.0005
NW112	**Dissolved Magnesium**			
	Magnesium (Mg)	19.7	mg/l	0.01
NW113	**Dissolved Manganese**			
	Manganese (Mn)	0.650	mg/l	0.0005
NW114	**Dissolved Mercury**			
	Mercury (Hg)	<0.0005	mg/l	0.0005
NW116	**Dissolved Nickel**			
	Nickel (Ni)	0.0008	mg/l	0.0005
NW117	**Dissolved Potassium**			
	Potassium (K)	7.21	mg/l	0.01
NW193	**Dissolved Reactive Phosphorus**			
	Phosphorus (soluble reactive)	0.663	mg/l	0.005
NW120	**Dissolved Sodium**			
	Sodium (Na)	51.5	mg/l	0.01
NW125	**Dissolved Zinc**			
	Zinc (Zn)	0.009	mg/l	0.002
ZMF1E	**Enumeration of Escherichia coli By Membrane Filtration**			
	Escherichia coli	<1	cfu/100 ml	1
NW010	**Nitrate-N**			
	Nitrate-N	<0.01	(± 0.00) mg/l	0.01
NW195	**pH (Tested beyond 15 minute APHA holding time)**			
	pH	7.3	(± 0.2)	0.1
NW011	**Sulphate**			
	Sulphate	0.08	(± 0.01) mg/l	0.02
NW206	**Suspended Solids**			
	Suspended Solids	7	mg/l	3
NW228	**SVOC (GC-MSMS)**			
	Acenaphthene	<0.0001	mg/l	0.0001
	Acenaphthylene	<0.001	mg/l	0.001
	Adipatic acid, bis-2-ethylhexyl ester (DEHA)	<0.0001	mg/l	0.0001
	Alachlor	<0.0001	mg/l	0.0001
	Aldicarb	<0.1	mg/l	0.1
	Aldrin	<0.001	mg/l	0.001
	Anthracene	<0.001	mg/l	0.001
	Atrazine	<0.0001	mg/l	0.0001

		RESULTS (UNCERTAINTY)		LOQ
NW228	**SVOC (GC-MSMS)**			
	Benz(a)anthracene	<0.0001	mg/l	0.0001
	Benzo(a)pyrene	<0.0001	mg/l	0.0001
	Benzo(g,h,i)perylene	<0.001	mg/l	0.001
	Bromacil	<0.005	mg/l	0.005
	Carbofuran	<0.001	mg/l	0.001
	Chlordane	<0.0001	mg/l	0.0001
	Chlordane, gamma	<0.001	mg/l	0.001
	Chlorpyrifos (-ethyl)	<0.0001	mg/l	0.0001
	Chrysene	<0.0001	mg/l	0.0001
	Cyanazine	<0.005	mg/l	0.005
	d-BHC	<0.0001	mg/l	0.0001
	DDD, p,p'-	<0.0001	mg/l	0.0001
	DDE, p,p-	<0.0001	mg/l	0.0001
	DDT, p,p'-	<0.001	mg/l	0.001
	Diazinon	<0.0001	mg/l	0.0001
	Dibenz(a,h)anthracene	<0.0001	mg/l	0.0001
	Dieldrin	<0.0001	mg/l	0.0001
	Dimethoate	<0.001	mg/l	0.001
	Diuron	<0.001	mg/l	0.001
	Endosulfan, alpha-	<0.001	mg/l	0.001
	Endosulfan, beta-	<0.005	mg/l	0.005
	Endosulfan-sulfate	<0.0001	mg/l	0.0001
	Endrin	<0.0001	mg/l	0.0001
	Endrin ketone	<0.0001	mg/l	0.0001
	Endrin-aldehyde	<0.001	mg/l	0.01
	Fluoranthene	<0.0001	mg/l	0.0001
	Fluorene	<0.0001	mg/l	0.0001
	HCH, alpha-	<0.0001	mg/l	0.0001
	HCH, beta-	<0.0001	mg/l	0.0001
	Heptachlor	<0.0001	mg/l	0.0001
	Heptachlor epoxide, cis-	<0.0001	mg/l	0.0001
	Hexachlorobenzene (HCB)	<0.0001	mg/l	0.0001
	Hexazinone	<0.001	mg/l	0.001
	Indeno(1,2,3-cd)pyrene	<0.0001	mg/l	0.0001
	Lindane (gamma-HCH)	<0.0001	mg/l	0.0001
	Metalaxyl and metalaxyl-M (metalaxyl including other mixtures of constituent isomers including metalaxyl-M (sum of isomers))	<0.001	mg/l	0.001
	Methoxychlor	<0.0001	mg/l	0.0001
	Metolachlor	<0.0001	mg/l	0.0001
	Metribuzin	<0.0001	mg/l	0.0001
	Molinate	<0.0001	mg/l	0.0001
	Naphthalene	<0.0001	mg/l	0.0001
	Oxadiazon	<0.0001	mg/l	0.0001
	PCB 101	<0.0001	mg/l	0.0001
	PCB 138	<0.001	mg/l	0.001
	PCB 183	<0.0001	mg/l	0.0001

		RESULTS	(UNCERTAINTY)	LOQ
NW228	**SVOC (GC-MSMS)**			
	PCB 28	<0.0001	mg/l	0.0001
	PCB 7	<0.0001	mg/l	0.0001
	Pendimethalin	<0.002	mg/l	0.002
	Permethrin (sum of isomers)	<0.0001	mg/l	0.0001
	Phenanthrene	<0.0001	mg/l	0.0001
	Pirimiphos-methyl	<0.0001	mg/l	0.0001
	Procymidone	<0.0001	mg/l	0.0001
	Propanil	<0.001	mg/l	0.001
	Propazine	<0.0001	mg/l	0.0001
	Pyrene	<0.0001	mg/l	0.0001
	Pyriproxyfen	<0.0001	mg/l	0.0001
	Simazine	<0.0001	mg/l	0.0001
	Terbuthylazine	<0.0001	mg/l	0.0001
	Total Benzo(b) and Benzo(k) fluoranthene	<0.001	mg/l	0.001
	Trifluralin	<0.0001	mg/l	0.0001
NW003	**Total Alkalinity**			
	Alkalinity total	241	(± 24) mg CaCO3/l	1
NW030	**Total Hardness**			
	Hardness	197	mg CaCO3/l	1
NW210	**Total Non-Purgeable Organic Carbon**			
	Total Organic Carbon	5.5	(± 0.5) mg/l	0.1
NW229	**VOC (GC-MS)**			
	1,1,1,2-Tetrachloroethane	<0.0005	mg/l	0.0005
	1,1,1-Trichloroethane	<0.0005	mg/l	0.0005
	1,1,2,2-tetrachloroethane	<0.0005	mg/l	0.0005
	1,1,2-Trichloroethane	<0.0005	mg/l	0.0005
	1,1-Dichloroethane	<0.0005	mg/l	0.0005
	1,1-Dichloroethene	<0.0005	mg/l	0.0005
	1,1-Dichloropropene	<0.0005	mg/l	0.0005
	1,2,3-Trichlorobenzene	<0.0005	mg/l	0.0005
	1,2,3-Trichloropropane	<0.0005	mg/l	0.0005
	1,2,4 trimethylbenzen	<0.0005	mg/l	0.0005
	1,2,4-Trichlorobenzene	<0.0005	mg/l	0.0005
	1,2-Dibromo-3-chloropropane	<0.001	mg/l	0.002
	1,2-Dibromoethane	<0.0002	mg/l	0.0002
	1,2-Dichlorobenzene (2)	<0.0005	mg/l	0.0005
	1,2-Dichloroethane	<0.0005	mg/l	0.0005
	1,2-Dichloropropane	<0.0005	mg/l	0.0005
	1,3,5-Trichlorobenzene	<0.0005	mg/l	0.0005
	1,3,5-Trimethylbenzene	<0.0005	mg/l	0.0005
	1,3-Dichlorobenzene	<0.0005	mg/l	0.0005
	1,3-Dichloropropane	<0.0005	mg/l	0.0005
	1,4-dichlorobenzene	<0.0005	mg/l	0.0005
	2,2-Dichloropropane	<0.0005	mg/l	0.0005
	2-Chlorotoluene	<0.0005	mg/l	0.0005
	3-chloropropene	<0.0005	mg/l	0.0005
	4-Chlorotoluene	<0.0005	mg/l	0.0005

		RESULTS (UNCERTAINTY)		LOQ
NW229	**VOC (GC-MS)**			
	4-methyl-2-pentanone	<0.0005	mg/l	0.0005
	Benzene	<0.0005	mg/l	0.0005
	Bromobenzene	<0.0005	mg/l	0.0005
	Bromochloromethane	<0.0012	mg/l	0.0012
	Bromodichloromethane	<0.0005	mg/l	0.0005
	Bromoform	<0.0005	mg/l	0.0005
	Bromomethane (zone 2)	<0.001	mg/l	0.001
	Carbon tetrachloride	<0.0005	mg/l	0.0005
	Carbondisulphide (CS2)	<0.0005	mg/l	0.0005
	Chlorobenzene	<0.0005	mg/l	0.0005
	Chloroethane	<0.001	mg/l	0.001
	Chloroform	<0.0005	mg/l	0.0005
	Chloromethane	<0.006	mg/l	0.006
	cis-1,2-Dichloroethene	<0.0005	mg/l	0.0005
	cis-1,3-Dichloropropene	<0.0005	mg/l	0.0005
	Dibromochloromethane	<0.0005	mg/l	0.0005
	Dibromomethane	<0.0005	mg/l	0.0005
	Dichlorodifluoromethane	NotRecovered	mg/l	0.001
	Dichloromethane	<0.005	mg/l	0.005
	Hexachlorobutadiene	<0.0002	mg/l	0.0002
	Isopropylbenzene (Cumene)	<0.0005	mg/l	0.0005
	m,p-Xylene, Ethylbenzene	<0.0015	mg/l	0.0015
	Naphthalene	<0.0005	mg/l	0.0005
	n-Butylbenzene	<0.0005	mg/l	0.0005
	n-Propylbenzene	<0.0005	mg/l	0.0005
	p-Isopropyltoluene	<0.0005	mg/l	0.0005
	sec-Butylbenzene	<0.0005	mg/l	0.0005
	Styrene	<0.0005	mg/l	0.0005
	tert-Butylbenzene	<0.0005	mg/l	0.0005
	Tetrachloroethene	<0.0005	mg/l	0.0005
	Toluene	<0.0005	mg/l	0.0005
	trans-1,2-Dichloroethene	<0.0005	mg/l	0.0005
	trans-1,3-Dichloropropene	<0.0005	mg/l	0.0005
	Trichloroethene	<0.0005	mg/l	0.0005
	Trichlorofluoromethane	<0.0005	mg/l	0.0005
	Vinyl chloride	<0.0003	mg/l	0.0003
	Xylene (ortho-)	<0.0005	mg/l	0.0005
①**NWWG6**	**Volatile Fatty Acids (VFA)**			
	Acetic acid	<5	mg/l	5
	Butyric acid	<5	mg/l	5
	Heptanoic acid	<5	mg/l	5
	Hexanoic acid	<5	mg/l	5
	Isobutyric acid	<5	mg/l	5
	Isocaproic acid	<5	mg/l	5
	Isovaleric acid	<5	mg/l	5
	Propionic acid	<5	mg/l	5
	Valeric acid	<5	mg/l	5
	Volatile fatty acids as acetic acid	<5	mg/l	5

RESULTS (UNCERTAINTY)	LOQ

LIST OF METHODS

NW003	**Total Alkalinity:** APHA Online Edition 2320 B
NW00U	**Chlorophenols:** Internal Method, LC-MS/MS
NW011	**Sulphate:** APHA Online Edition 4110 B
NW023	**Conductivity:** APHA 24th Edition 2510 B
NW098	**Dissolved Aluminium:** APHA Online Edition 3125 B mod.
NW104	**Dissolved Cadmium:** APHA Online Edition 3125 B mod.
NW106	**Dissolved Chromium:** APHA Online Edition 3125 B mod.
NW109	**Dissolved Iron:** APHA Online Edition 3125 B mod.
NW112	**Dissolved Magnesium:** APHA Online Edition 3125 B mod.
NW114	**Dissolved Mercury:** APHA Online Edition 3125 B mod.
NW117	**Dissolved Potassium:** APHA Online Edition 3125 B mod.
NW125	**Dissolved Zinc:** APHA Online Edition 3125 B mod.
NW193	**Dissolved Reactive Phosphorus:** APHA Online Edition 4500-P G
NW206	**Suspended Solids:** APHA Online Edition 2540 D
NW228	**SVOC (GC-MSMS):** Internal Method, GC-MS/MS
NW341	**BOD5 - Soluble Carbonaceous:** APHA Online Edition 5210 B
NWWG6	**Volatile Fatty Acids (VFA):** APHA 24th Edition 5560 D mod.
NW007	**Chloride:** APHA Online Edition 4110 B
NW010	**Nitrate-N:** APHA Online Edition 4110 B
NW020	**Chemical Oxygen Demand:** APHA Online Edition 5220 D
NW030	**Total Hardness:** APHA Online Edition 2340 B
NW103	**Dissolved Boron:** APHA Online Edition 3125 B mod.
NW105	**Dissolved Calcium:** APHA Online Edition 3125 B mod.
NW108	**Dissolved Copper:** APHA Online Edition 3125 B mod.
NW110	**Dissolved Lead:** APHA Online Edition 3125 B mod.
NW113	**Dissolved Manganese:** APHA Online Edition 3125 B mod.
NW116	**Dissolved Nickel:** APHA Online Edition 3125 B mod.
NW120	**Dissolved Sodium:** APHA Online Edition 3125 B mod.
NW179	**Ammonia Nitrogen:** APHA Online Edition 4500-NH3 H
NW195	**pH (Tested beyond 15 minute APHA holding time):** APHA 24th Edition 4500-H B
NW210	**Total Non-Purgeable Organic Carbon:** APHA Online Edition 5310 B
NW229	**VOC (GC-MS):** Internal Method, HS-GC-MS
NW583	**Dissolved Arsenic:** APHA Online Edition 3125 B mod.
ZMF1E	**Escherichia coli E (Water) [NZ] <1 >80 /100 ml (0) Ml Agar-F:** SMEWW 9222K; APHA 24th Edition

Signature

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EXPLANATORY NOTE

① Test is not accredited
② Test is subcontracted within Eurofins group and is accredited
③ Test is subcontracted within Eurofins group and is not accredited
④ Test is subcontracted outside Eurofins group and is accredited
⑤ Test is subcontracted outside Eurofins group and is not accredited
⑥ Test result is provided by the customer and is not accredited
⑦ Tested at the sampling point by Eurofins and is not accredited
⑧ Tested at the sampling point by Eurofins and is accredited
⑨ Test is RLP accredited
⑩ Test is subcontracted within Eurofins group and is RLP accredited

N/A means Not Applicable
Not Detected means not detected at or above the Limit of Quantification (LOQ)
LOQ means Limit of Quantification and the unit of LOQ is the same as the result unit
✗ (Unsatisfactory) means does not meet the specification
✓ (Satisfactory) means meets the specification

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END OF REPORT

Food & Water Testing

ANALYTICAL REPORT

REPORT CODE	AR-24-NW-023588-01	REPORT DATE	19/04/2024

Attention Downer NZ Ltd (EDI Levin)
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Copy to: Water and Waste Team (waterandwasteteam@horowhenua.govt.nz), McMillan

Contact for your orders: Gabriela Carvalhaes
Contract: Landfill

Order code: EUNZWE-00177701
Purchase Order Number: Landfill

SAMPLE CODE	812-2024-00052919		
Sample Name	349863-0		
Product:	Ground water		
Sampling Point code:	WIL-C2ds	**Sampling Point name:**	Levin C2ds
Reception Date & Time:	10/04/2024 14:30		
Analysis Started on:	10/04/2024	**Analysis Ending Date:**	19/04/2024
Product Type	Ground water	**Sampled Date & Time**	10/04/2024 06:08
Sampler(s)	Client nominated external sampler	**Sampled by Eurofins**	No

		RESULTS	(UNCERTAINTY)	LOQ
NW179	**Ammonia Nitrogen**			
	Ammoniacal nitrogen (N)	1.85	(± 0.18) mg/l	0.01
NW341	**BOD5 - Soluble Carbonaceous**			
	BOD5	1	mg/l	1
NW020	**Chemical Oxygen Demand**			
	Chemical oxygen demand (COD)	73	(± 12) mg/l	15
NW007	**Chloride**			
	Chloride (Cl)	110	(± 11.0) mg/l	0.02
NW00U	**Chlorophenols**			
	2,3,4,6-Tetrachlorophenol	<0.01	mg/l	0.01
	2,4-Dichlorophenol	<0.01	mg/l	0.01
	2,6-Dichlorophenol	<0.02	mg/l	0.2
	2-Chlorophenol (o-chlorophenol)	<0.01	mg/l	0.01
	3,4,5-Trichlorophenol	<0.01	mg/l	0.01
	4-Chloro-3-cresol	<0.01	mg/l	0.01
	Pentachlorophenol	<0.005	mg/l	0.005
	Phenol	<0.01	mg/l	0.01
	Total of 2,4,5 & 2,4,6 -Trichlorophenol	<0.02	mg/l	0.02
NW023	**Conductivity**			
	Conductivity	193	(± 3.9) mS/m	0.1
NW098	**Dissolved Aluminium**			
	Aluminium	<0.002	mg/l	0.002
NW583	**Dissolved Arsenic**			
	Arsenic (As)	0.001	mg/l	0.001
NW103	**Dissolved Boron**			
	Boron (B)	0.89	mg/l	0.03

		RESULTS (UNCERTAINTY)		LOQ
NW104	**Dissolved Cadmium**			
	Cadmium (Cd)	<0.0002	mg/l	0.0002
NW105	**Dissolved Calcium**			
	Calcium (Ca)	148	mg/l	0.1
NW106	**Dissolved Chromium**			
	Chromium (Cr)	<0.001	mg/l	0.001
NW108	**Dissolved Copper**			
	Copper (Cu)	<0.0005	mg/l	0.0005
NW109	**Dissolved Iron**			
	Iron (Fe)	2.54	mg/l	0.01
NW110	**Dissolved Lead**			
	Lead (Pb)	<0.0005	mg/l	0.0005
NW112	**Dissolved Magnesium**			
	Magnesium (Mg)	74.8	mg/l	0.01
NW113	**Dissolved Manganese**			
	Manganese (Mn)	2.93	mg/l	0.0005
NW114	**Dissolved Mercury**			
	Mercury (Hg)	<0.0005	mg/l	0.0005
NW116	**Dissolved Nickel**			
	Nickel (Ni)	0.0027	mg/l	0.0005
NW117	**Dissolved Potassium**			
	Potassium (K)	15.8	mg/l	0.01
NW193	**Dissolved Reactive Phosphorus**			
	Phosphorus (soluble reactive)	0.041	mg/l	0.005
NW120	**Dissolved Sodium**			
	Sodium (Na)	101	mg/l	0.01
NW125	**Dissolved Zinc**			
	Zinc (Zn)	0.003	mg/l	0.002
ZM2GA	**Enumeration of Escherichia coli By Membrane Filtration**			
	Escherichia coli	<100	cfu/100 ml	100
NW010	**Nitrate-N**			
	Nitrate-N	<0.01	(± 0.00) mg/l	0.01
NW195	**pH (Tested beyond 15 minute APHA holding time)**			
	pH	6.7	(± 0.2)	0.1
NW011	**Sulphate**			
	Sulphate	0.04	(± 0.01) mg/l	0.02
NW206	**Suspended Solids**			
	Suspended Solids	118	mg/l	3
NW228	**SVOC (GC-MSMS)**			
	Acenaphthene	<0.0001	mg/l	0.0001
	Acenaphthylene	<0.001	mg/l	0.001
	Adipatic acid, bis-2-ethylhexyl ester (DEHA)	<0.0001	mg/l	0.0001
	Alachlor	<0.0001	mg/l	0.0001
	Aldicarb	<0.1	mg/l	0.1
	Aldrin	<0.001	mg/l	0.001
	Anthracene	<0.001	mg/l	0.001
	Atrazine	<0.0001	mg/l	0.0001

		RESULTS (UNCERTAINTY)		LOQ
NW228	**SVOC (GC-MSMS)**			
	Benz(a)anthracene	<0.0001	mg/l	0.0001
	Benzo(a)pyrene	<0.0001	mg/l	0.0001
	Benzo(g,h,i)perylene	<0.001	mg/l	0.001
	Bromacil	<0.005	mg/l	0.005
	Carbofuran	0.001	mg/l	0.001
	Chlordane	<0.0001	mg/l	0.0001
	Chlordane, gamma	<0.001	mg/l	0.001
	Chlorpyrifos (-ethyl)	<0.0001	mg/l	0.0001
	Chrysene	<0.0001	mg/l	0.0001
	Cyanazine	<0.005	mg/l	0.005
	d-BHC	<0.0001	mg/l	0.0001
	DDD, p,p'-	<0.0001	mg/l	0.0001
	DDE, p,p-	<0.0001	mg/l	0.0001
	DDT, p,p'-	NotRecovered	mg/l	0.001
	Diazinon	<0.0001	mg/l	0.0001
	Dibenz(a,h)anthracene	<0.0001	mg/l	0.0001
	Dieldrin	<0.0001	mg/l	0.0001
	Dimethoate	<0.001	mg/l	0.001
	Diuron	<0.001	mg/l	0.001
	Endosulfan, alpha-	<0.001	mg/l	0.001
	Endosulfan, beta-	<0.005	mg/l	0.005
	Endosulfan-sulfate	<0.0001	mg/l	0.0001
	Endrin	<0.0001	mg/l	0.0001
	Endrin ketone	NotRecovered	mg/l	0.0001
	Endrin-aldehyde	<0.001	mg/l	0.01
	Fluoranthene	<0.0001	mg/l	0.0001
	Fluorene	<0.0001	mg/l	0.0001
	HCH, alpha-	<0.0001	mg/l	0.0001
	HCH, beta-	<0.0001	mg/l	0.0001
	Heptachlor	<0.0001	mg/l	0.0001
	Heptachlor epoxide, cis-	<0.0001	mg/l	0.0001
	Hexachlorobenzene (HCB)	<0.0001	mg/l	0.0001
	Hexazinone	<0.001	mg/l	0.001
	Indeno(1,2,3-cd)pyrene	<0.0001	mg/l	0.0001
	Lindane (gamma-HCH)	<0.0001	mg/l	0.0001
	Metalaxyl and metalaxyl-M (metalaxyl including other mixtures of constituent isomers including metalaxyl-M (sum of isomers))	<0.001	mg/l	0.001
	Methoxychlor	<0.0001	mg/l	0.0001
	Metolachlor	<0.0001	mg/l	0.0001
	Metribuzin	<0.0001	mg/l	0.0001
	Molinate	<0.0001	mg/l	0.0001
	Naphthalene	<0.0001	mg/l	0.0001
	Oxadiazon	<0.0001	mg/l	0.0001
	PCB 101	<0.0001	mg/l	0.0001
	PCB 138	<0.001	mg/l	0.001
	PCB 183	<0.0001	mg/l	0.0001

		RESULTS	(UNCERTAINTY)	LOQ
NW228	**SVOC (GC-MSMS)**			
	PCB 28	<0.0001	mg/l	0.0001
	PCB 7	<0.0001	mg/l	0.0001
	Pendimethalin	<0.002	mg/l	0.002
	Permethrin (sum of isomers)	<0.0001	mg/l	0.0001
	Phenanthrene	<0.0001	mg/l	0.0001
	Pirimiphos-methyl	<0.0001	mg/l	0.0001
	Procymidone	<0.0001	mg/l	0.0001
	Propanil	<0.001	mg/l	0.001
	Propazine	<0.0001	mg/l	0.0001
	Pyrene	<0.0001	mg/l	0.0001
	Pyriproxyfen	<0.0001	mg/l	0.0001
	Simazine	<0.0001	mg/l	0.0001
	Terbuthylazine	<0.0001	mg/l	0.0001
	Total Benzo(b) and Benzo(k) fluoranthene	<0.001	mg/l	0.001
	Trifluralin	<0.0001	mg/l	0.0001
NW003	**Total Alkalinity**			
	Alkalinity total	918	(± 92) mg CaCO3/l	1
NW030	**Total Hardness**			
	Hardness	678	mg CaCO3/l	1
NW210	**Total Non-Purgeable Organic Carbon**			
	Total Organic Carbon	31.0	(± 3.1) mg/l	0.1
NW229	**VOC (GC-MS)**			
	1,1,1,2-Tetrachloroethane	<0.0005	mg/l	0.0005
	1,1,1-Trichloroethane	<0.0005	mg/l	0.0005
	1,1,2,2-tetrachloroethane	<0.0005	mg/l	0.0005
	1,1,2-Trichloroethane	<0.0005	mg/l	0.0005
	1,1-Dichloroethane	<0.0005	mg/l	0.0005
	1,1-Dichloroethene	<0.0005	mg/l	0.0005
	1,1-Dichloropropene	<0.0005	mg/l	0.0005
	1,2,3-Trichlorobenzene	<0.0005	mg/l	0.0005
	1,2,3-Trichloropropane	<0.0005	mg/l	0.0005
	1,2,4 trimethylbenzen	<0.0005	mg/l	0.0005
	1,2,4-Trichlorobenzene	<0.0005	mg/l	0.0005
	1,2-Dibromo-3-chloropropane	<0.001	mg/l	0.002
	1,2-Dibromoethane	<0.0002	mg/l	0.0002
	1,2-Dichlorobenzene (2)	<0.0005	mg/l	0.0005
	1,2-Dichloroethane	<0.0005	mg/l	0.0005
	1,2-Dichloropropane	<0.0005	mg/l	0.0005
	1,3,5-Trichlorobenzene	<0.0005	mg/l	0.0005
	1,3,5-Trimethylbenzene	<0.0005	mg/l	0.0005
	1,3-Dichlorobenzene	<0.0005	mg/l	0.0005
	1,3-Dichloropropane	<0.0005	mg/l	0.0005
	1,4-dichlorobenzene	<0.0005	mg/l	0.0005
	2,2-Dichloropropane	<0.0005	mg/l	0.0005
	2-Chlorotoluene	<0.0005	mg/l	0.0005
	3-chloropropene	<0.0020	mg/l	0.0005
	4-Chlorotoluene	<0.0005	mg/l	0.0005

		RESULTS (UNCERTAINTY)		LOQ
NW229	**VOC (GC-MS)**			
	4-methyl-2-pentanone	<0.0005	mg/l	0.0005
	Benzene	0.0005	mg/l	0.0005
	Bromobenzene	<0.0005	mg/l	0.0005
	Bromochloromethane	<0.0012	mg/l	0.0012
	Bromodichloromethane	<0.0005	mg/l	0.0005
	Bromoform	<0.0005	mg/l	0.0005
	Bromomethane (zone 2)	<0.001	mg/l	0.001
	Carbon tetrachloride	<0.0005	mg/l	0.0005
	Carbondisulphide (CS2)	<0.0005	mg/l	0.0005
	Chlorobenzene	<0.0005	mg/l	0.0005
	Chloroethane	<0.001	mg/l	0.001
	Chloroform	<0.0005	mg/l	0.0005
	Chloromethane	<0.006	mg/l	0.006
	cis-1,2-Dichloroethene	0.0007	mg/l	0.0005
	cis-1,3-Dichloropropene	<0.0005	mg/l	0.0005
	Dibromochloromethane	<0.0005	mg/l	0.0005
	Dibromomethane	<0.0005	mg/l	0.0005
	Dichlorodifluoromethane	NotRecovered	mg/l	0.001
	Dichloromethane	<0.005	mg/l	0.005
	Hexachlorobutadiene	<0.0002	mg/l	0.0002
	Isopropylbenzene (Cumene)	<0.0005	mg/l	0.0005
	m,p-Xylene, Ethylbenzene	<0.0015	mg/l	0.0015
	Naphthalene	<0.0005	mg/l	0.0005
	n-Butylbenzene	<0.0005	mg/l	0.0005
	n-Propylbenzene	<0.0005	mg/l	0.0005
	p-Isopropyltoluene	<0.0005	mg/l	0.0005
	sec-Butylbenzene	<0.0005	mg/l	0.0005
	Styrene	<0.0005	mg/l	0.0005
	tert-Butylbenzene	<0.0005	mg/l	0.0005
	Tetrachloroethene	<0.0005	mg/l	0.0005
	Toluene	<0.0005	mg/l	0.0005
	trans-1,2-Dichloroethene	<0.0005	mg/l	0.0005
	trans-1,3-Dichloropropene	<0.0005	mg/l	0.0005
	Trichloroethene	<0.0005	mg/l	0.0005
	Trichlorofluoromethane	<0.0005	mg/l	0.0005
	Vinyl chloride	<0.0003	mg/l	0.0003
	Xylene (ortho-)	<0.0005	mg/l	0.0005
①**NWWG6**	**Volatile Fatty Acids (VFA)**			
	Acetic acid	<5	mg/l	5
	Butyric acid	<5	mg/l	5
	Heptanoic acid	<5	mg/l	5
	Hexanoic acid	<5	mg/l	5
	Isobutyric acid	<5	mg/l	5
	Isocaproic acid	<5	mg/l	5
	Isovaleric acid	<5	mg/l	5
	Propionic acid	<5	mg/l	5
	Valeric acid	<5	mg/l	5
	Volatile fatty acids as acetic acid	<5	mg/l	5

RESULTS (UNCERTAINTY)	LOQ

LIST OF METHODS

NW003	**Total Alkalinity:** APHA Online Edition 2320 B
NW00U	**Chlorophenols:** Internal Method, LC-MS/MS
NW011	**Sulphate:** APHA Online Edition 4110 B
NW023	**Conductivity:** APHA 24th Edition 2510 B
NW098	**Dissolved Aluminium:** APHA Online Edition 3125 B mod.
NW104	**Dissolved Cadmium:** APHA Online Edition 3125 B mod.
NW106	**Dissolved Chromium:** APHA Online Edition 3125 B mod.
NW109	**Dissolved Iron:** APHA Online Edition 3125 B mod.
NW112	**Dissolved Magnesium:** APHA Online Edition 3125 B mod.
NW114	**Dissolved Mercury:** APHA Online Edition 3125 B mod.
NW117	**Dissolved Potassium:** APHA Online Edition 3125 B mod.
NW125	**Dissolved Zinc:** APHA Online Edition 3125 B mod.
NW193	**Dissolved Reactive Phosphorus:** APHA Online Edition 4500-P G
NW206	**Suspended Solids:** APHA Online Edition 2540 D
NW228	**SVOC (GC-MSMS):** Internal Method, GC-MS/MS
NW341	**BOD5 - Soluble Carbonaceous:** APHA Online Edition 5210 B
NWWG6	**Volatile Fatty Acids (VFA):** APHA 24th Edition 5560 D mod.
NW007	**Chloride:** APHA Online Edition 4110 B
NW010	**Nitrate-N:** APHA Online Edition 4110 B
NW020	**Chemical Oxygen Demand:** APHA Online Edition 5220 D
NW030	**Total Hardness:** APHA Online Edition 2340 B
NW103	**Dissolved Boron:** APHA Online Edition 3125 B mod.
NW105	**Dissolved Calcium:** APHA Online Edition 3125 B mod.
NW108	**Dissolved Copper:** APHA Online Edition 3125 B mod.
NW110	**Dissolved Lead:** APHA Online Edition 3125 B mod.
NW113	**Dissolved Manganese:** APHA Online Edition 3125 B mod.
NW116	**Dissolved Nickel:** APHA Online Edition 3125 B mod.
NW120	**Dissolved Sodium:** APHA Online Edition 3125 B mod.
NW179	**Ammonia Nitrogen:** APHA Online Edition 4500-NH3 H
NW195	**pH (Tested beyond 15 minute APHA holding time):** APHA 24th Edition 4500-H B
NW210	**Total Non-Purgeable Organic Carbon:** APHA Online Edition 5310 B
NW229	**VOC (GC-MS):** Internal Method, HS-GC-MS
NW583	**Dissolved Arsenic:** APHA Online Edition 3125 B mod.
ZM2GA	**Escherichia coli E (Water) [NZ] <100 >6 000 000 /100 ml (0-3) m-FC Agar-F:** SMEWW 9222I; APHA 24th Edition

Signature

Marylou Cabral	Laboratory Manager Eurofins ELS Limited	**Jennifer Mont**	Supervisor Eurofins ELS Limited	**Divina Cunanan Lagazon**	Supervisor Eurofins ELS Limited
Gordon McArthur	Senior Laboratory Analyst Eurofins ELS Limited	**Ganesh Ilancko**	Supervisor Eurofins ELS Limited	**Arvinder Singh**	Laboratory Supervisor Microbiology
Gabriela Carvalhaes	Manager Food and Water Testing Chemistry	**Cody Forbes**	Laboratory Analyst Laboratory Analyst		

EXPLANATORY NOTE

① Test is not accredited
② Test is subcontracted within Eurofins group and is accredited
③ Test is subcontracted within Eurofins group and is not accredited
④ Test is subcontracted outside Eurofins group and is accredited
⑤ Test is subcontracted outside Eurofins group and is not accredited
⑥ Test result is provided by the customer and is not accredited
⑦ Tested at the sampling point by Eurofins and is not accredited
⑧ Tested at the sampling point by Eurofins and is accredited
⑨ Test is RLP accredited
⑩ Test is subcontracted within Eurofins group and is RLP accredited

N/A means Not Applicable
Not Detected means not detected at or above the Limit of Quantification (LOQ)
LOQ means Limit of Quantification and the unit of LOQ is the same as the result unit
✗ (Unsatisfactory) means does not meet the specification
✓ (Satisfactory) means meets the specification

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END OF REPORT

Food & Water Testing

ANALYTICAL REPORT

REPORT CODE	AR-24-NW-024780-01	REPORT DATE	24/04/2024

Attention Downer NZ Ltd (EDI Levin)
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Copy to: Water and Waste Team (waterandwasteteam@horowhenua.govt.nz), McMillan

Contact for your orders: Gabriela Carvalhaes
Contract: Landfill

Order code: EUNZWE-00177658
Purchase Order Number: Landfill

SAMPLE CODE 812-2024-00052260

Sample Name	349864-0		
Product:	Ground water		
Sampling Point code:	WIL-D1	**Sampling Point name:**	Levin D1
Reception Date & Time:	09/04/2024 17:39		
Analysis Started on:	09/04/2024	**Analysis Ending Date:**	24/04/2024
Product Type	Ground water	**Sampled Date & Time**	09/04/2024 07:20
Sampler(s)	Client nominated external sampler	**Sampled by Eurofins**	No

		RESULTS	(UNCERTAINTY)	LOQ
NW179	**Ammonia Nitrogen**			
	Ammoniacal nitrogen (N)	<0.01	(± 0.00) mg/l	0.01
NW341	**BOD5 - Soluble Carbonaceous**			
	BOD5	<1	mg/l	1
NW020	**Chemical Oxygen Demand**			
	Chemical oxygen demand (COD)	<15	(± 5) mg/l	15
NW007	**Chloride**			
	Chloride (Cl)	34.8	(± 3.48) mg/l	0.02
NW00U	**Chlorophenols**			
	2,3,4,6-Tetrachlorophenol	<0.01	mg/l	0.01
	2,4-Dichlorophenol	<0.01	mg/l	0.01
	2,6-Dichlorophenol	<0.02	mg/l	0.2
	2-Chlorophenol (o-chlorophenol)	<0.01	mg/l	0.01
	3,4,5-Trichlorophenol	<0.01	mg/l	0.01
	4-Chloro-3-cresol	<0.01	mg/l	0.01
	Pentachlorophenol	<0.005	mg/l	0.005
	Phenol	<0.01	mg/l	0.01
	Total of 2,4,5 & 2,4,6 -Trichlorophenol	<0.02	mg/l	0.02
NW023	**Conductivity**			
	Conductivity	58.0	(± 1.2) mS/m	0.1
NW098	**Dissolved Aluminium**			
	Aluminium	<0.002	mg/l	0.002
NW583	**Dissolved Arsenic**			
	Arsenic (As)	0.001	mg/l	0.001
NW103	**Dissolved Boron**			
	Boron (B)	0.05	mg/l	0.03

		RESULTS (UNCERTAINTY)		LOQ
NW104	**Dissolved Cadmium**			
	Cadmium (Cd)	<0.0002	mg/l	0.0002
NW105	**Dissolved Calcium**			
	Calcium (Ca)	29.4	mg/l	0.1
NW106	**Dissolved Chromium**			
	Chromium (Cr)	<0.001	mg/l	0.001
NW108	**Dissolved Copper**			
	Copper (Cu)	<0.0005	mg/l	0.0005
NW109	**Dissolved Iron**			
	Iron (Fe)	<0.01	mg/l	0.01
NW110	**Dissolved Lead**			
	Lead (Pb)	<0.0005	mg/l	0.0005
NW112	**Dissolved Magnesium**			
	Magnesium (Mg)	22.5	mg/l	0.01
NW113	**Dissolved Manganese**			
	Manganese (Mn)	0.0007	mg/l	0.0005
NW114	**Dissolved Mercury**			
	Mercury (Hg)	<0.0005	mg/l	0.0005
NW116	**Dissolved Nickel**			
	Nickel (Ni)	<0.0005	mg/l	0.0005
NW117	**Dissolved Potassium**			
	Potassium (K)	12.4	mg/l	0.01
NW193	**Dissolved Reactive Phosphorus**			
	Phosphorus (soluble reactive)	0.089	mg/l	0.005
NW120	**Dissolved Sodium**			
	Sodium (Na)	46.3	mg/l	0.01
NW125	**Dissolved Zinc**			
	Zinc (Zn)	0.011	mg/l	0.002
ZM2GA	**Enumeration of Escherichia coli By Membrane Filtration**			
	Escherichia coli	<100	cfu/100 ml	100
NW010	**Nitrate-N**			
	Nitrate-N	6.17	(± 0.62) mg/l	0.01
NW195	**pH (Tested beyond 15 minute APHA holding time)**			
	pH	6.5	(± 0.2)	0.1
NW011	**Sulphate**			
	Sulphate	17.9	(± 1.79) mg/l	0.02
NW206	**Suspended Solids**			
	Suspended Solids	<5	mg/l	3
NW228	**SVOC (GC-MSMS)**			
	Acenaphthene	<0.0001	mg/l	0.0001
	Acenaphthylene	<0.001	mg/l	0.001
	Adipatic acid, bis-2-ethylhexyl ester (DEHA)	<0.0001	mg/l	0.0001
	Alachlor	<0.0001	mg/l	0.0001
	Aldicarb	<0.1	mg/l	0.1
	Aldrin	<0.001	mg/l	0.001
	Anthracene	<0.001	mg/l	0.001
	Atrazine	<0.0001	mg/l	0.0001

		RESULTS (UNCERTAINTY)		LOQ
NW228	**SVOC (GC-MSMS)**			
	Benz(a)anthracene	<0.0001	mg/l	0.0001
	Benzo(a)pyrene	<0.0001	mg/l	0.0001
	Benzo(g,h,i)perylene	<0.001	mg/l	0.001
	Bromacil	<0.005	mg/l	0.005
	Carbofuran	<0.001	mg/l	0.001
	Chlordane	<0.0001	mg/l	0.0001
	Chlordane, gamma	<0.001	mg/l	0.001
	Chlorpyrifos (-ethyl)	<0.0001	mg/l	0.0001
	Chrysene	<0.0001	mg/l	0.0001
	Cyanazine	<0.005	mg/l	0.005
	d-BHC	<0.0001	mg/l	0.0001
	DDD, p,p'-	<0.0001	mg/l	0.0001
	DDE, p,p-	<0.0001	mg/l	0.0001
	DDT, p,p'-	NotRecovered	mg/l	0.001
	Diazinon	<0.0001	mg/l	0.0001
	Dibenz(a,h)anthracene	<0.0001	mg/l	0.0001
	Dieldrin	<0.0001	mg/l	0.0001
	Dimethoate	<0.001	mg/l	0.001
	Diuron	<0.001	mg/l	0.001
	Endosulfan, alpha-	<0.001	mg/l	0.001
	Endosulfan, beta-	<0.005	mg/l	0.005
	Endosulfan-sulfate	<0.0001	mg/l	0.0001
	Endrin	<0.0001	mg/l	0.0001
	Endrin ketone	NotRecovered	mg/l	0.0001
	Endrin-aldehyde	<0.001	mg/l	0.01
	Fluoranthene	<0.0001	mg/l	0.0001
	Fluorene	<0.0001	mg/l	0.0001
	HCH, alpha-	<0.0001	mg/l	0.0001
	HCH, beta-	<0.0001	mg/l	0.0001
	Heptachlor	<0.0001	mg/l	0.0001
	Heptachlor epoxide, cis-	<0.0001	mg/l	0.0001
	Hexachlorobenzene (HCB)	<0.0001	mg/l	0.0001
	Hexazinone	<0.001	mg/l	0.001
	Indeno(1,2,3-cd)pyrene	<0.0001	mg/l	0.0001
	Lindane (gamma-HCH)	<0.0001	mg/l	0.0001
	Metalaxyl and metalaxyl-M (metalaxyl including other mixtures of constituent isomers including metalaxyl-M (sum of isomers))	<0.001	mg/l	0.001
	Methoxychlor	<0.0001	mg/l	0.0001
	Metolachlor	<0.0001	mg/l	0.0001
	Metribuzin	<0.0001	mg/l	0.0001
	Molinate	<0.0001	mg/l	0.0001
	Naphthalene	<0.0001	mg/l	0.0001
	Oxadiazon	<0.0001	mg/l	0.0001
	PCB 101	<0.0001	mg/l	0.0001
	PCB 138	<0.001	mg/l	0.001
	PCB 183	<0.0001	mg/l	0.0001

		RESULTS	(UNCERTAINTY)	LOQ
NW228	**SVOC (GC-MSMS)**			
	PCB 28	<0.0001	mg/l	0.0001
	PCB 7	<0.0001	mg/l	0.0001
	Pendimethalin	<0.002	mg/l	0.002
	Permethrin (sum of isomers)	<0.0001	mg/l	0.0001
	Phenanthrene	<0.0001	mg/l	0.0001
	Pirimiphos-methyl	<0.0001	mg/l	0.0001
	Procymidone	<0.0001	mg/l	0.0001
	Propanil	<0.001	mg/l	0.001
	Propazine	<0.0001	mg/l	0.0001
	Pyrene	<0.0001	mg/l	0.0001
	Pyriproxyfen	<0.0001	mg/l	0.0001
	Simazine	<0.0001	mg/l	0.0001
	Terbuthylazine	<0.0001	mg/l	0.0001
	Total Benzo(b) and Benzo(k) fluoranthene	<0.001	mg/l	0.001
	Trifluralin	<0.0001	mg/l	0.0001
NW003	**Total Alkalinity**			
	Alkalinity total	200	(± 20) mg CaCO3/l	1
NW030	**Total Hardness**			
	Hardness	166	mg CaCO3/l	1
NW210	**Total Non-Purgeable Organic Carbon**			
	Total Organic Carbon	1.1	(± 0.1) mg/l	0.1
NW229	**VOC (GC-MS)**			
	1,1,1,2-Tetrachloroethane	<0.0005	mg/l	0.0005
	1,1,1-Trichloroethane	<0.0005	mg/l	0.0005
	1,1,2,2-tetrachloroethane	<0.0005	mg/l	0.0005
	1,1,2-Trichloroethane	<0.0005	mg/l	0.0005
	1,1-Dichloroethane	<0.0005	mg/l	0.0005
	1,1-Dichloroethene	<0.0005	mg/l	0.0005
	1,1-Dichloropropene	<0.0005	mg/l	0.0005
	1,2,3-Trichlorobenzene	<0.0005	mg/l	0.0005
	1,2,3-Trichloropropane	<0.0005	mg/l	0.0005
	1,2,4 trimethylbenzen	<0.0005	mg/l	0.0005
	1,2,4-Trichlorobenzene	<0.0005	mg/l	0.0005
	1,2-Dibromo-3-chloropropane	<0.001	mg/l	0.002
	1,2-Dibromoethane	<0.0002	mg/l	0.0002
	1,2-Dichlorobenzene (2)	<0.0005	mg/l	0.0005
	1,2-Dichloroethane	<0.0005	mg/l	0.0005
	1,2-Dichloropropane	<0.0005	mg/l	0.0005
	1,3,5-Trichlorobenzene	<0.0005	mg/l	0.0005
	1,3,5-Trimethylbenzene	<0.0005	mg/l	0.0005
	1,3-Dichlorobenzene	<0.0005	mg/l	0.0005
	1,3-Dichloropropane	<0.0005	mg/l	0.0005
	1,4-dichlorobenzene	<0.0005	mg/l	0.0005
	2,2-Dichloropropane	<0.0005	mg/l	0.0005
	2-Chlorotoluene	<0.0005	mg/l	0.0005
	3-chloropropene	<0.0005	mg/l	0.0005
	4-Chlorotoluene	<0.0005	mg/l	0.0005

		RESULTS (UNCERTAINTY)		LOQ
NW229	**VOC (GC-MS)**			
	4-methyl-2-pentanone	<0.0005	mg/l	0.0005
	Benzene	<0.0005	mg/l	0.0005
	Bromobenzene	<0.0005	mg/l	0.0005
	Bromochloromethane	<0.0012	mg/l	0.0012
	Bromodichloromethane	<0.0005	mg/l	0.0005
	Bromoform	<0.0005	mg/l	0.0005
	Bromomethane (zone 2)	<0.001	mg/l	0.001
	Carbon tetrachloride	<0.0005	mg/l	0.0005
	Carbondisulphide (CS2)	<0.0005	mg/l	0.0005
	Chlorobenzene	<0.0005	mg/l	0.0005
	Chloroethane	<0.001	mg/l	0.001
	Chloroform	<0.0005	mg/l	0.0005
	Chloromethane	<0.006	mg/l	0.006
	cis-1,2-Dichloroethene	<0.0005	mg/l	0.0005
	cis-1,3-Dichloropropene	<0.0005	mg/l	0.0005
	Dibromochloromethane	<0.0005	mg/l	0.0005
	Dibromomethane	<0.0005	mg/l	0.0005
	Dichlorodifluoromethane	NotRecovered	mg/l	0.001
	Dichloromethane	<0.005	mg/l	0.005
	Hexachlorobutadiene	<0.0002	mg/l	0.0002
	Isopropylbenzene (Cumene)	<0.0005	mg/l	0.0005
	m,p-Xylene, Ethylbenzene	<0.0015	mg/l	0.0015
	Naphthalene	<0.0005	mg/l	0.0005
	n-Butylbenzene	<0.0005	mg/l	0.0005
	n-Propylbenzene	<0.0005	mg/l	0.0005
	p-Isopropyltoluene	<0.0005	mg/l	0.0005
	sec-Butylbenzene	<0.0005	mg/l	0.0005
	Styrene	<0.0005	mg/l	0.0005
	tert-Butylbenzene	<0.0005	mg/l	0.0005
	Tetrachloroethene	<0.0005	mg/l	0.0005
	Toluene	<0.0005	mg/l	0.0005
	trans-1,2-Dichloroethene	<0.0005	mg/l	0.0005
	trans-1,3-Dichloropropene	<0.0005	mg/l	0.0005
	Trichloroethene	<0.0005	mg/l	0.0005
	Trichlorofluoromethane	<0.0005	mg/l	0.0005
	Vinyl chloride	<0.0003	mg/l	0.0003
	Xylene (ortho-)	<0.0005	mg/l	0.0005
①**NWWG6**	**Volatile Fatty Acids (VFA)**			
	Acetic acid	<5	mg/l	5
	Butyric acid	<5	mg/l	5
	Heptanoic acid	<5	mg/l	5
	Hexanoic acid	<5	mg/l	5
	Isobutyric acid	<5	mg/l	5
	Isocaproic acid	<5	mg/l	5
	Isovaleric acid	<5	mg/l	5
	Propionic acid	<5	mg/l	5
	Valeric acid	<5	mg/l	5
	Volatile fatty acids as acetic acid	<5	mg/l	5

RESULTS (UNCERTAINTY)	LOQ

LIST OF METHODS

NW003	**Total Alkalinity:** APHA Online Edition 2320 B
NW00U	**Chlorophenols:** Internal Method, LC-MS/MS
NW011	**Sulphate:** APHA Online Edition 4110 B
NW023	**Conductivity:** APHA 24th Edition 2510 B
NW098	**Dissolved Aluminium:** APHA Online Edition 3125 B mod.
NW104	**Dissolved Cadmium:** APHA Online Edition 3125 B mod.
NW106	**Dissolved Chromium:** APHA Online Edition 3125 B mod.
NW109	**Dissolved Iron:** APHA Online Edition 3125 B mod.
NW112	**Dissolved Magnesium:** APHA Online Edition 3125 B mod.
NW114	**Dissolved Mercury:** APHA Online Edition 3125 B mod.
NW117	**Dissolved Potassium:** APHA Online Edition 3125 B mod.
NW125	**Dissolved Zinc:** APHA Online Edition 3125 B mod.
NW193	**Dissolved Reactive Phosphorus:** APHA Online Edition 4500-P G
NW206	**Suspended Solids:** APHA Online Edition 2540 D
NW228	**SVOC (GC-MSMS):** Internal Method, GC-MS/MS
NW341	**BOD5 - Soluble Carbonaceous:** APHA Online Edition 5210 B
NWWG6	**Volatile Fatty Acids (VFA):** APHA 24th Edition 5560 D mod.
NW007	**Chloride:** APHA Online Edition 4110 B
NW010	**Nitrate-N:** APHA Online Edition 4110 B
NW020	**Chemical Oxygen Demand:** APHA Online Edition 5220 D
NW030	**Total Hardness:** APHA Online Edition 2340 B
NW103	**Dissolved Boron:** APHA Online Edition 3125 B mod.
NW105	**Dissolved Calcium:** APHA Online Edition 3125 B mod.
NW108	**Dissolved Copper:** APHA Online Edition 3125 B mod.
NW110	**Dissolved Lead:** APHA Online Edition 3125 B mod.
NW113	**Dissolved Manganese:** APHA Online Edition 3125 B mod.
NW116	**Dissolved Nickel:** APHA Online Edition 3125 B mod.
NW120	**Dissolved Sodium:** APHA Online Edition 3125 B mod.
NW179	**Ammonia Nitrogen:** APHA Online Edition 4500-NH3 H
NW195	**pH (Tested beyond 15 minute APHA holding time):** APHA 24th Edition 4500-H B
NW210	**Total Non-Purgeable Organic Carbon:** APHA Online Edition 5310 B
NW229	**VOC (GC-MS):** Internal Method, HS-GC-MS
NW583	**Dissolved Arsenic:** APHA Online Edition 3125 B mod.
ZM2GA	**Escherichia coli E (Water) [NZ] <100 >6 000 000 /100 ml (0-3) m-FC Agar-F:** SMEWW 9222I; APHA 24th Edition

Signature

Marylou Cabral Laboratory Manager Eurofins ELS Limited

Jennifer Mont Supervisor Eurofins ELS Limited

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EXPLANATORY NOTE

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② Test is subcontracted within Eurofins group and is accredited
③ Test is subcontracted within Eurofins group and is not accredited
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⑤ Test is subcontracted outside Eurofins group and is not accredited
⑥ Test result is provided by the customer and is not accredited
⑦ Tested at the sampling point by Eurofins and is not accredited
⑧ Tested at the sampling point by Eurofins and is accredited
⑨ Test is RLP accredited
⑩ Test is subcontracted within Eurofins group and is RLP accredited

N/A means Not Applicable
Not Detected means not detected at or above the Limit of Quantification (LOQ)
LOQ means Limit of Quantification and the unit of LOQ is the same as the result unit
✗ (Unsatisfactory) means does not meet the specification
✓ (Satisfactory) means meets the specification

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END OF REPORT

Food & Water Testing

ANALYTICAL REPORT

REPORT CODE	AR-24-NW-024782-01	REPORT DATE	24/04/2024

Attention Downer NZ Ltd (EDI Levin)
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Copy to: Water and Waste Team (waterandwasteteam@horowhenua.govt.nz), McMillan

Contact for your orders: Gabriela Carvalhaes
Contract: Landfill

Order code: EUNZWE-00177658
Purchase Order Number: Landfill

SAMPLE CODE	812-2024-00052262		
Sample Name	349865-0		
Product:	Ground water		
Sampling Point code:	WIL-D2	**Sampling Point name:**	Levin D2
Reception Date & Time:	09/04/2024 17:45		
Analysis Started on:	09/04/2024	**Analysis Ending Date:**	24/04/2024
Product Type	Ground water	**Sampled Date & Time**	09/04/2024 08:07
Sampler(s)	Client nominated external sampler	**Sampled by Eurofins**	No

		RESULTS	(UNCERTAINTY)	LOQ
NW179	**Ammonia Nitrogen**			
	Ammoniacal nitrogen (N)	0.76	(± 0.08) mg/l	0.01
NW341	**BOD5 - Soluble Carbonaceous**			
	BOD5	<3	mg/l	1
NW020	**Chemical Oxygen Demand**			
	Chemical oxygen demand (COD)	51	(± 9) mg/l	15
NW007	**Chloride**			
	Chloride (Cl)	94.4	(± 9.44) mg/l	0.02
NW00U	**Chlorophenols**			
	2,3,4,6-Tetrachlorophenol	<0.01	mg/l	0.01
	2,4-Dichlorophenol	<0.01	mg/l	0.01
	2,6-Dichlorophenol	<0.02	mg/l	0.2
	2-Chlorophenol (o-chlorophenol)	<0.01	mg/l	0.01
	3,4,5-Trichlorophenol	<0.01	mg/l	0.01
	4-Chloro-3-cresol	<0.01	mg/l	0.01
	Pentachlorophenol	<0.005	mg/l	0.005
	Phenol	<0.01	mg/l	0.01
	Total of 2,4,5 & 2,4,6 -Trichlorophenol	<0.02	mg/l	0.02
NW023	**Conductivity**			
	Conductivity	67.8	(± 1.4) mS/m	0.1
NW098	**Dissolved Aluminium**			
	Aluminium	<0.002	mg/l	0.002
NW583	**Dissolved Arsenic**			
	Arsenic (As)	<0.001	mg/l	0.001
NW103	**Dissolved Boron**			
	Boron (B)	0.04	mg/l	0.03

		RESULTS (UNCERTAINTY)		LOQ
NW104	**Dissolved Cadmium**			
	Cadmium (Cd)	<0.0002	mg/l	0.0002
NW105	**Dissolved Calcium**			
	Calcium (Ca)	26.8	mg/l	0.1
NW106	**Dissolved Chromium**			
	Chromium (Cr)	<0.001	mg/l	0.001
NW108	**Dissolved Copper**			
	Copper (Cu)	<0.0005	mg/l	0.0005
NW109	**Dissolved Iron**			
	Iron (Fe)	11.4	mg/l	0.01
NW110	**Dissolved Lead**			
	Lead (Pb)	<0.0005	mg/l	0.0005
NW112	**Dissolved Magnesium**			
	Magnesium (Mg)	22.6	mg/l	0.01
NW113	**Dissolved Manganese**			
	Manganese (Mn)	0.607	mg/l	0.0005
NW114	**Dissolved Mercury**			
	Mercury (Hg)	<0.0005	mg/l	0.0005
NW116	**Dissolved Nickel**			
	Nickel (Ni)	<0.0005	mg/l	0.0005
NW117	**Dissolved Potassium**			
	Potassium (K)	11.7	mg/l	0.01
NW193	**Dissolved Reactive Phosphorus**			
	Phosphorus (soluble reactive)	0.033	mg/l	0.005
NW120	**Dissolved Sodium**			
	Sodium (Na)	42.4	mg/l	0.01
NW125	**Dissolved Zinc**			
	Zinc (Zn)	0.005	mg/l	0.002
ZM2GA	**Enumeration of Escherichia coli By Membrane Filtration**			
	Escherichia coli	<100	cfu/100 ml	100
NW010	**Nitrate-N**			
	Nitrate-N	<0.01	(± 0.00) mg/l	0.01
NW195	**pH (Tested beyond 15 minute APHA holding time)**			
	pH	6.3	(± 0.2)	0.1
NW011	**Sulphate**			
	Sulphate	6.15	(± 0.62) mg/l	0.02
NW206	**Suspended Solids**			
	Suspended Solids	53	mg/l	3
NW228	**SVOC (GC-MSMS)**			
	Acenaphthene	<0.0001	mg/l	0.0001
	Acenaphthylene	<0.001	mg/l	0.001
	Adipatic acid, bis-2-ethylhexyl ester (DEHA)	<0.0001	mg/l	0.0001
	Alachlor	<0.0001	mg/l	0.0001
	Aldicarb	<0.1	mg/l	0.1
	Aldrin	<0.001	mg/l	0.001
	Anthracene	<0.001	mg/l	0.001
	Atrazine	<0.0001	mg/l	0.0001

		RESULTS (UNCERTAINTY)		LOQ
NW228	**SVOC (GC-MSMS)**			
	Benz(a)anthracene	<0.0001	mg/l	0.0001
	Benzo(a)pyrene	<0.0001	mg/l	0.0001
	Benzo(g,h,i)perylene	<0.001	mg/l	0.001
	Bromacil	<0.005	mg/l	0.005
	Carbofuran	<0.001	mg/l	0.001
	Chlordane	<0.0001	mg/l	0.0001
	Chlordane, gamma	<0.001	mg/l	0.001
	Chlorpyrifos (-ethyl)	<0.0001	mg/l	0.0001
	Chrysene	<0.0001	mg/l	0.0001
	Cyanazine	<0.005	mg/l	0.005
	d-BHC	<0.0001	mg/l	0.0001
	DDD, p,p'-	<0.0001	mg/l	0.0001
	DDE, p,p-	<0.0001	mg/l	0.0001
	DDT, p,p'-	NotRecovered	mg/l	0.001
	Diazinon	<0.0001	mg/l	0.0001
	Dibenz(a,h)anthracene	<0.0001	mg/l	0.0001
	Dieldrin	<0.0001	mg/l	0.0001
	Dimethoate	<0.001	mg/l	0.001
	Diuron	<0.001	mg/l	0.001
	Endosulfan, alpha-	<0.001	mg/l	0.001
	Endosulfan, beta-	<0.005	mg/l	0.005
	Endosulfan-sulfate	<0.0001	mg/l	0.0001
	Endrin	<0.0001	mg/l	0.0001
	Endrin ketone	NotRecovered	mg/l	0.0001
	Endrin-aldehyde	<0.001	mg/l	0.01
	Fluoranthene	<0.0001	mg/l	0.0001
	Fluorene	<0.0001	mg/l	0.0001
	HCH, alpha-	<0.0001	mg/l	0.0001
	HCH, beta-	<0.0001	mg/l	0.0001
	Heptachlor	<0.0001	mg/l	0.0001
	Heptachlor epoxide, cis-	<0.0001	mg/l	0.0001
	Hexachlorobenzene (HCB)	<0.0001	mg/l	0.0001
	Hexazinone	<0.001	mg/l	0.001
	Indeno(1,2,3-cd)pyrene	<0.0001	mg/l	0.0001
	Lindane (gamma-HCH)	<0.0001	mg/l	0.0001
	Metalaxyl and metalaxyl-M (metalaxyl including other mixtures of constituent isomers including metalaxyl-M (sum of isomers))	<0.001	mg/l	0.001
	Methoxychlor	<0.0001	mg/l	0.0001
	Metolachlor	<0.0001	mg/l	0.0001
	Metribuzin	<0.0001	mg/l	0.0001
	Molinate	<0.0001	mg/l	0.0001
	Naphthalene	<0.0001	mg/l	0.0001
	Oxadiazon	<0.0001	mg/l	0.0001
	PCB 101	<0.0001	mg/l	0.0001
	PCB 138	<0.001	mg/l	0.001
	PCB 183	<0.0001	mg/l	0.0001

		RESULTS	(UNCERTAINTY)	LOQ
NW228	**SVOC (GC-MSMS)**			
	PCB 28	<0.0001	mg/l	0.0001
	PCB 7	<0.0001	mg/l	0.0001
	Pendimethalin	<0.002	mg/l	0.002
	Permethrin (sum of isomers)	<0.0001	mg/l	0.0001
	Phenanthrene	<0.0001	mg/l	0.0001
	Pirimiphos-methyl	<0.0001	mg/l	0.0001
	Procymidone	<0.0001	mg/l	0.0001
	Propanil	<0.001	mg/l	0.001
	Propazine	<0.0001	mg/l	0.0001
	Pyrene	<0.0001	mg/l	0.0001
	Pyriproxyfen	<0.0001	mg/l	0.0001
	Simazine	<0.0001	mg/l	0.0001
	Terbuthylazine	<0.0001	mg/l	0.0001
	Total Benzo(b) and Benzo(k) fluoranthene	<0.001	mg/l	0.001
	Trifluralin	<0.0001	mg/l	0.0001
NW003	**Total Alkalinity**			
	Alkalinity total	187	(± 19) mg CaCO3/l	1
NW030	**Total Hardness**			
	Hardness	160	mg CaCO3/l	1
NW210	**Total Non-Purgeable Organic Carbon**			
	Total Organic Carbon	16.3	(± 1.6) mg/l	0.1
NW229	**VOC (GC-MS)**			
	1,1,1,2-Tetrachloroethane	<0.0005	mg/l	0.0005
	1,1,1-Trichloroethane	<0.0005	mg/l	0.0005
	1,1,2,2-tetrachloroethane	<0.0005	mg/l	0.0005
	1,1,2-Trichloroethane	<0.0005	mg/l	0.0005
	1,1-Dichloroethane	<0.0005	mg/l	0.0005
	1,1-Dichloroethene	<0.0005	mg/l	0.0005
	1,1-Dichloropropene	<0.0005	mg/l	0.0005
	1,2,3-Trichlorobenzene	<0.0005	mg/l	0.0005
	1,2,3-Trichloropropane	<0.0005	mg/l	0.0005
	1,2,4 trimethylbenzen	<0.0005	mg/l	0.0005
	1,2,4-Trichlorobenzene	<0.0005	mg/l	0.0005
	1,2-Dibromo-3-chloropropane	<0.001	mg/l	0.002
	1,2-Dibromoethane	<0.0002	mg/l	0.0002
	1,2-Dichlorobenzene (2)	<0.0005	mg/l	0.0005
	1,2-Dichloroethane	<0.0005	mg/l	0.0005
	1,2-Dichloropropane	<0.0005	mg/l	0.0005
	1,3,5-Trichlorobenzene	<0.0005	mg/l	0.0005
	1,3,5-Trimethylbenzene	<0.0005	mg/l	0.0005
	1,3-Dichlorobenzene	<0.0005	mg/l	0.0005
	1,3-Dichloropropane	<0.0005	mg/l	0.0005
	1,4-dichlorobenzene	<0.0005	mg/l	0.0005
	2,2-Dichloropropane	<0.0005	mg/l	0.0005
	2-Chlorotoluene	<0.0005	mg/l	0.0005
	3-chloropropene	<0.0005	mg/l	0.0005
	4-Chlorotoluene	<0.0005	mg/l	0.0005

		RESULTS (UNCERTAINTY)		LOQ
NW229	**VOC (GC-MS)**			
	4-methyl-2-pentanone	<0.0005	mg/l	0.0005
	Benzene	<0.0005	mg/l	0.0005
	Bromobenzene	<0.0005	mg/l	0.0005
	Bromochloromethane	<0.0012	mg/l	0.0012
	Bromodichloromethane	<0.0005	mg/l	0.0005
	Bromoform	<0.0005	mg/l	0.0005
	Bromomethane (zone 2)	<0.001	mg/l	0.001
	Carbon tetrachloride	<0.0005	mg/l	0.0005
	Carbondisulphide (CS2)	<0.0005	mg/l	0.0005
	Chlorobenzene	<0.0005	mg/l	0.0005
	Chloroethane	<0.001	mg/l	0.001
	Chloroform	<0.0005	mg/l	0.0005
	Chloromethane	<0.006	mg/l	0.006
	cis-1,2-Dichloroethene	<0.0005	mg/l	0.0005
	cis-1,3-Dichloropropene	<0.0005	mg/l	0.0005
	Dibromochloromethane	<0.0005	mg/l	0.0005
	Dibromomethane	<0.0005	mg/l	0.0005
	Dichlorodifluoromethane	NotRecovered	mg/l	0.001
	Dichloromethane	<0.005	mg/l	0.005
	Hexachlorobutadiene	<0.0002	mg/l	0.0002
	Isopropylbenzene (Cumene)	<0.0005	mg/l	0.0005
	m,p-Xylene, Ethylbenzene	<0.0015	mg/l	0.0015
	Naphthalene	<0.0005	mg/l	0.0005
	n-Butylbenzene	<0.0005	mg/l	0.0005
	n-Propylbenzene	<0.0005	mg/l	0.0005
	p-Isopropyltoluene	<0.0005	mg/l	0.0005
	sec-Butylbenzene	<0.0005	mg/l	0.0005
	Styrene	<0.0005	mg/l	0.0005
	tert-Butylbenzene	<0.0005	mg/l	0.0005
	Tetrachloroethene	<0.0005	mg/l	0.0005
	Toluene	<0.0005	mg/l	0.0005
	trans-1,2-Dichloroethene	<0.0005	mg/l	0.0005
	trans-1,3-Dichloropropene	<0.0005	mg/l	0.0005
	Trichloroethene	<0.0005	mg/l	0.0005
	Trichlorofluoromethane	<0.0005	mg/l	0.0005
	Vinyl chloride	<0.0003	mg/l	0.0003
	Xylene (ortho-)	<0.0005	mg/l	0.0005
①**NWWG6**	**Volatile Fatty Acids (VFA)**			
	Acetic acid	<5	mg/l	5
	Butyric acid	<5	mg/l	5
	Heptanoic acid	<5	mg/l	5
	Hexanoic acid	<5	mg/l	5
	Isobutyric acid	<5	mg/l	5
	Isocaproic acid	<5	mg/l	5
	Isovaleric acid	<5	mg/l	5
	Propionic acid	<5	mg/l	5
	Valeric acid	<5	mg/l	5
	Volatile fatty acids as acetic acid	<5	mg/l	5

RESULTS (UNCERTAINTY) LOQ

LIST OF METHODS

NW003	**Total Alkalinity:** APHA Online Edition 2320 B
NW00U	**Chlorophenols:** Internal Method, LC-MS/MS
NW011	**Sulphate:** APHA Online Edition 4110 B
NW023	**Conductivity:** APHA 24th Edition 2510 B
NW098	**Dissolved Aluminium:** APHA Online Edition 3125 B mod.
NW104	**Dissolved Cadmium:** APHA Online Edition 3125 B mod.
NW106	**Dissolved Chromium:** APHA Online Edition 3125 B mod.
NW109	**Dissolved Iron:** APHA Online Edition 3125 B mod.
NW112	**Dissolved Magnesium:** APHA Online Edition 3125 B mod.
NW114	**Dissolved Mercury:** APHA Online Edition 3125 B mod.
NW117	**Dissolved Potassium:** APHA Online Edition 3125 B mod.
NW125	**Dissolved Zinc:** APHA Online Edition 3125 B mod.
NW193	**Dissolved Reactive Phosphorus:** APHA Online Edition 4500-P G
NW206	**Suspended Solids:** APHA Online Edition 2540 D
NW228	**SVOC (GC-MSMS):** Internal Method, GC-MS/MS
NW341	**BOD5 - Soluble Carbonaceous:** APHA Online Edition 5210 B
NWWG6	**Volatile Fatty Acids (VFA):** APHA 24th Edition 5560 D mod.
NW007	**Chloride:** APHA Online Edition 4110 B
NW010	**Nitrate-N:** APHA Online Edition 4110 B
NW020	**Chemical Oxygen Demand:** APHA Online Edition 5220 D
NW030	**Total Hardness:** APHA Online Edition 2340 B
NW103	**Dissolved Boron:** APHA Online Edition 3125 B mod.
NW105	**Dissolved Calcium:** APHA Online Edition 3125 B mod.
NW108	**Dissolved Copper:** APHA Online Edition 3125 B mod.
NW110	**Dissolved Lead:** APHA Online Edition 3125 B mod.
NW113	**Dissolved Manganese:** APHA Online Edition 3125 B mod.
NW116	**Dissolved Nickel:** APHA Online Edition 3125 B mod.
NW120	**Dissolved Sodium:** APHA Online Edition 3125 B mod.
NW179	**Ammonia Nitrogen:** APHA Online Edition 4500-NH3 H
NW195	**pH (Tested beyond 15 minute APHA holding time):** APHA 24th Edition 4500-H B
NW210	**Total Non-Purgeable Organic Carbon:** APHA Online Edition 5310 B
NW229	**VOC (GC-MS):** Internal Method, HS-GC-MS
NW583	**Dissolved Arsenic:** APHA Online Edition 3125 B mod.
ZM2GA	**Escherichia coli E (Water) [NZ] <100 >6 000 000 /100 ml (0-3) m-FC Agar-F:** SMEWW 9222I; APHA 24th Edition

Signature

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Divina Cunanan Lagazon Supervisor Eurofins ELS Limited

Gordon McArthur Senior Laboratory Analyst Eurofins ELS Limited

Ganesh Ilancko Supervisor Eurofins ELS Limited

Arvinder Singh Laboratory Supervisor Microbiology

Gabriela Carvalhaes Manager Food and Water Testing Chemistry

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⑥ Test result is provided by the customer and is not accredited
⑦ Tested at the sampling point by Eurofins and is not accredited
⑧ Tested at the sampling point by Eurofins and is accredited
⑨ Test is RLP accredited
⑩ Test is subcontracted within Eurofins group and is RLP accredited

N/A means Not Applicable
Not Detected means not detected at or above the Limit of Quantification (LOQ)
LOQ means Limit of Quantification and the unit of LOQ is the same as the result unit
✗ (Unsatisfactory) means does not meet the specification
✓ (Satisfactory) means meets the specification

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END OF REPORT

Food & Water Testing

ANALYTICAL REPORT

REPORT CODE **AR-24-NW-024781-01** REPORT DATE **24/04/2024**

Attention Downer NZ Ltd (EDI Levin)
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Contact for your orders: Gabriela Carvalhaes
Contract: Landfill

Order code: EUNZWE-00177658
Purchase Order Number: Landfill

SAMPLE CODE **812-2024-00052261**

Sample Name 349866-0
Product: Ground water
Sampling Point code: WIL-D3rd
Sampling Point name: Levin D3rd
Reception Date & Time: 09/04/2024 17:40
Analysis Started on: 09/04/2024
Analysis Ending Date: 24/04/2024
Product Type Ground water
Sampled Date & Time 09/04/2024 08:58
Sampler(s) Client nominated external sampler
Sampled by Eurofins No

		RESULTS	(UNCERTAINTY)	LOQ
NW179	**Ammonia Nitrogen**			
	Ammoniacal nitrogen (N)	0.37	(± 0.04) mg/l	0.01
NW341	**BOD5 - Soluble Carbonaceous**			
	BOD5	<1	mg/l	1
NW020	**Chemical Oxygen Demand**			
	Chemical oxygen demand (COD)	<15	(± 5) mg/l	15
NW007	**Chloride**			
	Chloride (Cl)	32.6	(± 3.26) mg/l	0.02
NW00U	**Chlorophenols**			
	2,3,4,6-Tetrachlorophenol	<0.01	mg/l	0.01
	2,4-Dichlorophenol	<0.01	mg/l	0.01
	2,6-Dichlorophenol	<0.02	mg/l	0.2
	2-Chlorophenol (o-chlorophenol)	<0.01	mg/l	0.01
	3,4,5-Trichlorophenol	<0.01	mg/l	0.01
	4-Chloro-3-cresol	<0.01	mg/l	0.01
	Pentachlorophenol	<0.005	mg/l	0.005
	Phenol	<0.01	mg/l	0.01
	Total of 2,4,5 & 2,4,6 -Trichlorophenol	<0.02	mg/l	0.02
NW023	**Conductivity**			
	Conductivity	53.2	(± 1.1) mS/m	0.1
NW098	**Dissolved Aluminium**			
	Aluminium	0.003	mg/l	0.002
NW583	**Dissolved Arsenic**			
	Arsenic (As)	0.019	mg/l	0.001
NW103	**Dissolved Boron**			
	Boron (B)	<0.03	mg/l	0.03

		RESULTS (UNCERTAINTY)		LOQ
NW104	**Dissolved Cadmium**			
	Cadmium (Cd)	<0.0002	mg/l	0.0002
NW105	**Dissolved Calcium**			
	Calcium (Ca)	53.0	mg/l	0.1
NW106	**Dissolved Chromium**			
	Chromium (Cr)	<0.001	mg/l	0.001
NW108	**Dissolved Copper**			
	Copper (Cu)	<0.0005	mg/l	0.0005
NW109	**Dissolved Iron**			
	Iron (Fe)	0.03	mg/l	0.01
NW110	**Dissolved Lead**			
	Lead (Pb)	<0.0005	mg/l	0.0005
NW112	**Dissolved Magnesium**			
	Magnesium (Mg)	13.0	mg/l	0.01
NW113	**Dissolved Manganese**			
	Manganese (Mn)	0.500	mg/l	0.0005
NW114	**Dissolved Mercury**			
	Mercury (Hg)	<0.0005	mg/l	0.0005
NW116	**Dissolved Nickel**			
	Nickel (Ni)	<0.0005	mg/l	0.0005
NW117	**Dissolved Potassium**			
	Potassium (K)	6.37	mg/l	0.01
NW193	**Dissolved Reactive Phosphorus**			
	Phosphorus (soluble reactive)	1.14	mg/l	0.005
NW120	**Dissolved Sodium**			
	Sodium (Na)	20.4	mg/l	0.01
NW125	**Dissolved Zinc**			
	Zinc (Zn)	<0.002	mg/l	0.002
ZMF1E	**Enumeration of Escherichia coli By Membrane Filtration**			
	Escherichia coli	<1	cfu/100 ml	1
NW010	**Nitrate-N**			
	Nitrate-N	<0.01	(± 0.00) mg/l	0.01
NW195	**pH (Tested beyond 15 minute APHA holding time)**			
	pH	7.5	(± 0.2)	0.1
NW011	**Sulphate**			
	Sulphate	<0.02	(± 0.01) mg/l	0.02
NW206	**Suspended Solids**			
	Suspended Solids	<5	mg/l	3
NW228	**SVOC (GC-MSMS)**			
	Acenaphthene	<0.0001	mg/l	0.0001
	Acenaphthylene	<0.001	mg/l	0.001
	Adipatic acid, bis-2-ethylhexyl ester (DEHA)	<0.0001	mg/l	0.0001
	Alachlor	<0.0001	mg/l	0.0001
	Aldicarb	<0.1	mg/l	0.1
	Aldrin	<0.001	mg/l	0.001
	Anthracene	<0.001	mg/l	0.001
	Atrazine	<0.0001	mg/l	0.0001

		RESULTS (UNCERTAINTY)		LOQ
NW228	**SVOC (GC-MSMS)**			
	Benz(a)anthracene	<0.0001	mg/l	0.0001
	Benzo(a)pyrene	<0.0001	mg/l	0.0001
	Benzo(g,h,i)perylene	<0.001	mg/l	0.001
	Bromacil	<0.005	mg/l	0.005
	Carbofuran	<0.001	mg/l	0.001
	Chlordane	<0.0001	mg/l	0.0001
	Chlordane, gamma	<0.001	mg/l	0.001
	Chlorpyrifos (-ethyl)	<0.0001	mg/l	0.0001
	Chrysene	<0.0001	mg/l	0.0001
	Cyanazine	<0.005	mg/l	0.005
	d-BHC	<0.0001	mg/l	0.0001
	DDD, p,p'-	<0.0001	mg/l	0.0001
	DDE, p,p-	<0.0001	mg/l	0.0001
	DDT, p,p'-	NotRecovered	mg/l	0.001
	Diazinon	<0.0001	mg/l	0.0001
	Dibenz(a,h)anthracene	<0.0001	mg/l	0.0001
	Dieldrin	<0.0001	mg/l	0.0001
	Dimethoate	<0.001	mg/l	0.001
	Diuron	<0.001	mg/l	0.001
	Endosulfan, alpha-	<0.001	mg/l	0.001
	Endosulfan, beta-	<0.005	mg/l	0.005
	Endosulfan-sulfate	<0.0001	mg/l	0.0001
	Endrin	<0.0001	mg/l	0.0001
	Endrin ketone	NotRecovered	mg/l	0.0001
	Endrin-aldehyde	<0.001	mg/l	0.01
	Fluoranthene	<0.0001	mg/l	0.0001
	Fluorene	<0.0001	mg/l	0.0001
	HCH, alpha-	<0.0001	mg/l	0.0001
	HCH, beta-	<0.0001	mg/l	0.0001
	Heptachlor	<0.0001	mg/l	0.0001
	Heptachlor epoxide, cis-	<0.0001	mg/l	0.0001
	Hexachlorobenzene (HCB)	<0.0001	mg/l	0.0001
	Hexazinone	<0.001	mg/l	0.001
	Indeno(1,2,3-cd)pyrene	<0.0001	mg/l	0.0001
	Lindane (gamma-HCH)	<0.0001	mg/l	0.0001
	Metalaxyl and metalaxyl-M (metalaxyl including other mixtures of constituent isomers including metalaxyl-M (sum of isomers))	<0.001	mg/l	0.001
	Methoxychlor	<0.0001	mg/l	0.0001
	Metolachlor	<0.0001	mg/l	0.0001
	Metribuzin	<0.0001	mg/l	0.0001
	Molinate	<0.0001	mg/l	0.0001
	Naphthalene	<0.0001	mg/l	0.0001
	Oxadiazon	<0.0001	mg/l	0.0001
	PCB 101	<0.0001	mg/l	0.0001
	PCB 138	<0.001	mg/l	0.001
	PCB 183	<0.0001	mg/l	0.0001

		RESULTS	(UNCERTAINTY)	LOQ
NW228	**SVOC (GC-MSMS)**			
	PCB 28	<0.0001	mg/l	0.0001
	PCB 7	<0.0001	mg/l	0.0001
	Pendimethalin	<0.002	mg/l	0.002
	Permethrin (sum of isomers)	<0.0001	mg/l	0.0001
	Phenanthrene	<0.0001	mg/l	0.0001
	Pirimiphos-methyl	<0.0001	mg/l	0.0001
	Procymidone	<0.0001	mg/l	0.0001
	Propanil	<0.001	mg/l	0.001
	Propazine	<0.0001	mg/l	0.0001
	Pyrene	<0.0001	mg/l	0.0001
	Pyriproxyfen	<0.0001	mg/l	0.0001
	Simazine	<0.0001	mg/l	0.0001
	Terbuthylazine	<0.0001	mg/l	0.0001
	Total Benzo(b) and Benzo(k) fluoranthene	<0.001	mg/l	0.001
	Trifluralin	<0.0001	mg/l	0.0001
NW003	**Total Alkalinity**			
	Alkalinity total	223	(± 22) mg CaCO3/l	1
NW030	**Total Hardness**			
	Hardness	186	mg CaCO3/l	1
NW210	**Total Non-Purgeable Organic Carbon**			
	Total Organic Carbon	5.8	(± 0.6) mg/l	0.1
NW229	**VOC (GC-MS)**			
	1,1,1,2-Tetrachloroethane	<0.0005	mg/l	0.0005
	1,1,1-Trichloroethane	<0.0005	mg/l	0.0005
	1,1,2,2-tetrachloroethane	<0.0005	mg/l	0.0005
	1,1,2-Trichloroethane	<0.0005	mg/l	0.0005
	1,1-Dichloroethane	<0.0005	mg/l	0.0005
	1,1-Dichloroethene	<0.0005	mg/l	0.0005
	1,1-Dichloropropene	<0.0005	mg/l	0.0005
	1,2,3-Trichlorobenzene	<0.0005	mg/l	0.0005
	1,2,3-Trichloropropane	<0.0005	mg/l	0.0005
	1,2,4 trimethylbenzen	<0.0005	mg/l	0.0005
	1,2,4-Trichlorobenzene	<0.0005	mg/l	0.0005
	1,2-Dibromo-3-chloropropane	<0.001	mg/l	0.002
	1,2-Dibromoethane	<0.0002	mg/l	0.0002
	1,2-Dichlorobenzene (2)	<0.0005	mg/l	0.0005
	1,2-Dichloroethane	<0.0005	mg/l	0.0005
	1,2-Dichloropropane	<0.0005	mg/l	0.0005
	1,3,5-Trichlorobenzene	<0.0005	mg/l	0.0005
	1,3,5-Trimethylbenzene	<0.0005	mg/l	0.0005
	1,3-Dichlorobenzene	<0.0005	mg/l	0.0005
	1,3-Dichloropropane	<0.0005	mg/l	0.0005
	1,4-dichlorobenzene	<0.0005	mg/l	0.0005
	2,2-Dichloropropane	<0.0005	mg/l	0.0005
	2-Chlorotoluene	<0.0005	mg/l	0.0005
	3-chloropropene	<0.0005	mg/l	0.0005
	4-Chlorotoluene	<0.0005	mg/l	0.0005

		RESULTS (UNCERTAINTY)		LOQ
NW229	**VOC (GC-MS)**			
	4-methyl-2-pentanone	<0.0005	mg/l	0.0005
	Benzene	<0.0005	mg/l	0.0005
	Bromobenzene	<0.0005	mg/l	0.0005
	Bromochloromethane	<0.0012	mg/l	0.0012
	Bromodichloromethane	<0.0005	mg/l	0.0005
	Bromoform	<0.0005	mg/l	0.0005
	Bromomethane (zone 2)	<0.001	mg/l	0.001
	Carbon tetrachloride	<0.0005	mg/l	0.0005
	Carbondisulphide (CS2)	<0.0005	mg/l	0.0005
	Chlorobenzene	<0.0005	mg/l	0.0005
	Chloroethane	<0.001	mg/l	0.001
	Chloroform	<0.0005	mg/l	0.0005
	Chloromethane	<0.006	mg/l	0.006
	cis-1,2-Dichloroethene	<0.0005	mg/l	0.0005
	cis-1,3-Dichloropropene	<0.0005	mg/l	0.0005
	Dibromochloromethane	<0.0005	mg/l	0.0005
	Dibromomethane	<0.0005	mg/l	0.0005
	Dichlorodifluoromethane	NotRecovered	mg/l	0.001
	Dichloromethane	<0.005	mg/l	0.005
	Hexachlorobutadiene	<0.0002	mg/l	0.0002
	Isopropylbenzene (Cumene)	<0.0005	mg/l	0.0005
	m,p-Xylene, Ethylbenzene	<0.0015	mg/l	0.0015
	Naphthalene	<0.0005	mg/l	0.0005
	n-Butylbenzene	<0.0005	mg/l	0.0005
	n-Propylbenzene	<0.0005	mg/l	0.0005
	p-Isopropyltoluene	<0.0005	mg/l	0.0005
	sec-Butylbenzene	<0.0005	mg/l	0.0005
	Styrene	<0.0005	mg/l	0.0005
	tert-Butylbenzene	<0.0005	mg/l	0.0005
	Tetrachloroethene	<0.0005	mg/l	0.0005
	Toluene	<0.0005	mg/l	0.0005
	trans-1,2-Dichloroethene	<0.0005	mg/l	0.0005
	trans-1,3-Dichloropropene	<0.0005	mg/l	0.0005
	Trichloroethene	<0.0005	mg/l	0.0005
	Trichlorofluoromethane	<0.0005	mg/l	0.0005
	Vinyl chloride	<0.0003	mg/l	0.0003
	Xylene (ortho-)	<0.0005	mg/l	0.0005
①**NWWG6**	**Volatile Fatty Acids (VFA)**			
	Acetic acid	<5	mg/l	5
	Butyric acid	<5	mg/l	5
	Heptanoic acid	<5	mg/l	5
	Hexanoic acid	<5	mg/l	5
	Isobutyric acid	<5	mg/l	5
	Isocaproic acid	<5	mg/l	5
	Isovaleric acid	<5	mg/l	5
	Propionic acid	<5	mg/l	5
	Valeric acid	<5	mg/l	5
	Volatile fatty acids as acetic acid	<5	mg/l	5

RESULTS (UNCERTAINTY)	LOQ

LIST OF METHODS

NW003	**Total Alkalinity:** APHA Online Edition 2320 B
NW00U	**Chlorophenols:** Internal Method, LC-MS/MS
NW011	**Sulphate:** APHA Online Edition 4110 B
NW023	**Conductivity:** APHA 24th Edition 2510 B
NW098	**Dissolved Aluminium:** APHA Online Edition 3125 B mod.
NW104	**Dissolved Cadmium:** APHA Online Edition 3125 B mod.
NW106	**Dissolved Chromium:** APHA Online Edition 3125 B mod.
NW109	**Dissolved Iron:** APHA Online Edition 3125 B mod.
NW112	**Dissolved Magnesium:** APHA Online Edition 3125 B mod.
NW114	**Dissolved Mercury:** APHA Online Edition 3125 B mod.
NW117	**Dissolved Potassium:** APHA Online Edition 3125 B mod.
NW125	**Dissolved Zinc:** APHA Online Edition 3125 B mod.
NW193	**Dissolved Reactive Phosphorus:** APHA Online Edition 4500-P G
NW206	**Suspended Solids:** APHA Online Edition 2540 D
NW228	**SVOC (GC-MSMS):** Internal Method, GC-MS/MS
NW341	**BOD5 - Soluble Carbonaceous:** APHA Online Edition 5210 B
NWWG6	**Volatile Fatty Acids (VFA):** APHA 24th Edition 5560 D mod.
NW007	**Chloride:** APHA Online Edition 4110 B
NW010	**Nitrate-N:** APHA Online Edition 4110 B
NW020	**Chemical Oxygen Demand:** APHA Online Edition 5220 D
NW030	**Total Hardness:** APHA Online Edition 2340 B
NW103	**Dissolved Boron:** APHA Online Edition 3125 B mod.
NW105	**Dissolved Calcium:** APHA Online Edition 3125 B mod.
NW108	**Dissolved Copper:** APHA Online Edition 3125 B mod.
NW110	**Dissolved Lead:** APHA Online Edition 3125 B mod.
NW113	**Dissolved Manganese:** APHA Online Edition 3125 B mod.
NW116	**Dissolved Nickel:** APHA Online Edition 3125 B mod.
NW120	**Dissolved Sodium:** APHA Online Edition 3125 B mod.
NW179	**Ammonia Nitrogen:** APHA Online Edition 4500-NH3 H
NW195	**pH (Tested beyond 15 minute APHA holding time):** APHA 24th Edition 4500-H B
NW210	**Total Non-Purgeable Organic Carbon:** APHA Online Edition 5310 B
NW229	**VOC (GC-MS):** Internal Method, HS-GC-MS
NW583	**Dissolved Arsenic:** APHA Online Edition 3125 B mod.
ZMF1E	**Escherichia coli E (Water) [NZ] <1 >80 /100 ml (0) Ml Agar-F:** SMEWW 9222K; APHA 24th Edition

Signature

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EXPLANATORY NOTE

① Test is not accredited
② Test is subcontracted within Eurofins group and is accredited
③ Test is subcontracted within Eurofins group and is not accredited
④ Test is subcontracted outside Eurofins group and is accredited
⑤ Test is subcontracted outside Eurofins group and is not accredited
⑥ Test result is provided by the customer and is not accredited
⑦ Tested at the sampling point by Eurofins and is not accredited
⑧ Tested at the sampling point by Eurofins and is accredited
⑨ Test is RLP accredited
⑩ Test is subcontracted within Eurofins group and is RLP accredited

N/A means Not Applicable
Not Detected means not detected at or above the Limit of Quantification (LOQ)
LOQ means Limit of Quantification and the unit of LOQ is the same as the result unit
✗ (Unsatisfactory) means does not meet the specification
✓ (Satisfactory) means meets the specification

END OF REPORT

Food & Water Testing

ANALYTICAL REPORT

REPORT CODE	AR-24-NW-024101-01	REPORT DATE	20/04/2024

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Contact for your orders: Gabriela Carvalhaes
Contract: Landfill

Order code: EUNZWE-00177701
Purchase Order Number: Landfill

SAMPLE CODE	812-2024-00052406		
Sample Name	349867-0		
Product:	Ground water		
Sampling Point code:	WIL-D3rs	**Sampling Point name:**	Levin D3rs
Reception Date & Time:	10/04/2024 8:59		
Analysis Started on:	10/04/2024	**Analysis Ending Date:**	20/04/2024
Product Type	Ground water	**Sampled Date & Time**	09/04/2024 09:16
Sampler(s)	Client nominated external sampler	**Sampled by Eurofins**	No

		RESULTS	(UNCERTAINTY)	LOQ
NW179	**Ammonia Nitrogen**			
	Ammoniacal nitrogen (N)	0.75	(± 0.07) mg/l	0.01
NW341	**BOD5 - Soluble Carbonaceous**			
	BOD5	2	mg/l	1
NW020	**Chemical Oxygen Demand**			
	Chemical oxygen demand (COD)	63	(± 11) mg/l	15
NW007	**Chloride**			
	Chloride (Cl)	15.8	(± 1.58) mg/l	0.02
NW00U	**Chlorophenols**			
	2,3,4,6-Tetrachlorophenol	<0.01	mg/l	0.01
	2,4-Dichlorophenol	<0.01	mg/l	0.01
	2,6-Dichlorophenol	<0.02	mg/l	0.2
	2-Chlorophenol (o-chlorophenol)	<0.01	mg/l	0.01
	3,4,5-Trichlorophenol	<0.01	mg/l	0.01
	4-Chloro-3-cresol	<0.01	mg/l	0.01
	Pentachlorophenol	<0.005	mg/l	0.005
	Phenol	<0.01	mg/l	0.01
	Total of 2,4,5 & 2,4,6 -Trichlorophenol	<0.02	mg/l	0.02
NW023	**Conductivity**			
	Conductivity	22.0	(± 0.4) mS/m	0.1
NW098	**Dissolved Aluminium**			
	Aluminium	0.055	mg/l	0.002
NW103	**Dissolved Boron**			
	Boron (B)	0.03	mg/l	0.03
NW104	**Dissolved Cadmium**			
	Cadmium (Cd)	<0.0002	mg/l	0.0002

		RESULTS (UNCERTAINTY)		LOQ
NW105	**Dissolved Calcium**			
	Calcium (Ca)	9.0	mg/l	0.1
NW106	**Dissolved Chromium**			
	Chromium (Cr)	0.003	mg/l	0.001
NW108	**Dissolved Copper**			
	Copper (Cu)	<0.0005	mg/l	0.0005
NW109	**Dissolved Iron**			
	Iron (Fe)	14.8	mg/l	0.01
NW110	**Dissolved Lead**			
	Lead (Pb)	<0.0005	mg/l	0.0005
NW112	**Dissolved Magnesium**			
	Magnesium (Mg)	4.89	mg/l	0.01
NW113	**Dissolved Manganese**			
	Manganese (Mn)	0.382	mg/l	0.0005
NW114	**Dissolved Mercury**			
	Mercury (Hg)	<0.0005	mg/l	0.0005
NW116	**Dissolved Nickel**			
	Nickel (Ni)	<0.0005	mg/l	0.0005
NW117	**Dissolved Potassium**			
	Potassium (K)	4.61	mg/l	0.01
NW193	**Dissolved Reactive Phosphorus**			
	Phosphorus (soluble reactive)	0.082	mg/l	0.005
NW120	**Dissolved Sodium**			
	Sodium (Na)	23.0	mg/l	0.01
NW125	**Dissolved Zinc**			
	Zinc (Zn)	0.004	mg/l	0.002
ZM2GA	**Enumeration of Escherichia coli By Membrane Filtration**			
	Escherichia coli	<100	cfu/100 ml	100
NW010	**Nitrate-N**			
	Nitrate-N	<0.1	mg/l	0.01
NW195	**pH (Tested beyond 15 minute APHA holding time)**			
	pH	6.3	(± 0.2)	0.1
NW011	**Sulphate**			
	Sulphate	0.81	(± 0.08) mg/l	0.02
NW206	**Suspended Solids**			
	Suspended Solids	6	mg/l	3
NW228	**SVOC (GC-MSMS)**			
	Acenaphthene	<0.0001	mg/l	0.0001
	Acenaphthylene	<0.001	mg/l	0.001
	Adipatic acid, bis-2-ethylhexyl ester (DEHA)	<0.0001	mg/l	0.0001
	Alachlor	<0.0001	mg/l	0.0001
	Aldicarb	<0.1	mg/l	0.1
	Aldrin	<0.001	mg/l	0.001
	Anthracene	<0.001	mg/l	0.001
	Atrazine	<0.0001	mg/l	0.0001
	Benz(a)anthracene	<0.0001	mg/l	0.0001
	Benzo(a)pyrene	<0.0001	mg/l	0.0001

		RESULTS (UNCERTAINTY)		LOQ
NW228	**SVOC (GC-MSMS)**			
	Benzo(g,h,i)perylene	<0.001	mg/l	0.001
	Bromacil	<0.005	mg/l	0.005
	Carbofuran	<0.001	mg/l	0.001
	Chlordane	<0.0001	mg/l	0.0001
	Chlordane, gamma	<0.001	mg/l	0.001
	Chlorpyrifos (-ethyl)	<0.0001	mg/l	0.0001
	Chrysene	<0.0001	mg/l	0.0001
	Cyanazine	<0.005	mg/l	0.005
	d-BHC	<0.0001	mg/l	0.0001
	DDD, p,p'-	<0.0001	mg/l	0.0001
	DDE, p,p-	<0.0001	mg/l	0.0001
	DDT, p,p'-	<0.001	mg/l	0.001
	Diazinon	<0.0001	mg/l	0.0001
	Dibenz(a,h)anthracene	<0.0001	mg/l	0.0001
	Dieldrin	<0.0001	mg/l	0.0001
	Dimethoate	<0.001	mg/l	0.001
	Diuron	<0.001	mg/l	0.001
	Endosulfan, alpha-	<0.001	mg/l	0.001
	Endosulfan, beta-	<0.005	mg/l	0.005
	Endosulfan-sulfate	<0.0001	mg/l	0.0001
	Endrin	<0.0001	mg/l	0.0001
	Endrin ketone	<0.0001	mg/l	0.0001
	Endrin-aldehyde	<0.001	mg/l	0.01
	Fluoranthene	<0.0001	mg/l	0.0001
	Fluorene	<0.0001	mg/l	0.0001
	HCH, alpha-	<0.0001	mg/l	0.0001
	HCH, beta-	<0.0001	mg/l	0.0001
	Heptachlor	<0.0001	mg/l	0.0001
	Heptachlor epoxide, cis-	<0.0001	mg/l	0.0001
	Hexachlorobenzene (HCB)	<0.0001	mg/l	0.0001
	Hexazinone	<0.001	mg/l	0.001
	Indeno(1,2,3-cd)pyrene	<0.0001	mg/l	0.0001
	Lindane (gamma-HCH)	<0.0001	mg/l	0.0001
	Metalaxyl and metalaxyl-M (metalaxyl including other mixtures of constituent isomers including metalaxyl-M (sum of isomers))	<0.001	mg/l	0.001
	Methoxychlor	<0.0001	mg/l	0.0001
	Metolachlor	<0.0001	mg/l	0.0001
	Metribuzin	<0.0001	mg/l	0.0001
	Molinate	<0.0001	mg/l	0.0001
	Naphthalene	<0.0001	mg/l	0.0001
	Oxadiazon	<0.0001	mg/l	0.0001
	PCB 101	<0.0001	mg/l	0.0001
	PCB 138	<0.001	mg/l	0.001
	PCB 183	<0.0001	mg/l	0.0001
	PCB 28	<0.0001	mg/l	0.0001
	PCB 7	<0.0001	mg/l	0.0001

		RESULTS	(UNCERTAINTY)	LOQ
NW228	**SVOC (GC-MSMS)**			
	Pendimethalin	<0.002	mg/l	0.002
	Permethrin (sum of isomers)	<0.0001	mg/l	0.0001
	Phenanthrene	<0.0001	mg/l	0.0001
	Pirimiphos-methyl	<0.0001	mg/l	0.0001
	Procymidone	<0.0001	mg/l	0.0001
	Propanil	<0.001	mg/l	0.001
	Propazine	<0.0001	mg/l	0.0001
	Pyrene	<0.0001	mg/l	0.0001
	Pyriproxyfen	<0.0001	mg/l	0.0001
	Simazine	<0.0001	mg/l	0.0001
	Terbuthylazine	<0.0001	mg/l	0.0001
	Total Benzo(b) and Benzo(k) fluoranthene	<0.001	mg/l	0.001
	Trifluralin	<0.0001	mg/l	0.0001
NW003	**Total Alkalinity**			
	Alkalinity total	80	(± 8) mg CaCO3/l	1
NW030	**Total Hardness**			
	Hardness	43	mg CaCO3/l	1
NW210	**Total Non-Purgeable Organic Carbon**			
	Total Organic Carbon	21.9	(± 2.2) mg/l	0.1
NW229	**VOC (GC-MS)**			
	1,1,1,2-Tetrachloroethane	<0.0005	mg/l	0.0005
	1,1,1-Trichloroethane	<0.0005	mg/l	0.0005
	1,1,2,2-tetrachloroethane	<0.0005	mg/l	0.0005
	1,1,2-Trichloroethane	<0.0005	mg/l	0.0005
	1,1-Dichloroethane	<0.0005	mg/l	0.0005
	1,1-Dichloroethene	<0.0005	mg/l	0.0005
	1,1-Dichloropropene	<0.0005	mg/l	0.0005
	1,2,3-Trichlorobenzene	<0.0005	mg/l	0.0005
	1,2,3-Trichloropropane	<0.0005	mg/l	0.0005
	1,2,4 trimethylbenzen	<0.0005	mg/l	0.0005
	1,2,4-Trichlorobenzene	<0.0005	mg/l	0.0005
	1,2-Dibromo-3-chloropropane	<0.001	mg/l	0.002
	1,2-Dibromoethane	<0.0002	mg/l	0.0002
	1,2-Dichlorobenzene (2)	<0.0005	mg/l	0.0005
	1,2-Dichloroethane	<0.0005	mg/l	0.0005
	1,2-Dichloropropane	<0.0005	mg/l	0.0005
	1,3,5-Trichlorobenzene	<0.0005	mg/l	0.0005
	1,3,5-Trimethylbenzene	<0.0005	mg/l	0.0005
	1,3-Dichlorobenzene	<0.0005	mg/l	0.0005
	1,3-Dichloropropane	<0.0005	mg/l	0.0005
	1,4-dichlorobenzene	<0.0005	mg/l	0.0005
	2,2-Dichloropropane	<0.0005	mg/l	0.0005
	2-Chlorotoluene	<0.0005	mg/l	0.0005
	3-chloropropene	<0.0020	mg/l	0.0005
	4-Chlorotoluene	<0.0005	mg/l	0.0005
	4-methyl-2-pentanone	<0.0005	mg/l	0.0005
	Benzene	<0.0005	mg/l	0.0005

		RESULTS	(UNCERTAINTY)	LOQ
NW229	**VOC (GC-MS)**			
	Bromobenzene	<0.0005	mg/l	0.0005
	Bromochloromethane	<0.0012	mg/l	0.0012
	Bromodichloromethane	<0.0005	mg/l	0.0005
	Bromoform	<0.0005	mg/l	0.0005
	Bromomethane (zone 2)	<0.001	mg/l	0.001
	Carbon tetrachloride	<0.0005	mg/l	0.0005
	Carbondisulphide (CS2)	<0.0005	mg/l	0.0005
	Chlorobenzene	<0.0005	mg/l	0.0005
	Chloroethane	<0.001	mg/l	0.001
	Chloroform	<0.0005	mg/l	0.0005
	Chloromethane	<0.006	mg/l	0.006
	cis-1,2-Dichloroethene	<0.0005	mg/l	0.0005
	cis-1,3-Dichloropropene	<0.0005	mg/l	0.0005
	Dibromochloromethane	<0.0005	mg/l	0.0005
	Dibromomethane	<0.0005	mg/l	0.0005
	Dichlorodifluoromethane	NotRecovered	mg/l	0.001
	Dichloromethane	<0.005	mg/l	0.005
	Hexachlorobutadiene	<0.0002	mg/l	0.0002
	Isopropylbenzene (Cumene)	<0.0005	mg/l	0.0005
	m,p-Xylene, Ethylbenzene	<0.0015	mg/l	0.0015
	Naphthalene	<0.0005	mg/l	0.0005
	n-Butylbenzene	<0.0005	mg/l	0.0005
	n-Propylbenzene	<0.0005	mg/l	0.0005
	p-Isopropyltoluene	<0.0005	mg/l	0.0005
	sec-Butylbenzene	<0.0005	mg/l	0.0005
	Styrene	<0.0005	mg/l	0.0005
	tert-Butylbenzene	<0.0005	mg/l	0.0005
	Tetrachloroethene	<0.0005	mg/l	0.0005
	Toluene	<0.0005	mg/l	0.0005
	trans-1,2-Dichloroethene	<0.0005	mg/l	0.0005
	trans-1,3-Dichloropropene	<0.0005	mg/l	0.0005
	Trichloroethene	<0.0005	mg/l	0.0005
	Trichlorofluoromethane	<0.0005	mg/l	0.0005
	Vinyl chloride	<0.0003	mg/l	0.0003
	Xylene (ortho-)	<0.0005	mg/l	0.0005
①**NWWG6**	**Volatile Fatty Acids (VFA)**			
	Acetic acid	<5	mg/l	5
	Butyric acid	<5	mg/l	5
	Heptanoic acid	<5	mg/l	5
	Hexanoic acid	<5	mg/l	5
	Isobutyric acid	<5	mg/l	5
	Isocaproic acid	<5	mg/l	5
	Isovaleric acid	<5	mg/l	5
	Propionic acid	<5	mg/l	5
	Valeric acid	<5	mg/l	5
	Volatile fatty acids as acetic acid	<5	mg/l	5

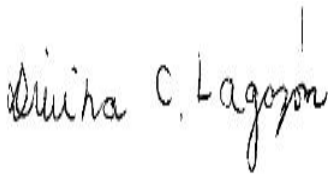
LIST OF METHODS

NW003	**Total Alkalinity:** APHA Online Edition 2320 B	NW007	**Chloride:** APHA Online Edition 4110 B
NW00U	**Chlorophenols:** Internal Method, LC-MS/MS	NW010	**Nitrate-N:** APHA Online Edition 4110 B
NW011	**Sulphate:** APHA Online Edition 4110 B	NW020	**Chemical Oxygen Demand:** APHA Online Edition 5220 D
NW023	**Conductivity:** APHA 24th Edition 2510 B	NW030	**Total Hardness:** APHA Online Edition 2340 B
NW098	**Dissolved Aluminium:** APHA Online Edition 3125 B mod.	NW103	**Dissolved Boron:** APHA Online Edition 3125 B mod.
NW104	**Dissolved Cadmium:** APHA Online Edition 3125 B mod.	NW105	**Dissolved Calcium:** APHA Online Edition 3125 B mod.
NW106	**Dissolved Chromium:** APHA Online Edition 3125 B mod.	NW108	**Dissolved Copper:** APHA Online Edition 3125 B mod.
NW109	**Dissolved Iron:** APHA Online Edition 3125 B mod.	NW110	**Dissolved Lead:** APHA Online Edition 3125 B mod.
NW112	**Dissolved Magnesium:** APHA Online Edition 3125 B mod.	NW113	**Dissolved Manganese:** APHA Online Edition 3125 B mod.
NW114	**Dissolved Mercury:** APHA Online Edition 3125 B mod.	NW116	**Dissolved Nickel:** APHA Online Edition 3125 B mod.
NW117	**Dissolved Potassium:** APHA Online Edition 3125 B mod.	NW120	**Dissolved Sodium:** APHA Online Edition 3125 B mod.
NW125	**Dissolved Zinc:** APHA Online Edition 3125 B mod.	NW179	**Ammonia Nitrogen:** APHA Online Edition 4500-NH3 H
NW193	**Dissolved Reactive Phosphorus:** APHA Online Edition 4500-P G	NW195	**pH (Tested beyond 15 minute APHA holding time):** APHA 24th Edition 4500-H B
NW206	**Suspended Solids:** APHA Online Edition 2540 D	NW210	**Total Non-Purgeable Organic Carbon:** APHA Online Edition 5310 B
NW228	**SVOC (GC-MSMS):** Internal Method, GC-MS/MS	NW229	**VOC (GC-MS):** Internal Method, HS-GC-MS
NW341	**BOD5 - Soluble Carbonaceous:** APHA Online Edition 5210 B	NWWG6	**Volatile Fatty Acids (VFA):** APHA 24th Edition 5560 D mod.
ZM2GA	**Escherichia coli E (Water) [NZ] <100 >6 000 000 /100 ml (0-3) m-FC Agar-F:** SMEWW 9222I; APHA 24th Edition		

Signature

Marylou Cabral Laboratory Manager
Eurofins ELS Limited

Jennifer Mont Supervisor Eurofins ELS Limited



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EXPLANATORY NOTE

① Test is not accredited
② Test is subcontracted within Eurofins group and is accredited
③ Test is subcontracted within Eurofins group and is not accredited
④ Test is subcontracted outside Eurofins group and is accredited
⑤ Test is subcontracted outside Eurofins group and is not accredited
⑥ Test result is provided by the customer and is not accredited
⑦ Tested at the sampling point by Eurofins and is not accredited
⑧ Tested at the sampling point by Eurofins and is accredited
⑨ Test is RLP accredited
⑩ Test is subcontracted within Eurofins group and is RLP accredited

N/A means Not Applicable
Not Detected means not detected at or above the Limit of Quantification (LOQ)
LOQ means Limit of Quantification and the unit of LOQ is the same as the result unit
✗ (Unsatisfactory) means does not meet the specification
✓ (Satisfactory) means meets the specification

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END OF REPORT

Food & Water Testing

ANALYTICAL REPORT

REPORT CODE	AR-24-NW-023550-01	REPORT DATE	19/04/2024

Attention Downer NZ Ltd (EDI Levin)
Horowhenua Admin
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NEW ZEALAND

Phone (06) 367 2705
Email horowhenuaadmin@downer.co.nz

Copy to: Water and Waste Team (waterandwasteteam@horowhenua.govt.nz), McMillan

Contact for your orders: Gabriela Carvalhaes
Contract: Landfill

Order code: EUNZWE-00177701
Purchase Order Number: Landfill

SAMPLE CODE	812-2024-00052407		
Sample Name	349868-0		
Product:	Ground water		
Sampling Point code:	WIL-D4	**Sampling Point name:**	Levin D4
Reception Date & Time:	10/04/2024 9:03		
Analysis Started on:	10/04/2024	**Analysis Ending Date:**	19/04/2024
Product Type	Ground water	**Sampled Date & Time**	09/04/2024 12:16
Sampler(s)	Client nominated external sampler	**Sampled by Eurofins**	No

		RESULTS	(UNCERTAINTY)	LOQ
NW179	**Ammonia Nitrogen**			
	Ammoniacal nitrogen (N)	0.24	(± 0.02) mg/l	0.01
NW341	**BOD5 - Soluble Carbonaceous**			
	BOD5	<1	mg/l	1
NW020	**Chemical Oxygen Demand**			
	Chemical oxygen demand (COD)	28	(± 7) mg/l	15
NW007	**Chloride**			
	Chloride (Cl)	29.8	(± 2.98) mg/l	0.02
NW00U	**Chlorophenols**			
	2,3,4,6-Tetrachlorophenol	<0.01	mg/l	0.01
	2,4-Dichlorophenol	<0.01	mg/l	0.01
	2,6-Dichlorophenol	<0.02	mg/l	0.2
	2-Chlorophenol (o-chlorophenol)	<0.01	mg/l	0.01
	3,4,5-Trichlorophenol	<0.01	mg/l	0.01
	4-Chloro-3-cresol	<0.01	mg/l	0.01
	Pentachlorophenol	<0.005	mg/l	0.005
	Phenol	<0.01	mg/l	0.01
	Total of 2,4,5 & 2,4,6 -Trichlorophenol	<0.02	mg/l	0.02
NW023	**Conductivity**			
	Conductivity	27.4	(± 0.5) mS/m	0.1
NW098	**Dissolved Aluminium**			
	Aluminium	0.003	mg/l	0.002
NW103	**Dissolved Boron**			
	Boron (B)	<0.03	mg/l	0.03
NW104	**Dissolved Cadmium**			
	Cadmium (Cd)	<0.0002	mg/l	0.0002

		RESULTS (UNCERTAINTY)		LOQ
NW105	**Dissolved Calcium**			
	Calcium (Ca)	9.2	mg/l	0.1
NW106	**Dissolved Chromium**			
	Chromium (Cr)	<0.001	mg/l	0.001
NW108	**Dissolved Copper**			
	Copper (Cu)	<0.0005	mg/l	0.0005
NW109	**Dissolved Iron**			
	Iron (Fe)	1.90	mg/l	0.01
NW110	**Dissolved Lead**			
	Lead (Pb)	<0.0005	mg/l	0.0005
NW112	**Dissolved Magnesium**			
	Magnesium (Mg)	6.34	mg/l	0.01
NW113	**Dissolved Manganese**			
	Manganese (Mn)	0.207	mg/l	0.0005
NW114	**Dissolved Mercury**			
	Mercury (Hg)	<0.0005	mg/l	0.0005
NW116	**Dissolved Nickel**			
	Nickel (Ni)	<0.0005	mg/l	0.0005
NW117	**Dissolved Potassium**			
	Potassium (K)	5.63	mg/l	0.01
NW193	**Dissolved Reactive Phosphorus**			
	Phosphorus (soluble reactive)	0.052	mg/l	0.005
NW120	**Dissolved Sodium**			
	Sodium (Na)	28.8	mg/l	0.01
NW125	**Dissolved Zinc**			
	Zinc (Zn)	<0.002	mg/l	0.002
ZM2GA	**Enumeration of Escherichia coli By Membrane Filtration**			
	Escherichia coli	<100	cfu/100 ml	100
NW010	**Nitrate-N**			
	Nitrate-N	<0.01	(± 0.00) mg/l	0.01
NW195	**pH (Tested beyond 15 minute APHA holding time)**			
	pH	7.0	(± 0.2)	0.1
NW011	**Sulphate**			
	Sulphate	5.61	(± 0.56) mg/l	0.02
NW206	**Suspended Solids**			
	Suspended Solids	<5	mg/l	3
NW228	**SVOC (GC-MSMS)**			
	Acenaphthene	<0.0001	mg/l	0.0001
	Acenaphthylene	<0.001	mg/l	0.001
	Adipatic acid, bis-2-ethylhexyl ester (DEHA)	<0.0001	mg/l	0.0001
	Alachlor	<0.0001	mg/l	0.0001
	Aldicarb	<0.1	mg/l	0.1
	Aldrin	<0.001	mg/l	0.001
	Anthracene	<0.001	mg/l	0.001
	Atrazine	<0.0001	mg/l	0.0001
	Benz(a)anthracene	<0.0001	mg/l	0.0001
	Benzo(a)pyrene	<0.0001	mg/l	0.0001

		RESULTS (UNCERTAINTY)		LOQ
NW228	**SVOC (GC-MSMS)**			
	Benzo(g,h,i)perylene	<0.001	mg/l	0.001
	Bromacil	<0.005	mg/l	0.005
	Carbofuran	<0.001	mg/l	0.001
	Chlordane	<0.0001	mg/l	0.0001
	Chlordane, gamma	<0.001	mg/l	0.001
	Chlorpyrifos (-ethyl)	<0.0001	mg/l	0.0001
	Chrysene	<0.0001	mg/l	0.0001
	Cyanazine	<0.005	mg/l	0.005
	d-BHC	<0.0001	mg/l	0.0001
	DDD, p,p'-	<0.0001	mg/l	0.0001
	DDE, p,p-	<0.0001	mg/l	0.0001
	DDT, p,p'-	<0.001	mg/l	0.001
	Diazinon	<0.0001	mg/l	0.0001
	Dibenz(a,h)anthracene	<0.0001	mg/l	0.0001
	Dieldrin	<0.0001	mg/l	0.0001
	Dimethoate	<0.001	mg/l	0.001
	Diuron	<0.001	mg/l	0.001
	Endosulfan, alpha-	<0.001	mg/l	0.001
	Endosulfan, beta-	<0.005	mg/l	0.005
	Endosulfan-sulfate	<0.0001	mg/l	0.0001
	Endrin	<0.0001	mg/l	0.0001
	Endrin ketone	<0.0001	mg/l	0.0001
	Endrin-aldehyde	<0.001	mg/l	0.01
	Fluoranthene	<0.0001	mg/l	0.0001
	Fluorene	<0.0001	mg/l	0.0001
	HCH, alpha-	<0.0001	mg/l	0.0001
	HCH, beta-	<0.0001	mg/l	0.0001
	Heptachlor	<0.0001	mg/l	0.0001
	Heptachlor epoxide, cis-	<0.0001	mg/l	0.0001
	Hexachlorobenzene (HCB)	<0.0001	mg/l	0.0001
	Hexazinone	<0.001	mg/l	0.001
	Indeno(1,2,3-cd)pyrene	<0.0001	mg/l	0.0001
	Lindane (gamma-HCH)	<0.0001	mg/l	0.0001
	Metalaxyl and metalaxyl-M (metalaxyl including other mixtures of constituent isomers including metalaxyl-M (sum of isomers))	<0.001	mg/l	0.001
	Methoxychlor	<0.0001	mg/l	0.0001
	Metolachlor	<0.0001	mg/l	0.0001
	Metribuzin	<0.0001	mg/l	0.0001
	Molinate	<0.0001	mg/l	0.0001
	Naphthalene	<0.0001	mg/l	0.0001
	Oxadiazon	<0.0001	mg/l	0.0001
	PCB 101	<0.0001	mg/l	0.0001
	PCB 138	<0.001	mg/l	0.001
	PCB 183	<0.0001	mg/l	0.0001
	PCB 28	<0.0001	mg/l	0.0001
	PCB 7	<0.0001	mg/l	0.0001

		RESULTS	(UNCERTAINTY)	LOQ
NW228	**SVOC (GC-MSMS)**			
	Pendimethalin	<0.002	mg/l	0.002
	Permethrin (sum of isomers)	<0.0001	mg/l	0.0001
	Phenanthrene	<0.0001	mg/l	0.0001
	Pirimiphos-methyl	<0.0001	mg/l	0.0001
	Procymidone	<0.0001	mg/l	0.0001
	Propanil	<0.001	mg/l	0.001
	Propazine	<0.0001	mg/l	0.0001
	Pyrene	<0.0001	mg/l	0.0001
	Pyriproxyfen	<0.0001	mg/l	0.0001
	Simazine	<0.0001	mg/l	0.0001
	Terbuthylazine	<0.0001	mg/l	0.0001
	Total Benzo(b) and Benzo(k) fluoranthene	<0.001	mg/l	0.001
	Trifluralin	<0.0001	mg/l	0.0001
NW003	**Total Alkalinity**			
	Alkalinity total	83	(± 8) mg CaCO3/l	1
NW030	**Total Hardness**			
	Hardness	49	mg CaCO3/l	1
NW210	**Total Non-Purgeable Organic Carbon**			
	Total Organic Carbon	4.0	(± 0.4) mg/l	0.1
NW229	**VOC (GC-MS)**			
	1,1,1,2-Tetrachloroethane	<0.0005	mg/l	0.0005
	1,1,1-Trichloroethane	<0.0005	mg/l	0.0005
	1,1,2,2-tetrachloroethane	<0.0005	mg/l	0.0005
	1,1,2-Trichloroethane	<0.0005	mg/l	0.0005
	1,1-Dichloroethane	<0.0005	mg/l	0.0005
	1,1-Dichloroethene	<0.0005	mg/l	0.0005
	1,1-Dichloropropene	<0.0005	mg/l	0.0005
	1,2,3-Trichlorobenzene	<0.0005	mg/l	0.0005
	1,2,3-Trichloropropane	<0.0005	mg/l	0.0005
	1,2,4 trimethylbenzen	<0.0005	mg/l	0.0005
	1,2,4-Trichlorobenzene	<0.0005	mg/l	0.0005
	1,2-Dibromo-3-chloropropane	<0.001	mg/l	0.002
	1,2-Dibromoethane	<0.0002	mg/l	0.0002
	1,2-Dichlorobenzene (2)	<0.0005	mg/l	0.0005
	1,2-Dichloroethane	<0.0005	mg/l	0.0005
	1,2-Dichloropropane	<0.0005	mg/l	0.0005
	1,3,5-Trichlorobenzene	<0.0005	mg/l	0.0005
	1,3,5-Trimethylbenzene	<0.0005	mg/l	0.0005
	1,3-Dichlorobenzene	<0.0005	mg/l	0.0005
	1,3-Dichloropropane	<0.0005	mg/l	0.0005
	1,4-dichlorobenzene	<0.0005	mg/l	0.0005
	2,2-Dichloropropane	<0.0005	mg/l	0.0005
	2-Chlorotoluene	<0.0005	mg/l	0.0005
	3-chloropropene	<0.0020	mg/l	0.0005
	4-Chlorotoluene	<0.0005	mg/l	0.0005
	4-methyl-2-pentanone	<0.0005	mg/l	0.0005
	Benzene	<0.0005	mg/l	0.0005

		RESULTS (UNCERTAINTY)		LOQ
NW229	**VOC (GC-MS)**			
	Bromobenzene	<0.0005	mg/l	0.0005
	Bromochloromethane	<0.0012	mg/l	0.0012
	Bromodichloromethane	<0.0005	mg/l	0.0005
	Bromoform	<0.0005	mg/l	0.0005
	Bromomethane (zone 2)	<0.001	mg/l	0.001
	Carbon tetrachloride	<0.0005	mg/l	0.0005
	Carbondisulphide (CS2)	<0.0005	mg/l	0.0005
	Chlorobenzene	<0.0005	mg/l	0.0005
	Chloroethane	<0.001	mg/l	0.001
	Chloroform	<0.0005	mg/l	0.0005
	Chloromethane	<0.006	mg/l	0.006
	cis-1,2-Dichloroethene	<0.0005	mg/l	0.0005
	cis-1,3-Dichloropropene	<0.0005	mg/l	0.0005
	Dibromochloromethane	<0.0005	mg/l	0.0005
	Dibromomethane	<0.0005	mg/l	0.0005
	Dichlorodifluoromethane	NotRecovered	mg/l	0.001
	Dichloromethane	<0.005	mg/l	0.005
	Hexachlorobutadiene	<0.0002	mg/l	0.0002
	Isopropylbenzene (Cumene)	<0.0005	mg/l	0.0005
	m,p-Xylene, Ethylbenzene	<0.0015	mg/l	0.0015
	Naphthalene	<0.0005	mg/l	0.0005
	n-Butylbenzene	<0.0005	mg/l	0.0005
	n-Propylbenzene	<0.0005	mg/l	0.0005
	p-Isopropyltoluene	<0.0005	mg/l	0.0005
	sec-Butylbenzene	<0.0005	mg/l	0.0005
	Styrene	<0.0005	mg/l	0.0005
	tert-Butylbenzene	<0.0005	mg/l	0.0005
	Tetrachloroethene	<0.0005	mg/l	0.0005
	Toluene	<0.0005	mg/l	0.0005
	trans-1,2-Dichloroethene	<0.0005	mg/l	0.0005
	trans-1,3-Dichloropropene	<0.0005	mg/l	0.0005
	Trichloroethene	<0.0005	mg/l	0.0005
	Trichlorofluoromethane	<0.0005	mg/l	0.0005
	Vinyl chloride	<0.0003	mg/l	0.0003
	Xylene (ortho-)	<0.0005	mg/l	0.0005
① **NWWG6**	**Volatile Fatty Acids (VFA)**			
	Acetic acid	<5	mg/l	5
	Butyric acid	<5	mg/l	5
	Heptanoic acid	<5	mg/l	5
	Hexanoic acid	<5	mg/l	5
	Isobutyric acid	<5	mg/l	5
	Isocaproic acid	<5	mg/l	5
	Isovaleric acid	<5	mg/l	5
	Propionic acid	<5	mg/l	5
	Valeric acid	<5	mg/l	5
	Volatile fatty acids as acetic acid	<5	mg/l	5

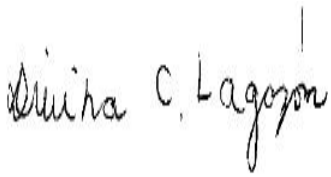
LIST OF METHODS

NW003	**Total Alkalinity:** APHA Online Edition 2320 B	NW007	**Chloride:** APHA Online Edition 4110 B
NW00U	**Chlorophenols:** Internal Method, LC-MS/MS	NW010	**Nitrate-N:** APHA Online Edition 4110 B
NW011	**Sulphate:** APHA Online Edition 4110 B	NW020	**Chemical Oxygen Demand:** APHA Online Edition 5220 D
NW023	**Conductivity:** APHA 24th Edition 2510 B	NW030	**Total Hardness:** APHA Online Edition 2340 B
NW098	**Dissolved Aluminium:** APHA Online Edition 3125 B mod.	NW103	**Dissolved Boron:** APHA Online Edition 3125 B mod.
NW104	**Dissolved Cadmium:** APHA Online Edition 3125 B mod.	NW105	**Dissolved Calcium:** APHA Online Edition 3125 B mod.
NW106	**Dissolved Chromium:** APHA Online Edition 3125 B mod.	NW108	**Dissolved Copper:** APHA Online Edition 3125 B mod.
NW109	**Dissolved Iron:** APHA Online Edition 3125 B mod.	NW110	**Dissolved Lead:** APHA Online Edition 3125 B mod.
NW112	**Dissolved Magnesium:** APHA Online Edition 3125 B mod.	NW113	**Dissolved Manganese:** APHA Online Edition 3125 B mod.
NW114	**Dissolved Mercury:** APHA Online Edition 3125 B mod.	NW116	**Dissolved Nickel:** APHA Online Edition 3125 B mod.
NW117	**Dissolved Potassium:** APHA Online Edition 3125 B mod.	NW120	**Dissolved Sodium:** APHA Online Edition 3125 B mod.
NW125	**Dissolved Zinc:** APHA Online Edition 3125 B mod.	NW179	**Ammonia Nitrogen:** APHA Online Edition 4500-NH3 H
NW193	**Dissolved Reactive Phosphorus:** APHA Online Edition 4500-P G	NW195	**pH (Tested beyond 15 minute APHA holding time):** APHA 24th Edition 4500-H B
NW206	**Suspended Solids:** APHA Online Edition 2540 D	NW210	**Total Non-Purgeable Organic Carbon:** APHA Online Edition 5310 B
NW228	**SVOC (GC-MSMS):** Internal Method, GC-MS/MS	NW229	**VOC (GC-MS):** Internal Method, HS-GC-MS
NW341	**BOD5 - Soluble Carbonaceous:** APHA Online Edition 5210 B	NWWG6	**Volatile Fatty Acids (VFA):** APHA 24th Edition 5560 D mod.
ZM2GA	**Escherichia coli E (Water) [NZ] <100 >6 000 000 /100 ml (0-3) m-FC Agar-F:** SMEWW 9222I; APHA 24th Edition		

Signature

Marylou Cabral Laboratory Manager
Eurofins ELS Limited

Jennifer Mont Supervisor Eurofins ELS Limited



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EXPLANATORY NOTE

①Test is not accredited
②Test is subcontracted within Eurofins group and is accredited
③Test is subcontracted within Eurofins group and is not accredited
④Test is subcontracted outside Eurofins group and is accredited
⑤Test is subcontracted outside Eurofins group and is not accredited
⑥Test result is provided by the customer and is not accredited
⑦Tested at the sampling point by Eurofins and is not accredited
⑧Tested at the sampling point by Eurofins and is accredited
⑨Test is RLP accredited
⑩Test is subcontracted within Eurofins group and is RLP accredited

N/A means Not Applicable
Not Detected means not detected at or above the Limit of Quantification (LOQ)
LOQ means Limit of Quantification and the unit of LOQ is the same as the result unit
✗ (Unsatisfactory) means does not meet the specification
✓ (Satisfactory) means meets the specification

END OF REPORT

Food & Water Testing

ANALYTICAL REPORT

REPORT CODE **AR-24-NW-023900-01** REPORT DATE **19/04/2024**

Attention Downer NZ Ltd (EDI Levin)
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Copy to: Water and Waste Team (waterandwasteteam@horowhenua.govt.nz), McMillan

Contact for your orders: Gabriela Carvalhaes
Contract: Landfill

Order code: EUNZWE-00177376
Purchase Order Number: Landfill

SAMPLE CODE **812-2024-00051378**

Sample Name	349869-0		
Product:	Ground water		
Sampling Point code:	WIL-D5	**Sampling Point name:**	Levin D5
Reception Date & Time:	08/04/2024 16:45		
Analysis Started on:	08/04/2024	**Analysis Ending Date:**	19/04/2024
Product Type	Ground water	**Sampled Date & Time**	08/04/2024 08:45
Sampler(s)	Client nominated external sampler	**Sampled by Eurofins**	No

		RESULTS	(UNCERTAINTY)	LOQ
NW179	**Ammonia Nitrogen**			
	Ammoniacal nitrogen (N)	<0.01	(± 0.00) mg/l	0.01
NW341	**BOD5 - Soluble Carbonaceous**			
	BOD5	<1	mg/l	1
NW020	**Chemical Oxygen Demand**			
	Chemical oxygen demand (COD)	<15	(± 5) mg/l	15
NW007	**Chloride**			
	Chloride (Cl)	27.3	(± 2.73) mg/l	0.02
NW00U	**Chlorophenols**			
	2,3,4,6-Tetrachlorophenol	<0.01	mg/l	0.01
	2,4-Dichlorophenol	<0.01	mg/l	0.01
	2,6-Dichlorophenol	<0.2	mg/l	0.2
	2-Chlorophenol (o-chlorophenol)	<0.01	mg/l	0.01
	3,4,5-Trichlorophenol	<0.01	mg/l	0.01
	4-Chloro-3-cresol	<0.01	mg/l	0.01
	Pentachlorophenol	<0.005	mg/l	0.005
	Phenol	<0.01	mg/l	0.01
	Total of 2,4,5 & 2,4,6 -Trichlorophenol	<0.02	mg/l	0.02
NW023	**Conductivity**			
	Conductivity	28.8	(± 0.6) mS/m	0.1
NW098	**Dissolved Aluminium**			
	Aluminium	0.002	mg/l	0.002
NW583	**Dissolved Arsenic**			
	Arsenic (As)	<0.001	mg/l	0.001
NW103	**Dissolved Boron**			
	Boron (B)	0.05	mg/l	0.03

		RESULTS (UNCERTAINTY)		LOQ
NW104	**Dissolved Cadmium**			
	Cadmium (Cd)	<0.0002	mg/l	0.0002
NW105	**Dissolved Calcium**			
	Calcium (Ca)	12.3	mg/l	0.1
NW106	**Dissolved Chromium**			
	Chromium (Cr)	<0.001	mg/l	0.001
NW108	**Dissolved Copper**			
	Copper (Cu)	0.0007	mg/l	0.0005
NW109	**Dissolved Iron**			
	Iron (Fe)	0.01	mg/l	0.01
NW110	**Dissolved Lead**			
	Lead (Pb)	<0.0005	mg/l	0.0005
NW112	**Dissolved Magnesium**			
	Magnesium (Mg)	10.3	mg/l	0.01
NW113	**Dissolved Manganese**			
	Manganese (Mn)	0.0051	mg/l	0.0005
NW114	**Dissolved Mercury**			
	Mercury (Hg)	<0.0005	mg/l	0.0005
NW116	**Dissolved Nickel**			
	Nickel (Ni)	<0.0005	mg/l	0.0005
NW117	**Dissolved Potassium**			
	Potassium (K)	6.85	mg/l	0.01
NW193	**Dissolved Reactive Phosphorus**			
	Phosphorus (soluble reactive)	0.107	mg/l	0.005
NW120	**Dissolved Sodium**			
	Sodium (Na)	23.5	mg/l	0.01
NW125	**Dissolved Zinc**			
	Zinc (Zn)	<0.002	mg/l	0.002
ZM2GA	**Enumeration of Escherichia coli By Membrane Filtration**			
	Escherichia coli	<100	cfu/100 ml	100
NW010	**Nitrate-N**			
	Nitrate-N	1.18	(± 0.12) mg/l	0.01
NW195	**pH (Tested beyond 15 minute APHA holding time)**			
	pH	6.9	(± 0.2)	0.1
NW011	**Sulphate**			
	Sulphate	18.0	(± 1.80) mg/l	0.02
NW206	**Suspended Solids**			
	Suspended Solids	<5	mg/l	3
NW228	**SVOC (GC-MSMS)**			
	Acenaphthene	<0.0001	mg/l	0.0001
	Acenaphthylene	<0.001	mg/l	0.001
	Adipatic acid, bis-2-ethylhexyl ester (DEHA)	<0.0001	mg/l	0.0001
	Alachlor	<0.0001	mg/l	0.0001
	Aldicarb	<0.1	mg/l	0.1
	Aldrin	<0.001	mg/l	0.001
	Anthracene	<0.001	mg/l	0.001
	Atrazine	<0.0001	mg/l	0.0001

		RESULTS (UNCERTAINTY)		LOQ
NW228	**SVOC (GC-MSMS)**			
	Benz(a)anthracene	<0.0001	mg/l	0.0001
	Benzo(a)pyrene	<0.0001	mg/l	0.0001
	Benzo(g,h,i)perylene	<0.001	mg/l	0.001
	Bromacil	<0.005	mg/l	0.005
	Carbofuran	<0.001	mg/l	0.001
	Chlordane	<0.0001	mg/l	0.0001
	Chlordane, gamma	<0.001	mg/l	0.001
	Chlorpyrifos (-ethyl)	<0.0001	mg/l	0.0001
	Chrysene	<0.0001	mg/l	0.0001
	Cyanazine	<0.005	mg/l	0.005
	d-BHC	<0.0001	mg/l	0.0001
	DDD, p,p'-	<0.0001	mg/l	0.0001
	DDE, p,p-	<0.0001	mg/l	0.0001
	DDT, p,p'-	<0.001	mg/l	0.001
	Diazinon	<0.0001	mg/l	0.0001
	Dibenz(a,h)anthracene	<0.0001	mg/l	0.0001
	Dieldrin	<0.0001	mg/l	0.0001
	Dimethoate	<0.001	mg/l	0.001
	Diuron	<0.001	mg/l	0.001
	Endosulfan, alpha-	<0.001	mg/l	0.001
	Endosulfan, beta-	<0.005	mg/l	0.005
	Endosulfan-sulfate	<0.0001	mg/l	0.0001
	Endrin	<0.0001	mg/l	0.0001
	Endrin ketone	<0.0001	mg/l	0.0001
	Endrin-aldehyde	<0.001	mg/l	0.01
	Fluoranthene	<0.0001	mg/l	0.0001
	Fluorene	<0.0001	mg/l	0.0001
	HCH, alpha-	<0.0001	mg/l	0.0001
	HCH, beta-	<0.0001	mg/l	0.0001
	Heptachlor	<0.0001	mg/l	0.0001
	Heptachlor epoxide, cis-	<0.0001	mg/l	0.0001
	Hexachlorobenzene (HCB)	<0.0001	mg/l	0.0001
	Hexazinone	<0.001	mg/l	0.001
	Indeno(1,2,3-cd)pyrene	<0.0001	mg/l	0.0001
	Lindane (gamma-HCH)	<0.0001	mg/l	0.0001
	Metalaxyl and metalaxyl-M (metalaxyl including other mixtures of constituent isomers including metalaxyl-M (sum of isomers))	<0.001	mg/l	0.001
	Methoxychlor	<0.0001	mg/l	0.0001
	Metolachlor	<0.0001	mg/l	0.0001
	Metribuzin	<0.0001	mg/l	0.0001
	Molinate	<0.0001	mg/l	0.0001
	Naphthalene	<0.0001	mg/l	0.0001
	Oxadiazon	<0.0001	mg/l	0.0001
	PCB 101	<0.0001	mg/l	0.0001
	PCB 138	<0.001	mg/l	0.001
	PCB 183	<0.0001	mg/l	0.0001

		RESULTS	(UNCERTAINTY)	LOQ
NW228	**SVOC (GC-MSMS)**			
	PCB 28	<0.0001	mg/l	0.0001
	PCB 7	<0.0001	mg/l	0.0001
	Pendimethalin	<0.002	mg/l	0.002
	Permethrin (sum of isomers)	<0.0001	mg/l	0.0001
	Phenanthrene	<0.0001	mg/l	0.0001
	Pirimiphos-methyl	<0.0001	mg/l	0.0001
	Procymidone	<0.0001	mg/l	0.0001
	Propanil	<0.001	mg/l	0.001
	Propazine	<0.0001	mg/l	0.0001
	Pyrene	<0.0001	mg/l	0.0001
	Pyriproxyfen	<0.0001	mg/l	0.0001
	Simazine	<0.0001	mg/l	0.0001
	Terbuthylazine	<0.0001	mg/l	0.0001
	Total Benzo(b) and Benzo(k) fluoranthene	<0.001	mg/l	0.001
	Trifluralin	<0.0001	mg/l	0.0001
NW003	**Total Alkalinity**			
	Alkalinity total	73	(± 7) mg CaCO3/l	1
NW030	**Total Hardness**			
	Hardness	73	mg CaCO3/l	1
NW210	**Total Non-Purgeable Organic Carbon**			
	Total Organic Carbon	1.9	(± 0.2) mg/l	0.1
NW229	**VOC (GC-MS)**			
	1,1,1,2-Tetrachloroethane	<0.0005	mg/l	0.0005
	1,1,1-Trichloroethane	<0.0005	mg/l	0.0005
	1,1,2,2-tetrachloroethane	<0.0005	mg/l	0.0005
	1,1,2-Trichloroethane	<0.0005	mg/l	0.0005
	1,1-Dichloroethane	<0.0005	mg/l	0.0005
	1,1-Dichloroethene	<0.0005	mg/l	0.0005
	1,1-Dichloropropene	<0.0005	mg/l	0.0005
	1,2,3-Trichlorobenzene	<0.0005	mg/l	0.0005
	1,2,3-Trichloropropane	<0.0005	mg/l	0.0005
	1,2,4 trimethylbenzen	<0.0005	mg/l	0.0005
	1,2,4-Trichlorobenzene	<0.0005	mg/l	0.0005
	1,2-Dibromo-3-chloropropane	<0.001	mg/l	0.002
	1,2-Dibromoethane	<0.0002	mg/l	0.0002
	1,2-Dichlorobenzene (2)	<0.0005	mg/l	0.0005
	1,2-Dichloroethane	<0.0005	mg/l	0.0005
	1,2-Dichloropropane	<0.0005	mg/l	0.0005
	1,3,5-Trichlorobenzene	<0.0005	mg/l	0.0005
	1,3,5-Trimethylbenzene	<0.0005	mg/l	0.0005
	1,3-Dichlorobenzene	<0.0005	mg/l	0.0005
	1,3-Dichloropropane	<0.0005	mg/l	0.0005
	1,4-dichlorobenzene	<0.0005	mg/l	0.0005
	2,2-Dichloropropane	<0.0005	mg/l	0.0005
	2-Chlorotoluene	<0.0005	mg/l	0.0005
	3-chloropropene	<0.0005	mg/l	0.0005
	4-Chlorotoluene	<0.0005	mg/l	0.0005

		RESULTS (UNCERTAINTY)		LOQ
NW229	**VOC (GC-MS)**			
	4-methyl-2-pentanone	<0.0005	mg/l	0.0005
	Benzene	<0.0005	mg/l	0.0005
	Bromobenzene	<0.0005	mg/l	0.0005
	Bromochloromethane	<0.0012	mg/l	0.0012
	Bromodichloromethane	<0.0005	mg/l	0.0005
	Bromoform	<0.0005	mg/l	0.0005
	Bromomethane (zone 2)	<0.001	mg/l	0.001
	Carbon tetrachloride	<0.0005	mg/l	0.0005
	Carbondisulphide (CS2)	<0.0005	mg/l	0.0005
	Chlorobenzene	<0.0005	mg/l	0.0005
	Chloroethane	<0.001	mg/l	0.001
	Chloroform	<0.0005	mg/l	0.0005
	Chloromethane	<0.006	mg/l	0.006
	cis-1,2-Dichloroethene	<0.0005	mg/l	0.0005
	cis-1,3-Dichloropropene	<0.0005	mg/l	0.0005
	Dibromochloromethane	<0.0005	mg/l	0.0005
	Dibromomethane	<0.0005	mg/l	0.0005
	Dichlorodifluoromethane	NotRecovered	mg/l	0.001
	Dichloromethane	<0.005	mg/l	0.005
	Hexachlorobutadiene	<0.0002	mg/l	0.0002
	Isopropylbenzene (Cumene)	<0.0005	mg/l	0.0005
	m,p-Xylene, Ethylbenzene	<0.0015	mg/l	0.0015
	Naphthalene	<0.0005	mg/l	0.0005
	n-Butylbenzene	<0.0005	mg/l	0.0005
	n-Propylbenzene	<0.0005	mg/l	0.0005
	p-Isopropyltoluene	<0.0005	mg/l	0.0005
	sec-Butylbenzene	<0.0005	mg/l	0.0005
	Styrene	<0.0005	mg/l	0.0005
	tert-Butylbenzene	<0.0005	mg/l	0.0005
	Tetrachloroethene	<0.0005	mg/l	0.0005
	Toluene	<0.0005	mg/l	0.0005
	trans-1,2-Dichloroethene	<0.0005	mg/l	0.0005
	trans-1,3-Dichloropropene	<0.0005	mg/l	0.0005
	Trichloroethene	<0.0005	mg/l	0.0005
	Trichlorofluoromethane	<0.0005	mg/l	0.0005
	Vinyl chloride	<0.0003	mg/l	0.0003
	Xylene (ortho-)	<0.0005	mg/l	0.0005
①**NWWG6**	**Volatile Fatty Acids (VFA)**			
	Acetic acid	<5	mg/l	5
	Butyric acid	<5	mg/l	5
	Heptanoic acid	<5	mg/l	5
	Hexanoic acid	<5	mg/l	5
	Isobutyric acid	<5	mg/l	5
	Isocaproic acid	<5	mg/l	5
	Isovaleric acid	<5	mg/l	5
	Propionic acid	<5	mg/l	5
	Valeric acid	<5	mg/l	5
	Volatile fatty acids as acetic acid	<5	mg/l	5

RESULTS (UNCERTAINTY)	LOQ

LIST OF METHODS

NW003	**Total Alkalinity:** APHA Online Edition 2320 B
NW00U	**Chlorophenols:** Internal Method, LC-MS/MS
NW011	**Sulphate:** APHA Online Edition 4110 B
NW023	**Conductivity:** APHA 24th Edition 2510 B
NW098	**Dissolved Aluminium:** APHA Online Edition 3125 B mod.
NW104	**Dissolved Cadmium:** APHA Online Edition 3125 B mod.
NW106	**Dissolved Chromium:** APHA Online Edition 3125 B mod.
NW109	**Dissolved Iron:** APHA Online Edition 3125 B mod.
NW112	**Dissolved Magnesium:** APHA Online Edition 3125 B mod.
NW114	**Dissolved Mercury:** APHA Online Edition 3125 B mod.
NW117	**Dissolved Potassium:** APHA Online Edition 3125 B mod.
NW125	**Dissolved Zinc:** APHA Online Edition 3125 B mod.
NW193	**Dissolved Reactive Phosphorus:** APHA Online Edition 4500-P G
NW206	**Suspended Solids:** APHA Online Edition 2540 D
NW228	**SVOC (GC-MSMS):** Internal Method, GC-MS/MS
NW341	**BOD5 - Soluble Carbonaceous:** APHA Online Edition 5210 B
NWWG6	**Volatile Fatty Acids (VFA):** APHA 24th Edition 5560 D mod.
NW007	**Chloride:** APHA Online Edition 4110 B
NW010	**Nitrate-N:** APHA Online Edition 4110 B
NW020	**Chemical Oxygen Demand:** APHA Online Edition 5220 D
NW030	**Total Hardness:** APHA Online Edition 2340 B
NW103	**Dissolved Boron:** APHA Online Edition 3125 B mod.
NW105	**Dissolved Calcium:** APHA Online Edition 3125 B mod.
NW108	**Dissolved Copper:** APHA Online Edition 3125 B mod.
NW110	**Dissolved Lead:** APHA Online Edition 3125 B mod.
NW113	**Dissolved Manganese:** APHA Online Edition 3125 B mod.
NW116	**Dissolved Nickel:** APHA Online Edition 3125 B mod.
NW120	**Dissolved Sodium:** APHA Online Edition 3125 B mod.
NW179	**Ammonia Nitrogen:** APHA Online Edition 4500-NH3 H
NW195	**pH (Tested beyond 15 minute APHA holding time):** APHA 24th Edition 4500-H B
NW210	**Total Non-Purgeable Organic Carbon:** APHA Online Edition 5310 B
NW229	**VOC (GC-MS):** Internal Method, HS-GC-MS
NW583	**Dissolved Arsenic:** APHA Online Edition 3125 B mod.
ZM2GA	**Escherichia coli E (Water) [NZ] <100 >6 000 000 /100 ml (0-3) m-FC Agar-F:** SMEWW 9222I; APHA 24th Edition

Signature

Marylou Cabral Laboratory Manager Eurofins ELS Limited

Jennifer Mont Supervisor Eurofins ELS Limited

Divina Cunanan Lagazon Supervisor Eurofins ELS Limited

Ganesh Ilancko Supervisor Eurofins ELS Limited

Arvinder Singh Laboratory Supervisor Microbiology

Gabriela Carvalhaes Manager Food and Water Testing Chemistry

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EXPLANATORY NOTE

① Test is not accredited
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⑥ Test result is provided by the customer and is not accredited
⑦ Tested at the sampling point by Eurofins and is not accredited
⑧ Tested at the sampling point by Eurofins and is accredited
⑨ Test is RLP accredited
⑩ Test is subcontracted within Eurofins group and is RLP accredited

N/A means Not Applicable
Not Detected means not detected at or above the Limit of Quantification (LOQ)
LOQ means Limit of Quantification and the unit of LOQ is the same as the result unit
✗ (Unsatisfactory) means does not meet the specification
✓ (Satisfactory) means meets the specification

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END OF REPORT

Food & Water Testing

ANALYTICAL REPORT

REPORT CODE **AR-24-NW-023551-01** REPORT DATE **19/04/2024**

Attention Downer NZ Ltd (EDI Levin)
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Contact for your orders: Gabriela Carvalhaes
Contract: Landfill

Order code: EUNZWE-00177701
Purchase Order Number: Landfill

SAMPLE CODE **812-2024-00052408**

Sample Name	349870-0		
Product:	Ground water		
Sampling Point code:	WIL-D6	**Sampling Point name:**	Levin D6
Reception Date & Time:	10/04/2024 9:03		
Analysis Started on:	10/04/2024	**Analysis Ending Date:**	19/04/2024
Product Type	Ground water	**Sampled Date & Time**	09/04/2024 09:56
Sampler(s)	Client nominated external sampler	**Sampled by Eurofins**	No

		RESULTS	(UNCERTAINTY)	LOQ
NW179	**Ammonia Nitrogen**			
	Ammoniacal nitrogen (N)	<0.01	(± 0.00) mg/l	0.01
NW341	**BOD5 - Soluble Carbonaceous**			
	BOD5	<1	mg/l	1
NW020	**Chemical Oxygen Demand**			
	Chemical oxygen demand (COD)	<15	(± 5) mg/l	15
NW007	**Chloride**			
	Chloride (Cl)	56.6	(± 5.66) mg/l	0.02
NW00U	**Chlorophenols**			
	2,3,4,6-Tetrachlorophenol	<0.01	mg/l	0.01
	2,4-Dichlorophenol	<0.01	mg/l	0.01
	2,6-Dichlorophenol	<0.02	mg/l	0.2
	2-Chlorophenol (o-chlorophenol)	<0.01	mg/l	0.01
	3,4,5-Trichlorophenol	<0.01	mg/l	0.01
	4-Chloro-3-cresol	<0.01	mg/l	0.01
	Pentachlorophenol	<0.005	mg/l	0.005
	Phenol	<0.01	mg/l	0.01
	Total of 2,4,5 & 2,4,6 -Trichlorophenol	<0.02	mg/l	0.02
NW023	**Conductivity**			
	Conductivity	73.8	(± 1.5) mS/m	0.1
NW098	**Dissolved Aluminium**			
	Aluminium	<0.002	mg/l	0.002
NW103	**Dissolved Boron**			
	Boron (B)	0.06	mg/l	0.03
NW104	**Dissolved Cadmium**			
	Cadmium (Cd)	<0.0002	mg/l	0.0002

		RESULTS (UNCERTAINTY)		LOQ
NW105	**Dissolved Calcium**			
	Calcium (Ca)	32.2	mg/l	0.1
NW106	**Dissolved Chromium**			
	Chromium (Cr)	<0.001	mg/l	0.001
NW108	**Dissolved Copper**			
	Copper (Cu)	<0.0005	mg/l	0.0005
NW109	**Dissolved Iron**			
	Iron (Fe)	<0.01	mg/l	0.01
NW110	**Dissolved Lead**			
	Lead (Pb)	<0.0005	mg/l	0.0005
NW112	**Dissolved Magnesium**			
	Magnesium (Mg)	25.7	mg/l	0.01
NW113	**Dissolved Manganese**			
	Manganese (Mn)	0.0015	mg/l	0.0005
NW114	**Dissolved Mercury**			
	Mercury (Hg)	<0.0005	mg/l	0.0005
NW116	**Dissolved Nickel**			
	Nickel (Ni)	<0.0005	mg/l	0.0005
NW117	**Dissolved Potassium**			
	Potassium (K)	10.6	mg/l	0.01
NW193	**Dissolved Reactive Phosphorus**			
	Phosphorus (soluble reactive)	0.078	mg/l	0.005
NW120	**Dissolved Sodium**			
	Sodium (Na)	39.2	mg/l	0.01
NW125	**Dissolved Zinc**			
	Zinc (Zn)	0.004	mg/l	0.002
ZM2GA	**Enumeration of Escherichia coli By Membrane Filtration**			
	Escherichia coli	<100	cfu/100 ml	100
NW010	**Nitrate-N**			
	Nitrate-N	50.3	(± 5.03) mg/l	0.01
NW195	**pH (Tested beyond 15 minute APHA holding time)**			
	pH	6.6	(± 0.2)	0.1
NW011	**Sulphate**			
	Sulphate	7.85	(± 0.79) mg/l	0.02
NW206	**Suspended Solids**			
	Suspended Solids	<5	mg/l	3
NW228	**SVOC (GC-MSMS)**			
	Acenaphthene	<0.0001	mg/l	0.0001
	Acenaphthylene	<0.001	mg/l	0.001
	Adipatic acid, bis-2-ethylhexyl ester (DEHA)	<0.0001	mg/l	0.0001
	Alachlor	<0.0001	mg/l	0.0001
	Aldicarb	<0.1	mg/l	0.1
	Aldrin	<0.001	mg/l	0.001
	Anthracene	<0.001	mg/l	0.001
	Atrazine	<0.0001	mg/l	0.0001
	Benz(a)anthracene	<0.0001	mg/l	0.0001
	Benzo(a)pyrene	<0.0001	mg/l	0.0001

		RESULTS (UNCERTAINTY)		LOQ
NW228	**SVOC (GC-MSMS)**			
	Benzo(g,h,i)perylene	<0.001	mg/l	0.001
	Bromacil	<0.005	mg/l	0.005
	Carbofuran	<0.001	mg/l	0.001
	Chlordane	<0.0001	mg/l	0.0001
	Chlordane, gamma	<0.001	mg/l	0.001
	Chlorpyrifos (-ethyl)	<0.0001	mg/l	0.0001
	Chrysene	<0.0001	mg/l	0.0001
	Cyanazine	<0.005	mg/l	0.005
	d-BHC	<0.0001	mg/l	0.0001
	DDD, p,p'-	<0.0001	mg/l	0.0001
	DDE, p,p-	<0.0001	mg/l	0.0001
	DDT, p,p'-	<0.001	mg/l	0.001
	Diazinon	<0.0001	mg/l	0.0001
	Dibenz(a,h)anthracene	<0.0001	mg/l	0.0001
	Dieldrin	<0.0001	mg/l	0.0001
	Dimethoate	<0.001	mg/l	0.001
	Diuron	<0.001	mg/l	0.001
	Endosulfan, alpha-	<0.001	mg/l	0.001
	Endosulfan, beta-	<0.005	mg/l	0.005
	Endosulfan-sulfate	<0.0001	mg/l	0.0001
	Endrin	<0.0001	mg/l	0.0001
	Endrin ketone	<0.0001	mg/l	0.0001
	Endrin-aldehyde	<0.001	mg/l	0.01
	Fluoranthene	<0.0001	mg/l	0.0001
	Fluorene	<0.0001	mg/l	0.0001
	HCH, alpha-	<0.0001	mg/l	0.0001
	HCH, beta-	<0.0001	mg/l	0.0001
	Heptachlor	<0.0001	mg/l	0.0001
	Heptachlor epoxide, cis-	<0.0001	mg/l	0.0001
	Hexachlorobenzene (HCB)	<0.0001	mg/l	0.0001
	Hexazinone	<0.001	mg/l	0.001
	Indeno(1,2,3-cd)pyrene	<0.0001	mg/l	0.0001
	Lindane (gamma-HCH)	<0.0001	mg/l	0.0001
	Metalaxyl and metalaxyl-M (metalaxyl including other mixtures of constituent isomers including metalaxyl-M (sum of isomers))	<0.001	mg/l	0.001
	Methoxychlor	<0.0001	mg/l	0.0001
	Metolachlor	<0.0001	mg/l	0.0001
	Metribuzin	<0.0001	mg/l	0.0001
	Molinate	<0.0001	mg/l	0.0001
	Naphthalene	<0.0001	mg/l	0.0001
	Oxadiazon	<0.0001	mg/l	0.0001
	PCB 101	<0.0001	mg/l	0.0001
	PCB 138	<0.001	mg/l	0.001
	PCB 183	<0.0001	mg/l	0.0001
	PCB 28	<0.0001	mg/l	0.0001
	PCB 7	<0.0001	mg/l	0.0001

		RESULTS (UNCERTAINTY)		LOQ
NW228	**SVOC (GC-MSMS)**			
	Pendimethalin	<0.002	mg/l	0.002
	Permethrin (sum of isomers)	<0.0001	mg/l	0.0001
	Phenanthrene	<0.0001	mg/l	0.0001
	Pirimiphos-methyl	<0.0001	mg/l	0.0001
	Procymidone	<0.0001	mg/l	0.0001
	Propanil	<0.001	mg/l	0.001
	Propazine	<0.0001	mg/l	0.0001
	Pyrene	<0.0001	mg/l	0.0001
	Pyriproxyfen	<0.0001	mg/l	0.0001
	Simazine	<0.0001	mg/l	0.0001
	Terbuthylazine	<0.0001	mg/l	0.0001
	Total Benzo(b) and Benzo(k) fluoranthene	<0.001	mg/l	0.001
	Trifluralin	<0.0001	mg/l	0.0001
NW003	**Total Alkalinity**			
	Alkalinity total	68	(± 7) mg CaCO3/l	1
NW030	**Total Hardness**			
	Hardness	186	mg CaCO3/l	1
NW210	**Total Non-Purgeable Organic Carbon**			
	Total Organic Carbon	1.1	(± 0.1) mg/l	0.1
NW229	**VOC (GC-MS)**			
	1,1,1,2-Tetrachloroethane	<0.0005	mg/l	0.0005
	1,1,1-Trichloroethane	<0.0005	mg/l	0.0005
	1,1,2,2-tetrachloroethane	<0.0005	mg/l	0.0005
	1,1,2-Trichloroethane	<0.0005	mg/l	0.0005
	1,1-Dichloroethane	<0.0005	mg/l	0.0005
	1,1-Dichloroethene	<0.0005	mg/l	0.0005
	1,1-Dichloropropene	<0.0005	mg/l	0.0005
	1,2,3-Trichlorobenzene	<0.0005	mg/l	0.0005
	1,2,3-Trichloropropane	<0.0005	mg/l	0.0005
	1,2,4 trimethylbenzen	<0.0005	mg/l	0.0005
	1,2,4-Trichlorobenzene	<0.0005	mg/l	0.0005
	1,2-Dibromo-3-chloropropane	<0.001	mg/l	0.002
	1,2-Dibromoethane	<0.0002	mg/l	0.0002
	1,2-Dichlorobenzene (2)	<0.0005	mg/l	0.0005
	1,2-Dichloroethane	<0.0005	mg/l	0.0005
	1,2-Dichloropropane	<0.0005	mg/l	0.0005
	1,3,5-Trichlorobenzene	<0.0005	mg/l	0.0005
	1,3,5-Trimethylbenzene	<0.0005	mg/l	0.0005
	1,3-Dichlorobenzene	<0.0005	mg/l	0.0005
	1,3-Dichloropropane	<0.0005	mg/l	0.0005
	1,4-dichlorobenzene	<0.0005	mg/l	0.0005
	2,2-Dichloropropane	<0.0005	mg/l	0.0005
	2-Chlorotoluene	<0.0005	mg/l	0.0005
	3-chloropropene	<0.0020	mg/l	0.0005
	4-Chlorotoluene	<0.0005	mg/l	0.0005
	4-methyl-2-pentanone	<0.0005	mg/l	0.0005
	Benzene	<0.0005	mg/l	0.0005

		RESULTS (UNCERTAINTY)		LOQ
NW229	**VOC (GC-MS)**			
	Bromobenzene	<0.0005	mg/l	0.0005
	Bromochloromethane	<0.0012	mg/l	0.0012
	Bromodichloromethane	<0.0005	mg/l	0.0005
	Bromoform	<0.0005	mg/l	0.0005
	Bromomethane (zone 2)	<0.001	mg/l	0.001
	Carbon tetrachloride	<0.0005	mg/l	0.0005
	Carbondisulphide (CS2)	<0.0005	mg/l	0.0005
	Chlorobenzene	<0.0005	mg/l	0.0005
	Chloroethane	<0.001	mg/l	0.001
	Chloroform	<0.0005	mg/l	0.0005
	Chloromethane	<0.006	mg/l	0.006
	cis-1,2-Dichloroethene	<0.0005	mg/l	0.0005
	cis-1,3-Dichloropropene	<0.0005	mg/l	0.0005
	Dibromochloromethane	<0.0005	mg/l	0.0005
	Dibromomethane	<0.0005	mg/l	0.0005
	Dichlorodifluoromethane	NotRecovered	mg/l	0.001
	Dichloromethane	<0.005	mg/l	0.005
	Hexachlorobutadiene	<0.0002	mg/l	0.0002
	Isopropylbenzene (Cumene)	<0.0005	mg/l	0.0005
	m,p-Xylene, Ethylbenzene	<0.0015	mg/l	0.0015
	Naphthalene	<0.0005	mg/l	0.0005
	n-Butylbenzene	<0.0005	mg/l	0.0005
	n-Propylbenzene	<0.0005	mg/l	0.0005
	p-Isopropyltoluene	<0.0005	mg/l	0.0005
	sec-Butylbenzene	<0.0005	mg/l	0.0005
	Styrene	<0.0005	mg/l	0.0005
	tert-Butylbenzene	<0.0005	mg/l	0.0005
	Tetrachloroethene	<0.0005	mg/l	0.0005
	Toluene	<0.0005	mg/l	0.0005
	trans-1,2-Dichloroethene	<0.0005	mg/l	0.0005
	trans-1,3-Dichloropropene	<0.0005	mg/l	0.0005
	Trichloroethene	<0.0005	mg/l	0.0005
	Trichlorofluoromethane	<0.0005	mg/l	0.0005
	Vinyl chloride	<0.0003	mg/l	0.0003
	Xylene (ortho-)	<0.0005	mg/l	0.0005
① **NWWG6**	**Volatile Fatty Acids (VFA)**			
	Acetic acid	<5	mg/l	5
	Butyric acid	<5	mg/l	5
	Heptanoic acid	<5	mg/l	5
	Hexanoic acid	<5	mg/l	5
	Isobutyric acid	<5	mg/l	5
	Isocaproic acid	<5	mg/l	5
	Isovaleric acid	<5	mg/l	5
	Propionic acid	<5	mg/l	5
	Valeric acid	<5	mg/l	5
	Volatile fatty acids as acetic acid	<5	mg/l	5

LIST OF METHODS

NW003	**Total Alkalinity:** APHA Online Edition 2320 B	NW007	**Chloride:** APHA Online Edition 4110 B
NW00U	**Chlorophenols:** Internal Method, LC-MS/MS	NW010	**Nitrate-N:** APHA Online Edition 4110 B
NW011	**Sulphate:** APHA Online Edition 4110 B	NW020	**Chemical Oxygen Demand:** APHA Online Edition 5220 D
NW023	**Conductivity:** APHA 24th Edition 2510 B	NW030	**Total Hardness:** APHA Online Edition 2340 B
NW098	**Dissolved Aluminium:** APHA Online Edition 3125 B mod.	NW103	**Dissolved Boron:** APHA Online Edition 3125 B mod.
NW104	**Dissolved Cadmium:** APHA Online Edition 3125 B mod.	NW105	**Dissolved Calcium:** APHA Online Edition 3125 B mod.
NW106	**Dissolved Chromium:** APHA Online Edition 3125 B mod.	NW108	**Dissolved Copper:** APHA Online Edition 3125 B mod.
NW109	**Dissolved Iron:** APHA Online Edition 3125 B mod.	NW110	**Dissolved Lead:** APHA Online Edition 3125 B mod.
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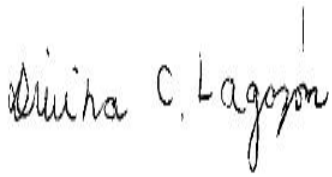
NW117	**Dissolved Potassium:** APHA Online Edition 3125 B mod.	NW120	**Dissolved Sodium:** APHA Online Edition 3125 B mod.
NW125	**Dissolved Zinc:** APHA Online Edition 3125 B mod.	NW179	**Ammonia Nitrogen:** APHA Online Edition 4500-NH3 H
NW193	**Dissolved Reactive Phosphorus:** APHA Online Edition 4500-P G	NW195	**pH (Tested beyond 15 minute APHA holding time):** APHA 24th Edition 4500-H B
NW206	**Suspended Solids:** APHA Online Edition 2540 D	NW210	**Total Non-Purgeable Organic Carbon:** APHA Online Edition 5310 B
NW228	**SVOC (GC-MSMS):** Internal Method, GC-MS/MS	NW229	**VOC (GC-MS):** Internal Method, HS-GC-MS
NW341	**BOD5 - Soluble Carbonaceous:** APHA Online Edition 5210 B	NWWG6	**Volatile Fatty Acids (VFA):** APHA 24th Edition 5560 D mod.
ZM2GA	**Escherichia coli E (Water) [NZ] <100 >6 000 000 /100 ml (0-3) m-FC Agar-F:** SMEWW 9222I; APHA 24th Edition		

Signature

Marylou Cabral Laboratory Manager
Eurofins ELS Limited

Jennifer Mont Supervisor Eurofins ELS Limited



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Cody Forbes Laboratory Analyst Laboratory Analyst

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⑧ Tested at the sampling point by Eurofins and is accredited
⑨ Test is RLP accredited
⑩ Test is subcontracted within Eurofins group and is RLP accredited

N/A means Not Applicable
Not Detected means not detected at or above the Limit of Quantification (LOQ)
LOQ means Limit of Quantification and the unit of LOQ is the same as the result unit
✗ (Unsatisfactory) means does not meet the specification
✓ (Satisfactory) means meets the specification

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END OF REPORT

Food & Water Testing

ANALYTICAL REPORT

REPORT CODE	AR-24-NW-023904-01	REPORT DATE	19/04/2024

Attention Downer NZ Ltd (EDI Levin)
Horowhenua Admin
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Copy to: Water and Waste Team (waterandwasteteam@horowhenua.govt.nz), McMillan

Contact for your orders: Gabriela Carvalhaes
Contract: Landfill

Order code: EUNZWE-00177376
Purchase Order Number: Landfill

SAMPLE CODE	812-2024-00051382		
Sample Name	349871-0		
Product:	Ground water		
Sampling Point code:	WIL-E1d	**Sampling Point name:**	Levin E1d
Reception Date & Time:	08/04/2024 16:45		
Analysis Started on:	08/04/2024	**Analysis Ending Date:**	19/04/2024
Product Type	Ground water	**Sampled Date & Time**	08/04/2024 12:37
Sampler(s)	Client nominated external sampler	**Sampled by Eurofins**	No

		RESULTS	(UNCERTAINTY)	LOQ
NW179	**Ammonia Nitrogen**			
	Ammoniacal nitrogen (N)	0.20	(± 0.02) mg/l	0.01
NW341	**BOD5 - Soluble Carbonaceous**			
	BOD5	<1	mg/l	1
NW020	**Chemical Oxygen Demand**			
	Chemical oxygen demand (COD)	<15	(± 5) mg/l	15
NW007	**Chloride**			
	Chloride (Cl)	39.4	(± 3.94) mg/l	0.02
NW00U	**Chlorophenols**			
	2,3,4,6-Tetrachlorophenol	<0.01	mg/l	0.01
	2,4-Dichlorophenol	<0.01	mg/l	0.01
	2,6-Dichlorophenol	<0.2	mg/l	0.2
	2-Chlorophenol (o-chlorophenol)	<0.01	mg/l	0.01
	3,4,5-Trichlorophenol	<0.01	mg/l	0.01
	4-Chloro-3-cresol	<0.01	mg/l	0.01
	Pentachlorophenol	<0.005	mg/l	0.005
	Phenol	<0.01	mg/l	0.01
	Total of 2,4,5 & 2,4,6 -Trichlorophenol	<0.02	mg/l	0.02
NW023	**Conductivity**			
	Conductivity	44.1	(± 0.9) mS/m	0.1
NW098	**Dissolved Aluminium**			
	Aluminium	<0.002	mg/l	0.002
NW583	**Dissolved Arsenic**			
	Arsenic (As)	0.007	mg/l	0.001
NW103	**Dissolved Boron**			
	Boron (B)	0.07	mg/l	0.03

		RESULTS (UNCERTAINTY)		LOQ
NW104	**Dissolved Cadmium**			
	Cadmium (Cd)	<0.0002	mg/l	0.0002
NW105	**Dissolved Calcium**			
	Calcium (Ca)	34.9	mg/l	0.1
NW106	**Dissolved Chromium**			
	Chromium (Cr)	0.002	mg/l	0.001
NW108	**Dissolved Copper**			
	Copper (Cu)	<0.0005	mg/l	0.0005
NW109	**Dissolved Iron**			
	Iron (Fe)	0.03	mg/l	0.01
NW110	**Dissolved Lead**			
	Lead (Pb)	<0.0005	mg/l	0.0005
NW112	**Dissolved Magnesium**			
	Magnesium (Mg)	14.3	mg/l	0.01
NW113	**Dissolved Manganese**			
	Manganese (Mn)	0.209	mg/l	0.0005
NW114	**Dissolved Mercury**			
	Mercury (Hg)	<0.0005	mg/l	0.0005
NW116	**Dissolved Nickel**			
	Nickel (Ni)	<0.0005	mg/l	0.0005
NW117	**Dissolved Potassium**			
	Potassium (K)	5.08	mg/l	0.01
NW193	**Dissolved Reactive Phosphorus**			
	Phosphorus (soluble reactive)	0.421	mg/l	0.005
NW120	**Dissolved Sodium**			
	Sodium (Na)	43.1	mg/l	0.01
NW125	**Dissolved Zinc**			
	Zinc (Zn)	0.003	mg/l	0.002
ZMF1E	**Enumeration of Escherichia coli By Membrane Filtration**			
	Escherichia coli	<1	cfu/100 ml	1
NW010	**Nitrate-N**			
	Nitrate-N	<0.01	(± 0.00) mg/l	0.01
NW195	**pH (Tested beyond 15 minute APHA holding time)**			
	pH	7.5	(± 0.2)	0.1
NW011	**Sulphate**			
	Sulphate	<0.02	(± 0.01) mg/l	0.02
NW206	**Suspended Solids**			
	Suspended Solids	72	mg/l	3
NW228	**SVOC (GC-MSMS)**			
	Acenaphthene	<0.0001	mg/l	0.0001
	Acenaphthylene	<0.001	mg/l	0.001
	Adipatic acid, bis-2-ethylhexyl ester (DEHA)	<0.0001	mg/l	0.0001
	Alachlor	<0.0001	mg/l	0.0001
	Aldicarb	<0.1	mg/l	0.1
	Aldrin	<0.001	mg/l	0.001
	Anthracene	<0.001	mg/l	0.001
	Atrazine	<0.0001	mg/l	0.0001

		RESULTS (UNCERTAINTY)		LOQ
NW228	**SVOC (GC-MSMS)**			
	Benz(a)anthracene	<0.0001	mg/l	0.0001
	Benzo(a)pyrene	<0.0001	mg/l	0.0001
	Benzo(g,h,i)perylene	<0.001	mg/l	0.001
	Bromacil	<0.005	mg/l	0.005
	Carbofuran	<0.001	mg/l	0.001
	Chlordane	<0.0001	mg/l	0.0001
	Chlordane, gamma	<0.001	mg/l	0.001
	Chlorpyrifos (-ethyl)	<0.0001	mg/l	0.0001
	Chrysene	<0.0001	mg/l	0.0001
	Cyanazine	<0.005	mg/l	0.005
	d-BHC	<0.0001	mg/l	0.0001
	DDD, p,p'-	<0.0001	mg/l	0.0001
	DDE, p,p-	<0.0001	mg/l	0.0001
	DDT, p,p'-	<0.001	mg/l	0.001
	Diazinon	<0.0001	mg/l	0.0001
	Dibenz(a,h)anthracene	<0.0001	mg/l	0.0001
	Dieldrin	<0.0001	mg/l	0.0001
	Dimethoate	<0.001	mg/l	0.001
	Diuron	<0.001	mg/l	0.001
	Endosulfan, alpha-	<0.001	mg/l	0.001
	Endosulfan, beta-	<0.005	mg/l	0.005
	Endosulfan-sulfate	<0.0001	mg/l	0.0001
	Endrin	<0.0001	mg/l	0.0001
	Endrin ketone	<0.0001	mg/l	0.0001
	Endrin-aldehyde	<0.001	mg/l	0.01
	Fluoranthene	<0.0001	mg/l	0.0001
	Fluorene	<0.0001	mg/l	0.0001
	HCH, alpha-	<0.0001	mg/l	0.0001
	HCH, beta-	<0.0001	mg/l	0.0001
	Heptachlor	<0.0001	mg/l	0.0001
	Heptachlor epoxide, cis-	<0.0001	mg/l	0.0001
	Hexachlorobenzene (HCB)	<0.0001	mg/l	0.0001
	Hexazinone	<0.001	mg/l	0.001
	Indeno(1,2,3-cd)pyrene	<0.0001	mg/l	0.0001
	Lindane (gamma-HCH)	<0.0001	mg/l	0.0001
	Metalaxyl and metalaxyl-M (metalaxyl including other mixtures of constituent isomers including metalaxyl-M (sum of isomers))	<0.001	mg/l	0.001
	Methoxychlor	<0.0001	mg/l	0.0001
	Metolachlor	<0.0001	mg/l	0.0001
	Metribuzin	<0.0001	mg/l	0.0001
	Molinate	<0.0001	mg/l	0.0001
	Naphthalene	<0.0001	mg/l	0.0001
	Oxadiazon	<0.0001	mg/l	0.0001
	PCB 101	<0.0001	mg/l	0.0001
	PCB 138	<0.001	mg/l	0.001
	PCB 183	<0.0001	mg/l	0.0001

		RESULTS	(UNCERTAINTY)	LOQ
NW228	**SVOC (GC-MSMS)**			
	PCB 28	<0.0001	mg/l	0.0001
	PCB 7	<0.0001	mg/l	0.0001
	Pendimethalin	<0.002	mg/l	0.002
	Permethrin (sum of isomers)	<0.0001	mg/l	0.0001
	Phenanthrene	<0.0001	mg/l	0.0001
	Pirimiphos-methyl	<0.0001	mg/l	0.0001
	Procymidone	<0.0001	mg/l	0.0001
	Propanil	<0.001	mg/l	0.001
	Propazine	<0.0001	mg/l	0.0001
	Pyrene	<0.0001	mg/l	0.0001
	Pyriproxyfen	<0.0001	mg/l	0.0001
	Simazine	<0.0001	mg/l	0.0001
	Terbuthylazine	<0.0001	mg/l	0.0001
	Total Benzo(b) and Benzo(k) fluoranthene	<0.001	mg/l	0.001
	Trifluralin	<0.0001	mg/l	0.0001
NW003	**Total Alkalinity**			
	Alkalinity total	164	(± 16) mg CaCO3/l	1
NW030	**Total Hardness**			
	Hardness	146	mg CaCO3/l	1
NW210	**Total Non-Purgeable Organic Carbon**			
	Total Organic Carbon	2.9	(± 0.3) mg/l	0.1
NW229	**VOC (GC-MS)**			
	1,1,1,2-Tetrachloroethane	<0.0005	mg/l	0.0005
	1,1,1-Trichloroethane	<0.0005	mg/l	0.0005
	1,1,2,2-tetrachloroethane	<0.0005	mg/l	0.0005
	1,1,2-Trichloroethane	<0.0005	mg/l	0.0005
	1,1-Dichloroethane	<0.0005	mg/l	0.0005
	1,1-Dichloroethene	<0.0005	mg/l	0.0005
	1,1-Dichloropropene	<0.0005	mg/l	0.0005
	1,2,3-Trichlorobenzene	<0.0005	mg/l	0.0005
	1,2,3-Trichloropropane	<0.0005	mg/l	0.0005
	1,2,4 trimethylbenzen	<0.0005	mg/l	0.0005
	1,2,4-Trichlorobenzene	<0.0005	mg/l	0.0005
	1,2-Dibromo-3-chloropropane	<0.001	mg/l	0.002
	1,2-Dibromoethane	<0.0002	mg/l	0.0002
	1,2-Dichlorobenzene (2)	<0.0005	mg/l	0.0005
	1,2-Dichloroethane	<0.0005	mg/l	0.0005
	1,2-Dichloropropane	<0.0005	mg/l	0.0005
	1,3,5-Trichlorobenzene	<0.0005	mg/l	0.0005
	1,3,5-Trimethylbenzene	<0.0005	mg/l	0.0005
	1,3-Dichlorobenzene	<0.0005	mg/l	0.0005
	1,3-Dichloropropane	<0.0005	mg/l	0.0005
	1,4-dichlorobenzene	<0.0005	mg/l	0.0005
	2,2-Dichloropropane	<0.0005	mg/l	0.0005
	2-Chlorotoluene	<0.0005	mg/l	0.0005
	3-chloropropene	<0.0005	mg/l	0.0005
	4-Chlorotoluene	<0.0005	mg/l	0.0005

		RESULTS (UNCERTAINTY)		LOQ
NW229	**VOC (GC-MS)**			
	4-methyl-2-pentanone	<0.0005	mg/l	0.0005
	Benzene	<0.0005	mg/l	0.0005
	Bromobenzene	<0.0005	mg/l	0.0005
	Bromochloromethane	<0.0012	mg/l	0.0012
	Bromodichloromethane	<0.0005	mg/l	0.0005
	Bromoform	<0.0005	mg/l	0.0005
	Bromomethane (zone 2)	<0.001	mg/l	0.001
	Carbon tetrachloride	<0.0005	mg/l	0.0005
	Carbondisulphide (CS2)	<0.0005	mg/l	0.0005
	Chlorobenzene	<0.0005	mg/l	0.0005
	Chloroethane	<0.001	mg/l	0.001
	Chloroform	<0.0005	mg/l	0.0005
	Chloromethane	<0.006	mg/l	0.006
	cis-1,2-Dichloroethene	<0.0005	mg/l	0.0005
	cis-1,3-Dichloropropene	<0.0005	mg/l	0.0005
	Dibromochloromethane	<0.0005	mg/l	0.0005
	Dibromomethane	<0.0005	mg/l	0.0005
	Dichlorodifluoromethane	NotRecovered	mg/l	0.001
	Dichloromethane	<0.005	mg/l	0.005
	Hexachlorobutadiene	<0.0002	mg/l	0.0002
	Isopropylbenzene (Cumene)	<0.0005	mg/l	0.0005
	m,p-Xylene, Ethylbenzene	<0.0015	mg/l	0.0015
	Naphthalene	<0.0005	mg/l	0.0005
	n-Butylbenzene	<0.0005	mg/l	0.0005
	n-Propylbenzene	<0.0005	mg/l	0.0005
	p-Isopropyltoluene	<0.0005	mg/l	0.0005
	sec-Butylbenzene	<0.0005	mg/l	0.0005
	Styrene	<0.0005	mg/l	0.0005
	tert-Butylbenzene	<0.0005	mg/l	0.0005
	Tetrachloroethene	<0.0005	mg/l	0.0005
	Toluene	<0.0005	mg/l	0.0005
	trans-1,2-Dichloroethene	<0.0005	mg/l	0.0005
	trans-1,3-Dichloropropene	<0.0005	mg/l	0.0005
	Trichloroethene	<0.0005	mg/l	0.0005
	Trichlorofluoromethane	<0.0005	mg/l	0.0005
	Vinyl chloride	<0.0003	mg/l	0.0003
	Xylene (ortho-)	<0.0005	mg/l	0.0005
①**NWWG6**	**Volatile Fatty Acids (VFA)**			
	Acetic acid	<5	mg/l	5
	Butyric acid	<5	mg/l	5
	Heptanoic acid	<5	mg/l	5
	Hexanoic acid	<5	mg/l	5
	Isobutyric acid	<5	mg/l	5
	Isocaproic acid	<5	mg/l	5
	Isovaleric acid	<5	mg/l	5
	Propionic acid	<5	mg/l	5
	Valeric acid	<5	mg/l	5
	Volatile fatty acids as acetic acid	<5	mg/l	5

RESULTS (UNCERTAINTY)	LOQ

LIST OF METHODS

NW003 **Total Alkalinity:** APHA Online Edition 2320 B

NW00U **Chlorophenols:** Internal Method, LC-MS/MS

NW011 **Sulphate:** APHA Online Edition 4110 B

NW023 **Conductivity:** APHA 24th Edition 2510 B

NW098 **Dissolved Aluminium:** APHA Online Edition 3125 B mod.

NW104 **Dissolved Cadmium:** APHA Online Edition 3125 B mod.

NW106 **Dissolved Chromium:** APHA Online Edition 3125 B mod.

NW109 **Dissolved Iron:** APHA Online Edition 3125 B mod.

NW112 **Dissolved Magnesium:** APHA Online Edition 3125 B mod.

NW114 **Dissolved Mercury:** APHA Online Edition 3125 B mod.

NW117 **Dissolved Potassium:** APHA Online Edition 3125 B mod.

NW125 **Dissolved Zinc:** APHA Online Edition 3125 B mod.

NW193 **Dissolved Reactive Phosphorus:** APHA Online Edition 4500-P G

NW206 **Suspended Solids:** APHA Online Edition 2540 D

NW228 **SVOC (GC-MSMS):** Internal Method, GC-MS/MS

NW341 **BOD5 - Soluble Carbonaceous:** APHA Online Edition 5210 B

NWWG6 **Volatile Fatty Acids (VFA):** APHA 24th Edition 5560 D mod.

NW007 **Chloride:** APHA Online Edition 4110 B

NW010 **Nitrate-N:** APHA Online Edition 4110 B

NW020 **Chemical Oxygen Demand:** APHA Online Edition 5220 D

NW030 **Total Hardness:** APHA Online Edition 2340 B

NW103 **Dissolved Boron:** APHA Online Edition 3125 B mod.

NW105 **Dissolved Calcium:** APHA Online Edition 3125 B mod.

NW108 **Dissolved Copper:** APHA Online Edition 3125 B mod.

NW110 **Dissolved Lead:** APHA Online Edition 3125 B mod.

NW113 **Dissolved Manganese:** APHA Online Edition 3125 B mod.

NW116 **Dissolved Nickel:** APHA Online Edition 3125 B mod.

NW120 **Dissolved Sodium:** APHA Online Edition 3125 B mod.

NW179 **Ammonia Nitrogen:** APHA Online Edition 4500-NH3 H

NW195 **pH (Tested beyond 15 minute APHA holding time):** APHA 24th Edition 4500-H B

NW210 **Total Non-Purgeable Organic Carbon:** APHA Online Edition 5310 B

NW229 **VOC (GC-MS):** Internal Method, HS-GC-MS

NW583 **Dissolved Arsenic:** APHA Online Edition 3125 B mod.

ZMF1E **Escherichia coli E (Water) [NZ] <1 >80 /100 ml (0) MI Agar-F:** SMEWW 9222K; APHA 24th Edition

Signature

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EXPLANATORY NOTE

①Test is not accredited
②Test is subcontracted within Eurofins group and is accredited
③Test is subcontracted within Eurofins group and is not accredited
④Test is subcontracted outside Eurofins group and is accredited
⑤Test is subcontracted outside Eurofins group and is not accredited
⑥Test result is provided by the customer and is not accredited
⑦Tested at the sampling point by Eurofins and is not accredited
⑧Tested at the sampling point by Eurofins and is accredited
⑨Test is RLP accredited
⑩Test is subcontracted within Eurofins group and is RLP accredited

N/A means Not Applicable
Not Detected means not detected at or above the Limit of Quantification (LOQ)
LOQ means Limit of Quantification and the unit of LOQ is the same as the result unit
✗ (Unsatisfactory) means does not meet the specification
✓ (Satisfactory) means meets the specification

END OF REPORT

Food & Water Testing

ANALYTICAL REPORT

REPORT CODE	AR-24-NW-023552-01	REPORT DATE	19/04/2024

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Contact for your orders: Gabriela Carvalhaes
Contract: Landfill

Order code: EUNZWE-00177701
Purchase Order Number: Landfill

SAMPLE CODE	812-2024-00052409

Sample Name 349872-0
Product: Ground water
Sampling Point code: WIL-E1s
Sampling Point name: Levin E1s
Reception Date & Time: 10/04/2024 9:08
Analysis Started on: 10/04/2024
Analysis Ending Date: 19/04/2024
Product Type Ground water
Sampled Date & Time 09/04/2024 11:02
Sampler(s) Client nominated external sampler
Sampled by Eurofins No

		RESULTS	(UNCERTAINTY)	LOQ
NW179	**Ammonia Nitrogen**			
	Ammoniacal nitrogen (N)	0.18	(± 0.02) mg/l	0.01
NW341	**BOD5 - Soluble Carbonaceous**			
	BOD5	<1	mg/l	1
NW020	**Chemical Oxygen Demand**			
	Chemical oxygen demand (COD)	44	(± 8) mg/l	15
NW007	**Chloride**			
	Chloride (Cl)	27.1	(± 2.71) mg/l	0.02
NW00U	**Chlorophenols**			
	2,3,4,6-Tetrachlorophenol	<0.01	mg/l	0.01
	2,4-Dichlorophenol	<0.01	mg/l	0.01
	2,6-Dichlorophenol	<0.02	mg/l	0.2
	2-Chlorophenol (o-chlorophenol)	<0.01	mg/l	0.01
	3,4,5-Trichlorophenol	<0.01	mg/l	0.01
	4-Chloro-3-cresol	<0.01	mg/l	0.01
	Pentachlorophenol	<0.005	mg/l	0.005
	Phenol	<0.01	mg/l	0.01
	Total of 2,4,5 & 2,4,6 -Trichlorophenol	<0.02	mg/l	0.02
NW023	**Conductivity**			
	Conductivity	24.3	(± 0.5) mS/m	0.1
NW098	**Dissolved Aluminium**			
	Aluminium	0.005	mg/l	0.002
NW103	**Dissolved Boron**			
	Boron (B)	<0.03	mg/l	0.03
NW104	**Dissolved Cadmium**			
	Cadmium (Cd)	<0.0002	mg/l	0.0002

		RESULTS (UNCERTAINTY)		LOQ
NW105	**Dissolved Calcium**			
	Calcium (Ca)	7.4	mg/l	0.1
NW106	**Dissolved Chromium**			
	Chromium (Cr)	<0.001	mg/l	0.001
NW108	**Dissolved Copper**			
	Copper (Cu)	<0.0005	mg/l	0.0005
NW109	**Dissolved Iron**			
	Iron (Fe)	3.54	mg/l	0.01
NW110	**Dissolved Lead**			
	Lead (Pb)	0.0009	mg/l	0.0005
NW112	**Dissolved Magnesium**			
	Magnesium (Mg)	6.62	mg/l	0.01
NW113	**Dissolved Manganese**			
	Manganese (Mn)	0.183	mg/l	0.0005
NW114	**Dissolved Mercury**			
	Mercury (Hg)	<0.0005	mg/l	0.0005
NW116	**Dissolved Nickel**			
	Nickel (Ni)	<0.0005	mg/l	0.0005
NW117	**Dissolved Potassium**			
	Potassium (K)	5.63	mg/l	0.01
NW193	**Dissolved Reactive Phosphorus**			
	Phosphorus (soluble reactive)	0.087	mg/l	0.005
NW120	**Dissolved Sodium**			
	Sodium (Na)	24.9	mg/l	0.01
NW125	**Dissolved Zinc**			
	Zinc (Zn)	<0.002	mg/l	0.002
ZM2GA	**Enumeration of Escherichia coli By Membrane Filtration**			
	Escherichia coli	<100	cfu/100 ml	100
NW010	**Nitrate-N**			
	Nitrate-N	<0.01	(± 0.00) mg/l	0.01
NW195	**pH (Tested beyond 15 minute APHA holding time)**			
	pH	7.0	(± 0.2)	0.1
NW011	**Sulphate**			
	Sulphate	6.87	(± 0.69) mg/l	0.02
NW206	**Suspended Solids**			
	Suspended Solids	<5	mg/l	3
NW228	**SVOC (GC-MSMS)**			
	Acenaphthene	<0.0001	mg/l	0.0001
	Acenaphthylene	<0.001	mg/l	0.001
	Adipatic acid, bis-2-ethylhexyl ester (DEHA)	<0.0001	mg/l	0.0001
	Alachlor	<0.0001	mg/l	0.0001
	Aldicarb	<0.1	mg/l	0.1
	Aldrin	<0.001	mg/l	0.001
	Anthracene	<0.001	mg/l	0.001
	Atrazine	<0.0001	mg/l	0.0001
	Benz(a)anthracene	<0.0001	mg/l	0.0001
	Benzo(a)pyrene	<0.0001	mg/l	0.0001

		RESULTS (UNCERTAINTY)		LOQ
NW228	**SVOC (GC-MSMS)**			
	Benzo(g,h,i)perylene	<0.001	mg/l	0.001
	Bromacil	<0.005	mg/l	0.005
	Carbofuran	<0.001	mg/l	0.001
	Chlordane	<0.0001	mg/l	0.0001
	Chlordane, gamma	<0.001	mg/l	0.001
	Chlorpyrifos (-ethyl)	<0.0001	mg/l	0.0001
	Chrysene	<0.0001	mg/l	0.0001
	Cyanazine	<0.005	mg/l	0.005
	d-BHC	<0.0001	mg/l	0.0001
	DDD, p,p'-	<0.0001	mg/l	0.0001
	DDE, p,p-	<0.0001	mg/l	0.0001
	DDT, p,p'-	<0.001	mg/l	0.001
	Diazinon	<0.0001	mg/l	0.0001
	Dibenz(a,h)anthracene	<0.0001	mg/l	0.0001
	Dieldrin	<0.0001	mg/l	0.0001
	Dimethoate	<0.001	mg/l	0.001
	Diuron	<0.001	mg/l	0.001
	Endosulfan, alpha-	<0.001	mg/l	0.001
	Endosulfan, beta-	<0.005	mg/l	0.005
	Endosulfan-sulfate	<0.0001	mg/l	0.0001
	Endrin	<0.0001	mg/l	0.0001
	Endrin ketone	<0.0001	mg/l	0.0001
	Endrin-aldehyde	<0.001	mg/l	0.01
	Fluoranthene	<0.0001	mg/l	0.0001
	Fluorene	<0.0001	mg/l	0.0001
	HCH, alpha-	<0.0001	mg/l	0.0001
	HCH, beta-	<0.0001	mg/l	0.0001
	Heptachlor	<0.0001	mg/l	0.0001
	Heptachlor epoxide, cis-	<0.0001	mg/l	0.0001
	Hexachlorobenzene (HCB)	<0.0001	mg/l	0.0001
	Hexazinone	<0.001	mg/l	0.001
	Indeno(1,2,3-cd)pyrene	<0.0001	mg/l	0.0001
	Lindane (gamma-HCH)	<0.0001	mg/l	0.0001
	Metalaxyl and metalaxyl-M (metalaxyl including other mixtures of constituent isomers including metalaxyl-M (sum of isomers))	<0.001	mg/l	0.001
	Methoxychlor	<0.0001	mg/l	0.0001
	Metolachlor	<0.0001	mg/l	0.0001
	Metribuzin	<0.0001	mg/l	0.0001
	Molinate	<0.0001	mg/l	0.0001
	Naphthalene	<0.0001	mg/l	0.0001
	Oxadiazon	<0.0001	mg/l	0.0001
	PCB 101	<0.0001	mg/l	0.0001
	PCB 138	<0.001	mg/l	0.001
	PCB 183	<0.0001	mg/l	0.0001
	PCB 28	<0.0001	mg/l	0.0001
	PCB 7	<0.0001	mg/l	0.0001

		RESULTS (UNCERTAINTY)		LOQ
NW228	**SVOC (GC-MSMS)**			
	Pendimethalin	<0.002	mg/l	0.002
	Permethrin (sum of isomers)	<0.0001	mg/l	0.0001
	Phenanthrene	<0.0001	mg/l	0.0001
	Pirimiphos-methyl	<0.0001	mg/l	0.0001
	Procymidone	<0.0001	mg/l	0.0001
	Propanil	<0.001	mg/l	0.001
	Propazine	<0.0001	mg/l	0.0001
	Pyrene	<0.0001	mg/l	0.0001
	Pyriproxyfen	<0.0001	mg/l	0.0001
	Simazine	<0.0001	mg/l	0.0001
	Terbuthylazine	<0.0001	mg/l	0.0001
	Total Benzo(b) and Benzo(k) fluoranthene	<0.001	mg/l	0.001
	Trifluralin	<0.0001	mg/l	0.0001
NW003	**Total Alkalinity**			
	Alkalinity total	69	(± 7) mg CaCO3/l	1
NW030	**Total Hardness**			
	Hardness	46	mg CaCO3/l	1
NW210	**Total Non-Purgeable Organic Carbon**			
	Total Organic Carbon	3.5	(± 0.4) mg/l	0.1
NW229	**VOC (GC-MS)**			
	1,1,1,2-Tetrachloroethane	<0.0005	mg/l	0.0005
	1,1,1-Trichloroethane	<0.0005	mg/l	0.0005
	1,1,2,2-tetrachloroethane	<0.0005	mg/l	0.0005
	1,1,2-Trichloroethane	<0.0005	mg/l	0.0005
	1,1-Dichloroethane	<0.0005	mg/l	0.0005
	1,1-Dichloroethene	<0.0005	mg/l	0.0005
	1,1-Dichloropropene	<0.0005	mg/l	0.0005
	1,2,3-Trichlorobenzene	<0.0005	mg/l	0.0005
	1,2,3-Trichloropropane	<0.0005	mg/l	0.0005
	1,2,4 trimethylbenzen	<0.0005	mg/l	0.0005
	1,2,4-Trichlorobenzene	<0.0005	mg/l	0.0005
	1,2-Dibromo-3-chloropropane	<0.001	mg/l	0.002
	1,2-Dibromoethane	<0.0002	mg/l	0.0002
	1,2-Dichlorobenzene (2)	<0.0005	mg/l	0.0005
	1,2-Dichloroethane	<0.0005	mg/l	0.0005
	1,2-Dichloropropane	<0.0005	mg/l	0.0005
	1,3,5-Trichlorobenzene	<0.0005	mg/l	0.0005
	1,3,5-Trimethylbenzene	<0.0005	mg/l	0.0005
	1,3-Dichlorobenzene	<0.0005	mg/l	0.0005
	1,3-Dichloropropane	<0.0005	mg/l	0.0005
	1,4-dichlorobenzene	<0.0005	mg/l	0.0005
	2,2-Dichloropropane	<0.0005	mg/l	0.0005
	2-Chlorotoluene	<0.0005	mg/l	0.0005
	3-chloropropene	<0.0020	mg/l	0.0005
	4-Chlorotoluene	<0.0005	mg/l	0.0005
	4-methyl-2-pentanone	<0.0005	mg/l	0.0005
	Benzene	<0.0005	mg/l	0.0005

		RESULTS (UNCERTAINTY)		LOQ
NW229	**VOC (GC-MS)**			
	Bromobenzene	<0.0005	mg/l	0.0005
	Bromochloromethane	<0.0012	mg/l	0.0012
	Bromodichloromethane	<0.0005	mg/l	0.0005
	Bromoform	<0.0005	mg/l	0.0005
	Bromomethane (zone 2)	<0.001	mg/l	0.001
	Carbon tetrachloride	<0.0005	mg/l	0.0005
	Carbondisulphide (CS2)	<0.0005	mg/l	0.0005
	Chlorobenzene	<0.0005	mg/l	0.0005
	Chloroethane	<0.001	mg/l	0.001
	Chloroform	<0.0005	mg/l	0.0005
	Chloromethane	<0.006	mg/l	0.006
	cis-1,2-Dichloroethene	<0.0005	mg/l	0.0005
	cis-1,3-Dichloropropene	<0.0005	mg/l	0.0005
	Dibromochloromethane	<0.0005	mg/l	0.0005
	Dibromomethane	<0.0005	mg/l	0.0005
	Dichlorodifluoromethane	NotRecovered	mg/l	0.001
	Dichloromethane	<0.005	mg/l	0.005
	Hexachlorobutadiene	<0.0002	mg/l	0.0002
	Isopropylbenzene (Cumene)	<0.0005	mg/l	0.0005
	m,p-Xylene, Ethylbenzene	<0.0015	mg/l	0.0015
	Naphthalene	<0.0005	mg/l	0.0005
	n-Butylbenzene	<0.0005	mg/l	0.0005
	n-Propylbenzene	<0.0005	mg/l	0.0005
	p-Isopropyltoluene	<0.0005	mg/l	0.0005
	sec-Butylbenzene	<0.0005	mg/l	0.0005
	Styrene	<0.0005	mg/l	0.0005
	tert-Butylbenzene	<0.0005	mg/l	0.0005
	Tetrachloroethene	<0.0005	mg/l	0.0005
	Toluene	<0.0005	mg/l	0.0005
	trans-1,2-Dichloroethene	<0.0005	mg/l	0.0005
	trans-1,3-Dichloropropene	<0.0005	mg/l	0.0005
	Trichloroethene	<0.0005	mg/l	0.0005
	Trichlorofluoromethane	<0.0005	mg/l	0.0005
	Vinyl chloride	<0.0003	mg/l	0.0003
	Xylene (ortho-)	<0.0005	mg/l	0.0005
① **NWWG6**	**Volatile Fatty Acids (VFA)**			
	Acetic acid	<5	mg/l	5
	Butyric acid	<5	mg/l	5
	Heptanoic acid	<5	mg/l	5
	Hexanoic acid	<5	mg/l	5
	Isobutyric acid	<5	mg/l	5
	Isocaproic acid	<5	mg/l	5
	Isovaleric acid	<5	mg/l	5
	Propionic acid	<5	mg/l	5
	Valeric acid	<5	mg/l	5
	Volatile fatty acids as acetic acid	<5	mg/l	5

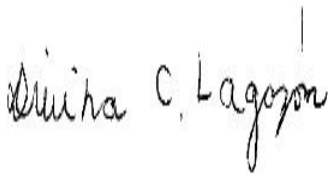
LIST OF METHODS

NW003	**Total Alkalinity:** APHA Online Edition 2320 B	NW007	**Chloride:** APHA Online Edition 4110 B
NW00U	**Chlorophenols:** Internal Method, LC-MS/MS	NW010	**Nitrate-N:** APHA Online Edition 4110 B
NW011	**Sulphate:** APHA Online Edition 4110 B	NW020	**Chemical Oxygen Demand:** APHA Online Edition 5220 D
NW023	**Conductivity:** APHA 24th Edition 2510 B	NW030	**Total Hardness:** APHA Online Edition 2340 B
NW098	**Dissolved Aluminium:** APHA Online Edition 3125 B mod.	NW103	**Dissolved Boron:** APHA Online Edition 3125 B mod.
NW104	**Dissolved Cadmium:** APHA Online Edition 3125 B mod.	NW105	**Dissolved Calcium:** APHA Online Edition 3125 B mod.
NW106	**Dissolved Chromium:** APHA Online Edition 3125 B mod.	NW108	**Dissolved Copper:** APHA Online Edition 3125 B mod.
NW109	**Dissolved Iron:** APHA Online Edition 3125 B mod.	NW110	**Dissolved Lead:** APHA Online Edition 3125 B mod.
NW112	**Dissolved Magnesium:** APHA Online Edition 3125 B mod.	NW113	**Dissolved Manganese:** APHA Online Edition 3125 B mod.
NW114	**Dissolved Mercury:** APHA Online Edition 3125 B mod.	NW116	**Dissolved Nickel:** APHA Online Edition 3125 B mod.
NW117	**Dissolved Potassium:** APHA Online Edition 3125 B mod.	NW120	**Dissolved Sodium:** APHA Online Edition 3125 B mod.
NW125	**Dissolved Zinc:** APHA Online Edition 3125 B mod.	NW179	**Ammonia Nitrogen:** APHA Online Edition 4500-NH3 H
NW193	**Dissolved Reactive Phosphorus:** APHA Online Edition 4500-P G	NW195	**pH (Tested beyond 15 minute APHA holding time):** APHA 24th Edition 4500-H B
NW206	**Suspended Solids:** APHA Online Edition 2540 D	NW210	**Total Non-Purgeable Organic Carbon:** APHA Online Edition 5310 B
NW228	**SVOC (GC-MSMS):** Internal Method, GC-MS/MS	NW229	**VOC (GC-MS):** Internal Method, HS-GC-MS
NW341	**BOD5 - Soluble Carbonaceous:** APHA Online Edition 5210 B	NWWG6	**Volatile Fatty Acids (VFA):** APHA 24th Edition 5560 D mod.
ZM2GA	**Escherichia coli E (Water) [NZ] <100 >6 000 000 /100 ml (0-3) m-FC Agar-F:** SMEWW 9222I; APHA 24th Edition		

Signature

Marylou Cabral Laboratory Manager
Eurofins ELS Limited

Jennifer Mont Supervisor Eurofins ELS Limited



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② Test is subcontracted within Eurofins group and is accredited
③ Test is subcontracted within Eurofins group and is not accredited
④ Test is subcontracted outside Eurofins group and is accredited
⑤ Test is subcontracted outside Eurofins group and is not accredited
⑥ Test result is provided by the customer and is not accredited
⑦ Tested at the sampling point by Eurofins and is not accredited
⑧ Tested at the sampling point by Eurofins and is accredited
⑨ Test is RLP accredited
⑩ Test is subcontracted within Eurofins group and is RLP accredited

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Not Detected means not detected at or above the Limit of Quantification (LOQ)
LOQ means Limit of Quantification and the unit of LOQ is the same as the result unit
✗ (Unsatisfactory) means does not meet the specification
✓ (Satisfactory) means meets the specification

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END OF REPORT

Food & Water Testing

ANALYTICAL REPORT

REPORT CODE	AR-24-NW-024783-01	REPORT DATE	24/04/2024

Attention Downer NZ Ltd (EDI Levin)
Horowhenua Admin
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4741 Levin
NEW ZEALAND

Phone (06) 367 2705
Email horowhenuaadmin@downer.co.nz

Copy to: Water and Waste Team (waterandwasteteam@horowhenua.govt.nz), McMillan

Contact for your orders: Gabriela Carvalhaes
Contract: Landfill

Order code: EUNZWE-00177658
Purchase Order Number: Landfill

SAMPLE CODE	812-2024-00052263		
Sample Name	349873-0		
Product:	Ground water		
Sampling Point code:	WIL-E2d	**Sampling Point name:**	Levin E2d
Reception Date & Time:	09/04/2024 17:46		
Analysis Started on:	09/04/2024	**Analysis Ending Date:**	24/04/2024
Product Type	Ground water	**Sampled Date & Time**	09/04/2024 06:42
Sampler(s)	Client nominated external sampler	**Sampled by Eurofins**	No

		RESULTS	(UNCERTAINTY)	LOQ
NW179	**Ammonia Nitrogen**			
	Ammoniacal nitrogen (N)	0.23	(± 0.02) mg/l	0.01
NW341	**BOD5 - Soluble Carbonaceous**			
	BOD5	<1	mg/l	1
NW020	**Chemical Oxygen Demand**			
	Chemical oxygen demand (COD)	<15	(± 5) mg/l	15
NW007	**Chloride**			
	Chloride (Cl)	41.8	(± 4.18) mg/l	0.02
NW00U	**Chlorophenols**			
	2,3,4,6-Tetrachlorophenol	<0.01	mg/l	0.01
	2,4-Dichlorophenol	<0.01	mg/l	0.01
	2,6-Dichlorophenol	<0.02	mg/l	0.2
	2-Chlorophenol (o-chlorophenol)	<0.01	mg/l	0.01
	3,4,5-Trichlorophenol	<0.01	mg/l	0.01
	4-Chloro-3-cresol	<0.01	mg/l	0.01
	Pentachlorophenol	<0.005	mg/l	0.005
	Phenol	<0.01	mg/l	0.01
	Total of 2,4,5 & 2,4,6 -Trichlorophenol	<0.02	mg/l	0.02
NW023	**Conductivity**			
	Conductivity	44.2	(± 0.9) mS/m	0.1
NW098	**Dissolved Aluminium**			
	Aluminium	<0.002	mg/l	0.002
NW583	**Dissolved Arsenic**			
	Arsenic (As)	0.001	mg/l	0.001
NW103	**Dissolved Boron**			
	Boron (B)	0.04	mg/l	0.03

		RESULTS (UNCERTAINTY)		LOQ
NW104	**Dissolved Cadmium**			
	Cadmium (Cd)	<0.0002	mg/l	0.0002
NW105	**Dissolved Calcium**			
	Calcium (Ca)	24.8	mg/l	0.1
NW106	**Dissolved Chromium**			
	Chromium (Cr)	<0.001	mg/l	0.001
NW108	**Dissolved Copper**			
	Copper (Cu)	<0.0005	mg/l	0.0005
NW109	**Dissolved Iron**			
	Iron (Fe)	0.03	mg/l	0.01
NW110	**Dissolved Lead**			
	Lead (Pb)	<0.0005	mg/l	0.0005
NW112	**Dissolved Magnesium**			
	Magnesium (Mg)	13.1	mg/l	0.01
NW113	**Dissolved Manganese**			
	Manganese (Mn)	0.458	mg/l	0.0005
NW114	**Dissolved Mercury**			
	Mercury (Hg)	<0.0005	mg/l	0.0005
NW116	**Dissolved Nickel**			
	Nickel (Ni)	<0.0005	mg/l	0.0005
NW117	**Dissolved Potassium**			
	Potassium (K)	6.45	mg/l	0.01
NW193	**Dissolved Reactive Phosphorus**			
	Phosphorus (soluble reactive)	0.612	mg/l	0.005
NW120	**Dissolved Sodium**			
	Sodium (Na)	39.5	mg/l	0.01
NW125	**Dissolved Zinc**			
	Zinc (Zn)	0.003	mg/l	0.002
ZMF1E	**Enumeration of Escherichia coli By Membrane Filtration**			
	Escherichia coli	<1	cfu/100 ml	1
NW010	**Nitrate-N**			
	Nitrate-N	<0.01	(± 0.00) mg/l	0.01
NW195	**pH (Tested beyond 15 minute APHA holding time)**			
	pH	7.4	(± 0.2)	0.1
NW011	**Sulphate**			
	Sulphate	<0.02	(± 0.01) mg/l	0.02
NW206	**Suspended Solids**			
	Suspended Solids	<5	mg/l	3
NW228	**SVOC (GC-MSMS)**			
	Acenaphthene	<0.0001	mg/l	0.0001
	Acenaphthylene	<0.001	mg/l	0.001
	Adipatic acid, bis-2-ethylhexyl ester (DEHA)	<0.0001	mg/l	0.0001
	Alachlor	<0.0001	mg/l	0.0001
	Aldicarb	<0.1	mg/l	0.1
	Aldrin	<0.001	mg/l	0.001
	Anthracene	<0.001	mg/l	0.001
	Atrazine	<0.0001	mg/l	0.0001

		RESULTS (UNCERTAINTY)		LOQ
NW228	**SVOC (GC-MSMS)**			
	Benz(a)anthracene	<0.0001	mg/l	0.0001
	Benzo(a)pyrene	<0.0001	mg/l	0.0001
	Benzo(g,h,i)perylene	<0.001	mg/l	0.001
	Bromacil	<0.005	mg/l	0.005
	Carbofuran	<0.001	mg/l	0.001
	Chlordane	<0.0001	mg/l	0.0001
	Chlordane, gamma	<0.001	mg/l	0.001
	Chlorpyrifos (-ethyl)	<0.0001	mg/l	0.0001
	Chrysene	<0.0001	mg/l	0.0001
	Cyanazine	<0.005	mg/l	0.005
	d-BHC	<0.0001	mg/l	0.0001
	DDD, p,p'-	<0.0001	mg/l	0.0001
	DDE, p,p-	<0.0001	mg/l	0.0001
	DDT, p,p'-	NotRecovered	mg/l	0.001
	Diazinon	<0.0001	mg/l	0.0001
	Dibenz(a,h)anthracene	<0.0001	mg/l	0.0001
	Dieldrin	<0.0001	mg/l	0.0001
	Dimethoate	<0.001	mg/l	0.001
	Diuron	<0.001	mg/l	0.001
	Endosulfan, alpha-	<0.001	mg/l	0.001
	Endosulfan, beta-	<0.005	mg/l	0.005
	Endosulfan-sulfate	<0.0001	mg/l	0.0001
	Endrin	<0.0001	mg/l	0.0001
	Endrin ketone	NotRecovered	mg/l	0.0001
	Endrin-aldehyde	<0.001	mg/l	0.01
	Fluoranthene	<0.0001	mg/l	0.0001
	Fluorene	<0.0001	mg/l	0.0001
	HCH, alpha-	<0.0001	mg/l	0.0001
	HCH, beta-	<0.0001	mg/l	0.0001
	Heptachlor	<0.0001	mg/l	0.0001
	Heptachlor epoxide, cis-	<0.0001	mg/l	0.0001
	Hexachlorobenzene (HCB)	<0.0001	mg/l	0.0001
	Hexazinone	<0.001	mg/l	0.001
	Indeno(1,2,3-cd)pyrene	<0.0001	mg/l	0.0001
	Lindane (gamma-HCH)	<0.0001	mg/l	0.0001
	Metalaxyl and metalaxyl-M (metalaxyl including other mixtures of constituent isomers including metalaxyl-M (sum of isomers))	<0.001	mg/l	0.001
	Methoxychlor	<0.0001	mg/l	0.0001
	Metolachlor	<0.0001	mg/l	0.0001
	Metribuzin	<0.0001	mg/l	0.0001
	Molinate	<0.0001	mg/l	0.0001
	Naphthalene	<0.0001	mg/l	0.0001
	Oxadiazon	<0.0001	mg/l	0.0001
	PCB 101	<0.0001	mg/l	0.0001
	PCB 138	<0.001	mg/l	0.001
	PCB 183	<0.0001	mg/l	0.0001

		RESULTS	(UNCERTAINTY)	LOQ
NW228	**SVOC (GC-MSMS)**			
	PCB 28	<0.0001	mg/l	0.0001
	PCB 7	<0.0001	mg/l	0.0001
	Pendimethalin	<0.002	mg/l	0.002
	Permethrin (sum of isomers)	<0.0001	mg/l	0.0001
	Phenanthrene	<0.0001	mg/l	0.0001
	Pirimiphos-methyl	<0.0001	mg/l	0.0001
	Procymidone	<0.0001	mg/l	0.0001
	Propanil	<0.001	mg/l	0.001
	Propazine	<0.0001	mg/l	0.0001
	Pyrene	<0.0001	mg/l	0.0001
	Pyriproxyfen	<0.0001	mg/l	0.0001
	Simazine	<0.0001	mg/l	0.0001
	Terbuthylazine	<0.0001	mg/l	0.0001
	Total Benzo(b) and Benzo(k) fluoranthene	<0.001	mg/l	0.001
	Trifluralin	<0.0001	mg/l	0.0001
NW003	**Total Alkalinity**			
	Alkalinity total	161	(± 16) mg CaCO3/l	1
NW030	**Total Hardness**			
	Hardness	116	mg CaCO3/l	1
NW210	**Total Non-Purgeable Organic Carbon**			
	Total Organic Carbon	2.7	(± 0.3) mg/l	0.1
NW229	**VOC (GC-MS)**			
	1,1,1,2-Tetrachloroethane	<0.0005	mg/l	0.0005
	1,1,1-Trichloroethane	<0.0005	mg/l	0.0005
	1,1,2,2-tetrachloroethane	<0.0005	mg/l	0.0005
	1,1,2-Trichloroethane	<0.0005	mg/l	0.0005
	1,1-Dichloroethane	<0.0005	mg/l	0.0005
	1,1-Dichloroethene	<0.0005	mg/l	0.0005
	1,1-Dichloropropene	<0.0005	mg/l	0.0005
	1,2,3-Trichlorobenzene	<0.0005	mg/l	0.0005
	1,2,3-Trichloropropane	<0.0005	mg/l	0.0005
	1,2,4 trimethylbenzen	<0.0005	mg/l	0.0005
	1,2,4-Trichlorobenzene	<0.0005	mg/l	0.0005
	1,2-Dibromo-3-chloropropane	<0.001	mg/l	0.002
	1,2-Dibromoethane	<0.0002	mg/l	0.0002
	1,2-Dichlorobenzene (2)	<0.0005	mg/l	0.0005
	1,2-Dichloroethane	<0.0005	mg/l	0.0005
	1,2-Dichloropropane	<0.0005	mg/l	0.0005
	1,3,5-Trichlorobenzene	<0.0005	mg/l	0.0005
	1,3,5-Trimethylbenzene	<0.0005	mg/l	0.0005
	1,3-Dichlorobenzene	<0.0005	mg/l	0.0005
	1,3-Dichloropropane	<0.0005	mg/l	0.0005
	1,4-dichlorobenzene	<0.0005	mg/l	0.0005
	2,2-Dichloropropane	<0.0005	mg/l	0.0005
	2-Chlorotoluene	<0.0005	mg/l	0.0005
	3-chloropropene	<0.0005	mg/l	0.0005
	4-Chlorotoluene	<0.0005	mg/l	0.0005

		RESULTS (UNCERTAINTY)		LOQ
NW229	**VOC (GC-MS)**			
	4-methyl-2-pentanone	<0.0005	mg/l	0.0005
	Benzene	<0.0005	mg/l	0.0005
	Bromobenzene	<0.0005	mg/l	0.0005
	Bromochloromethane	<0.0012	mg/l	0.0012
	Bromodichloromethane	<0.0005	mg/l	0.0005
	Bromoform	<0.0005	mg/l	0.0005
	Bromomethane (zone 2)	<0.001	mg/l	0.001
	Carbon tetrachloride	<0.0005	mg/l	0.0005
	Carbondisulphide (CS2)	<0.0005	mg/l	0.0005
	Chlorobenzene	<0.0005	mg/l	0.0005
	Chloroethane	<0.001	mg/l	0.001
	Chloroform	<0.0005	mg/l	0.0005
	Chloromethane	<0.006	mg/l	0.006
	cis-1,2-Dichloroethene	<0.0005	mg/l	0.0005
	cis-1,3-Dichloropropene	<0.0005	mg/l	0.0005
	Dibromochloromethane	<0.0005	mg/l	0.0005
	Dibromomethane	<0.0005	mg/l	0.0005
	Dichlorodifluoromethane	NotRecovered	mg/l	0.001
	Dichloromethane	<0.005	mg/l	0.005
	Hexachlorobutadiene	<0.0002	mg/l	0.0002
	Isopropylbenzene (Cumene)	<0.0005	mg/l	0.0005
	m,p-Xylene, Ethylbenzene	<0.0015	mg/l	0.0015
	Naphthalene	<0.0005	mg/l	0.0005
	n-Butylbenzene	<0.0005	mg/l	0.0005
	n-Propylbenzene	<0.0005	mg/l	0.0005
	p-Isopropyltoluene	<0.0005	mg/l	0.0005
	sec-Butylbenzene	<0.0005	mg/l	0.0005
	Styrene	<0.0005	mg/l	0.0005
	tert-Butylbenzene	<0.0005	mg/l	0.0005
	Tetrachloroethene	<0.0005	mg/l	0.0005
	Toluene	<0.0005	mg/l	0.0005
	trans-1,2-Dichloroethene	<0.0005	mg/l	0.0005
	trans-1,3-Dichloropropene	<0.0005	mg/l	0.0005
	Trichloroethene	<0.0005	mg/l	0.0005
	Trichlorofluoromethane	<0.0005	mg/l	0.0005
	Vinyl chloride	<0.0003	mg/l	0.0003
	Xylene (ortho-)	<0.0005	mg/l	0.0005
①**NWWG6**	**Volatile Fatty Acids (VFA)**			
	Acetic acid	<5	mg/l	5
	Butyric acid	<5	mg/l	5
	Heptanoic acid	<5	mg/l	5
	Hexanoic acid	<5	mg/l	5
	Isobutyric acid	<5	mg/l	5
	Isocaproic acid	<5	mg/l	5
	Isovaleric acid	<5	mg/l	5
	Propionic acid	<5	mg/l	5
	Valeric acid	<5	mg/l	5
	Volatile fatty acids as acetic acid	<5	mg/l	5

RESULTS (UNCERTAINTY)	LOQ

LIST OF METHODS

NW003	**Total Alkalinity:** APHA Online Edition 2320 B
NW00U	**Chlorophenols:** Internal Method, LC-MS/MS
NW011	**Sulphate:** APHA Online Edition 4110 B
NW023	**Conductivity:** APHA 24th Edition 2510 B
NW098	**Dissolved Aluminium:** APHA Online Edition 3125 B mod.
NW104	**Dissolved Cadmium:** APHA Online Edition 3125 B mod.
NW106	**Dissolved Chromium:** APHA Online Edition 3125 B mod.
NW109	**Dissolved Iron:** APHA Online Edition 3125 B mod.
NW112	**Dissolved Magnesium:** APHA Online Edition 3125 B mod.
NW114	**Dissolved Mercury:** APHA Online Edition 3125 B mod.
NW117	**Dissolved Potassium:** APHA Online Edition 3125 B mod.
NW125	**Dissolved Zinc:** APHA Online Edition 3125 B mod.
NW193	**Dissolved Reactive Phosphorus:** APHA Online Edition 4500-P G
NW206	**Suspended Solids:** APHA Online Edition 2540 D
NW228	**SVOC (GC-MSMS):** Internal Method, GC-MS/MS
NW341	**BOD5 - Soluble Carbonaceous:** APHA Online Edition 5210 B
NWWG6	**Volatile Fatty Acids (VFA):** APHA 24th Edition 5560 D mod.
NW007	**Chloride:** APHA Online Edition 4110 B
NW010	**Nitrate-N:** APHA Online Edition 4110 B
NW020	**Chemical Oxygen Demand:** APHA Online Edition 5220 D
NW030	**Total Hardness:** APHA Online Edition 2340 B
NW103	**Dissolved Boron:** APHA Online Edition 3125 B mod.
NW105	**Dissolved Calcium:** APHA Online Edition 3125 B mod.
NW108	**Dissolved Copper:** APHA Online Edition 3125 B mod.
NW110	**Dissolved Lead:** APHA Online Edition 3125 B mod.
NW113	**Dissolved Manganese:** APHA Online Edition 3125 B mod.
NW116	**Dissolved Nickel:** APHA Online Edition 3125 B mod.
NW120	**Dissolved Sodium:** APHA Online Edition 3125 B mod.
NW179	**Ammonia Nitrogen:** APHA Online Edition 4500-NH3 H
NW195	**pH (Tested beyond 15 minute APHA holding time):** APHA 24th Edition 4500-H B
NW210	**Total Non-Purgeable Organic Carbon:** APHA Online Edition 5310 B
NW229	**VOC (GC-MS):** Internal Method, HS-GC-MS
NW583	**Dissolved Arsenic:** APHA Online Edition 3125 B mod.
ZMF1E	**Escherichia coli E (Water) [NZ] <1 >80 /100 ml (0) Ml Agar-F:** SMEWW 9222K; APHA 24th Edition

Signature

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EXPLANATORY NOTE

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LOQ means Limit of Quantification and the unit of LOQ is the same as the result unit
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✓ (Satisfactory) means meets the specification

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END OF REPORT

Food & Water Testing

ANALYTICAL REPORT

REPORT CODE	AR-24-NW-023553-01	REPORT DATE	19/04/2024

Attention Downer NZ Ltd (EDI Levin)
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Contact for your orders: Gabriela Carvalhaes
Contract: Landfill

Order code: EUNZWE-00177701
Purchase Order Number: Landfill

SAMPLE CODE	812-2024-00052410

Sample Name 349874-0
Product: Ground water
Sampling Point code: WIL-E2s
Sampling Point name: Levin E2s
Reception Date & Time: 10/04/2024 9:10
Analysis Started on: 10/04/2024
Analysis Ending Date: 19/04/2024
Product Type Ground water
Sampled Date & Time 09/04/2024 11:43
Sampler(s) Client nominated external sampler
Sampled by Eurofins No

		RESULTS (UNCERTAINTY)		LOQ
NW179	**Ammonia Nitrogen**			
	Ammoniacal nitrogen (N)	0.30	(± 0.03) mg/l	0.01
NW341	**BOD5 - Soluble Carbonaceous**			
	BOD5	<1	mg/l	1
NW020	**Chemical Oxygen Demand**			
	Chemical oxygen demand (COD)	<15	(± 5) mg/l	15
NW007	**Chloride**			
	Chloride (Cl)	40.2	(± 4.02) mg/l	0.02
NW00U	**Chlorophenols**			
	2,3,4,6-Tetrachlorophenol	<0.01	mg/l	0.01
	2,4-Dichlorophenol	<0.01	mg/l	0.01
	2,6-Dichlorophenol	<0.02	mg/l	0.2
	2-Chlorophenol (o-chlorophenol)	<0.01	mg/l	0.01
	3,4,5-Trichlorophenol	<0.01	mg/l	0.01
	4-Chloro-3-cresol	<0.01	mg/l	0.01
	Pentachlorophenol	<0.005	mg/l	0.005
	Phenol	<0.01	mg/l	0.01
	Total of 2,4,5 & 2,4,6 -Trichlorophenol	<0.02	mg/l	0.02
NW023	**Conductivity**			
	Conductivity	33.6	(± 0.7) mS/m	0.1
NW098	**Dissolved Aluminium**			
	Aluminium	0.003	mg/l	0.002
NW103	**Dissolved Boron**			
	Boron (B)	<0.03	mg/l	0.03
NW104	**Dissolved Cadmium**			
	Cadmium (Cd)	<0.0002	mg/l	0.0002

Food & Water Testing

ANALYTICAL REPORT

REPORT CODE	AR-24-NW-023899-01	REPORT DATE	19/04/2024

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Copy to: Water and Waste Team (waterandwasteteam@horowhenua.govt.nz), McMillan

Contact for your orders: Gabriela Carvalhaes
Contract: Landfill

Order code: EUNZWE-00177376
Purchase Order Number: Landfill

SAMPLE CODE	812-2024-00051377		
Sample Name	349875-0		
Product:	Ground water		
Sampling Point code:	WIL-F1	**Sampling Point name:**	Levin F1
Reception Date & Time:	08/04/2024 16:45		
Analysis Started on:	08/04/2024	**Analysis Ending Date:**	19/04/2024
Product Type	Ground water	**Sampled Date & Time**	08/04/2024 09:23
Sampler(s)	Client nominated external sampler	**Sampled by Eurofins**	No

		RESULTS	(UNCERTAINTY)	LOQ
NW179	**Ammonia Nitrogen**			
	Ammoniacal nitrogen (N)	<0.01	(± 0.00) mg/l	0.01
NW341	**BOD5 - Soluble Carbonaceous**			
	BOD5	<1	mg/l	1
NW020	**Chemical Oxygen Demand**			
	Chemical oxygen demand (COD)	<15	(± 5) mg/l	15
NW007	**Chloride**			
	Chloride (Cl)	62.6	(± 6.26) mg/l	0.02
NW00U	**Chlorophenols**			
	2,3,4,6-Tetrachlorophenol	<0.01	mg/l	0.01
	2,4-Dichlorophenol	<0.01	mg/l	0.01
	2,6-Dichlorophenol	<0.2	mg/l	0.2
	2-Chlorophenol (o-chlorophenol)	<0.01	mg/l	0.01
	3,4,5-Trichlorophenol	<0.01	mg/l	0.01
	4-Chloro-3-cresol	<0.01	mg/l	0.01
	Pentachlorophenol	<0.005	mg/l	0.005
	Phenol	<0.01	mg/l	0.01
	Total of 2,4,5 & 2,4,6 -Trichlorophenol	<0.02	mg/l	0.02
NW023	**Conductivity**			
	Conductivity	49.3	(± 1.0) mS/m	0.1
NW098	**Dissolved Aluminium**			
	Aluminium	0.009	mg/l	0.002
NW583	**Dissolved Arsenic**			
	Arsenic (As)	0.002	mg/l	0.001
NW103	**Dissolved Boron**			
	Boron (B)	0.04	mg/l	0.03

		RESULTS (UNCERTAINTY)		LOQ
NW104	**Dissolved Cadmium**			
	Cadmium (Cd)	<0.0002	mg/l	0.0002
NW105	**Dissolved Calcium**			
	Calcium (Ca)	24.0	mg/l	0.1
NW106	**Dissolved Chromium**			
	Chromium (Cr)	0.001	mg/l	0.001
NW108	**Dissolved Copper**			
	Copper (Cu)	0.0021	mg/l	0.0005
NW109	**Dissolved Iron**			
	Iron (Fe)	0.01	mg/l	0.01
NW110	**Dissolved Lead**			
	Lead (Pb)	<0.0005	mg/l	0.0005
NW112	**Dissolved Magnesium**			
	Magnesium (Mg)	25.8	mg/l	0.01
NW113	**Dissolved Manganese**			
	Manganese (Mn)	0.0096	mg/l	0.0005
NW114	**Dissolved Mercury**			
	Mercury (Hg)	<0.0005	mg/l	0.0005
NW116	**Dissolved Nickel**			
	Nickel (Ni)	0.0006	mg/l	0.0005
NW117	**Dissolved Potassium**			
	Potassium (K)	8.20	mg/l	0.01
NW193	**Dissolved Reactive Phosphorus**			
	Phosphorus (soluble reactive)	0.161	mg/l	0.005
NW120	**Dissolved Sodium**			
	Sodium (Na)	40.6	mg/l	0.01
NW125	**Dissolved Zinc**			
	Zinc (Zn)	0.005	mg/l	0.002
ZM2GA	**Enumeration of Escherichia coli By Membrane Filtration**			
	Escherichia coli	<100	cfu/100 ml	100
NW010	**Nitrate-N**			
	Nitrate-N	2.90	(± 0.29) mg/l	0.01
NW195	**pH (Tested beyond 15 minute APHA holding time)**			
	pH	6.7	(± 0.2)	0.1
NW011	**Sulphate**			
	Sulphate	2.97	(± 0.30) mg/l	0.02
NW206	**Suspended Solids**			
	Suspended Solids	<5	mg/l	3
NW228	**SVOC (GC-MSMS)**			
	Acenaphthene	<0.0001	mg/l	0.0001
	Acenaphthylene	<0.001	mg/l	0.001
	Adipatic acid, bis-2-ethylhexyl ester (DEHA)	<0.0001	mg/l	0.0001
	Alachlor	<0.0001	mg/l	0.0001
	Aldicarb	<0.1	mg/l	0.1
	Aldrin	<0.001	mg/l	0.001
	Anthracene	<0.001	mg/l	0.001
	Atrazine	<0.0001	mg/l	0.0001

		RESULTS (UNCERTAINTY)		LOQ
NW228	**SVOC (GC-MSMS)**			
	Benz(a)anthracene	<0.0001	mg/l	0.0001
	Benzo(a)pyrene	<0.0001	mg/l	0.0001
	Benzo(g,h,i)perylene	<0.001	mg/l	0.001
	Bromacil	<0.005	mg/l	0.005
	Carbofuran	<0.001	mg/l	0.001
	Chlordane	<0.0001	mg/l	0.0001
	Chlordane, gamma	<0.001	mg/l	0.001
	Chlorpyrifos (-ethyl)	<0.0001	mg/l	0.0001
	Chrysene	<0.0001	mg/l	0.0001
	Cyanazine	<0.005	mg/l	0.005
	d-BHC	<0.0001	mg/l	0.0001
	DDD, p,p'-	<0.0001	mg/l	0.0001
	DDE, p,p-	<0.0001	mg/l	0.0001
	DDT, p,p'-	<0.001	mg/l	0.001
	Diazinon	<0.0001	mg/l	0.0001
	Dibenz(a,h)anthracene	<0.0001	mg/l	0.0001
	Dieldrin	<0.0001	mg/l	0.0001
	Dimethoate	<0.001	mg/l	0.001
	Diuron	<0.001	mg/l	0.001
	Endosulfan, alpha-	<0.001	mg/l	0.001
	Endosulfan, beta-	<0.005	mg/l	0.005
	Endosulfan-sulfate	<0.0001	mg/l	0.0001
	Endrin	<0.0001	mg/l	0.0001
	Endrin ketone	<0.0001	mg/l	0.0001
	Endrin-aldehyde	<0.001	mg/l	0.01
	Fluoranthene	<0.0001	mg/l	0.0001
	Fluorene	<0.0001	mg/l	0.0001
	HCH, alpha-	<0.0001	mg/l	0.0001
	HCH, beta-	<0.0001	mg/l	0.0001
	Heptachlor	<0.0001	mg/l	0.0001
	Heptachlor epoxide, cis-	<0.0001	mg/l	0.0001
	Hexachlorobenzene (HCB)	<0.0001	mg/l	0.0001
	Hexazinone	<0.001	mg/l	0.001
	Indeno(1,2,3-cd)pyrene	<0.0001	mg/l	0.0001
	Lindane (gamma-HCH)	<0.0001	mg/l	0.0001
	Metalaxyl and metalaxyl-M (metalaxyl including other mixtures of constituent isomers including metalaxyl-M (sum of isomers))	<0.001	mg/l	0.001
	Methoxychlor	<0.0001	mg/l	0.0001
	Metolachlor	<0.0001	mg/l	0.0001
	Metribuzin	<0.0001	mg/l	0.0001
	Molinate	<0.0001	mg/l	0.0001
	Naphthalene	<0.0001	mg/l	0.0001
	Oxadiazon	<0.0001	mg/l	0.0001
	PCB 101	<0.0001	mg/l	0.0001
	PCB 138	<0.001	mg/l	0.001
	PCB 183	<0.0001	mg/l	0.0001

		RESULTS	(UNCERTAINTY)	LOQ
NW228	**SVOC (GC-MSMS)**			
	PCB 28	<0.0001	mg/l	0.0001
	PCB 7	<0.0001	mg/l	0.0001
	Pendimethalin	<0.002	mg/l	0.002
	Permethrin (sum of isomers)	<0.0001	mg/l	0.0001
	Phenanthrene	<0.0001	mg/l	0.0001
	Pirimiphos-methyl	<0.0001	mg/l	0.0001
	Procymidone	<0.0001	mg/l	0.0001
	Propanil	<0.001	mg/l	0.001
	Propazine	<0.0001	mg/l	0.0001
	Pyrene	<0.0001	mg/l	0.0001
	Pyriproxyfen	<0.0001	mg/l	0.0001
	Simazine	<0.0001	mg/l	0.0001
	Terbuthylazine	<0.0001	mg/l	0.0001
	Total Benzo(b) and Benzo(k) fluoranthene	<0.001	mg/l	0.001
	Trifluralin	<0.0001	mg/l	0.0001
NW003	**Total Alkalinity**			
	Alkalinity total	134	(± 13) mg CaCO3/l	1
NW030	**Total Hardness**			
	Hardness	166	mg CaCO3/l	1
NW210	**Total Non-Purgeable Organic Carbon**			
	Total Organic Carbon	4.4	(± 0.4) mg/l	0.1
NW229	**VOC (GC-MS)**			
	1,1,1,2-Tetrachloroethane	<0.0005	mg/l	0.0005
	1,1,1-Trichloroethane	<0.0005	mg/l	0.0005
	1,1,2,2-tetrachloroethane	<0.0005	mg/l	0.0005
	1,1,2-Trichloroethane	<0.0005	mg/l	0.0005
	1,1-Dichloroethane	<0.0005	mg/l	0.0005
	1,1-Dichloroethene	<0.0005	mg/l	0.0005
	1,1-Dichloropropene	<0.0005	mg/l	0.0005
	1,2,3-Trichlorobenzene	<0.0005	mg/l	0.0005
	1,2,3-Trichloropropane	<0.0005	mg/l	0.0005
	1,2,4 trimethylbenzen	<0.0005	mg/l	0.0005
	1,2,4-Trichlorobenzene	<0.0005	mg/l	0.0005
	1,2-Dibromo-3-chloropropane	<0.001	mg/l	0.002
	1,2-Dibromoethane	<0.0002	mg/l	0.0002
	1,2-Dichlorobenzene (2)	<0.0005	mg/l	0.0005
	1,2-Dichloroethane	<0.0005	mg/l	0.0005
	1,2-Dichloropropane	<0.0005	mg/l	0.0005
	1,3,5-Trichlorobenzene	<0.0005	mg/l	0.0005
	1,3,5-Trimethylbenzene	<0.0005	mg/l	0.0005
	1,3-Dichlorobenzene	<0.0005	mg/l	0.0005
	1,3-Dichloropropane	<0.0005	mg/l	0.0005
	1,4-dichlorobenzene	<0.0005	mg/l	0.0005
	2,2-Dichloropropane	<0.0005	mg/l	0.0005
	2-Chlorotoluene	<0.0005	mg/l	0.0005
	3-chloropropene	<0.0005	mg/l	0.0005
	4-Chlorotoluene	<0.0005	mg/l	0.0005

		RESULTS (UNCERTAINTY)		LOQ
NW229	**VOC (GC-MS)**			
	4-methyl-2-pentanone	<0.0005	mg/l	0.0005
	Benzene	<0.0005	mg/l	0.0005
	Bromobenzene	<0.0005	mg/l	0.0005
	Bromochloromethane	<0.0012	mg/l	0.0012
	Bromodichloromethane	<0.0005	mg/l	0.0005
	Bromoform	<0.0005	mg/l	0.0005
	Bromomethane (zone 2)	<0.001	mg/l	0.001
	Carbon tetrachloride	<0.0005	mg/l	0.0005
	Carbondisulphide (CS2)	<0.0005	mg/l	0.0005
	Chlorobenzene	<0.0005	mg/l	0.0005
	Chloroethane	<0.001	mg/l	0.001
	Chloroform	<0.0005	mg/l	0.0005
	Chloromethane	<0.006	mg/l	0.006
	cis-1,2-Dichloroethene	<0.0005	mg/l	0.0005
	cis-1,3-Dichloropropene	<0.0005	mg/l	0.0005
	Dibromochloromethane	<0.0005	mg/l	0.0005
	Dibromomethane	<0.0005	mg/l	0.0005
	Dichlorodifluoromethane	NotRecovered	mg/l	0.001
	Dichloromethane	<0.005	mg/l	0.005
	Hexachlorobutadiene	<0.0002	mg/l	0.0002
	Isopropylbenzene (Cumene)	<0.0005	mg/l	0.0005
	m,p-Xylene, Ethylbenzene	<0.0015	mg/l	0.0015
	Naphthalene	<0.0005	mg/l	0.0005
	n-Butylbenzene	<0.0005	mg/l	0.0005
	n-Propylbenzene	<0.0005	mg/l	0.0005
	p-Isopropyltoluene	<0.0005	mg/l	0.0005
	sec-Butylbenzene	<0.0005	mg/l	0.0005
	Styrene	<0.0005	mg/l	0.0005
	tert-Butylbenzene	<0.0005	mg/l	0.0005
	Tetrachloroethene	<0.0005	mg/l	0.0005
	Toluene	<0.0005	mg/l	0.0005
	trans-1,2-Dichloroethene	<0.0005	mg/l	0.0005
	trans-1,3-Dichloropropene	<0.0005	mg/l	0.0005
	Trichloroethene	<0.0005	mg/l	0.0005
	Trichlorofluoromethane	<0.0005	mg/l	0.0005
	Vinyl chloride	<0.0003	mg/l	0.0003
	Xylene (ortho-)	<0.0005	mg/l	0.0005
①**NWWG6**	**Volatile Fatty Acids (VFA)**			
	Acetic acid	<5	mg/l	5
	Butyric acid	<5	mg/l	5
	Heptanoic acid	<5	mg/l	5
	Hexanoic acid	<5	mg/l	5
	Isobutyric acid	<5	mg/l	5
	Isocaproic acid	<5	mg/l	5
	Isovaleric acid	<5	mg/l	5
	Propionic acid	<5	mg/l	5
	Valeric acid	<5	mg/l	5
	Volatile fatty acids as acetic acid	<5	mg/l	5

RESULTS (UNCERTAINTY)	LOQ

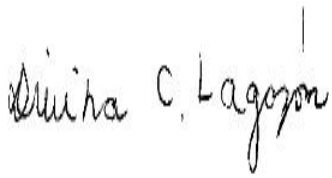
LIST OF METHODS

NW003	**Total Alkalinity:** APHA Online Edition 2320 B
NW00U	**Chlorophenols:** Internal Method, LC-MS/MS
NW011	**Sulphate:** APHA Online Edition 4110 B
NW023	**Conductivity:** APHA 24th Edition 2510 B
NW098	**Dissolved Aluminium:** APHA Online Edition 3125 B mod.
NW104	**Dissolved Cadmium:** APHA Online Edition 3125 B mod.
NW106	**Dissolved Chromium:** APHA Online Edition 3125 B mod.
NW109	**Dissolved Iron:** APHA Online Edition 3125 B mod.
NW112	**Dissolved Magnesium:** APHA Online Edition 3125 B mod.
NW114	**Dissolved Mercury:** APHA Online Edition 3125 B mod.
NW117	**Dissolved Potassium:** APHA Online Edition 3125 B mod.
NW125	**Dissolved Zinc:** APHA Online Edition 3125 B mod.
NW193	**Dissolved Reactive Phosphorus:** APHA Online Edition 4500-P G
NW206	**Suspended Solids:** APHA Online Edition 2540 D
NW228	**SVOC (GC-MSMS):** Internal Method, GC-MS/MS
NW341	**BOD5 - Soluble Carbonaceous:** APHA Online Edition 5210 B
NWWG6	**Volatile Fatty Acids (VFA):** APHA 24th Edition 5560 D mod.
NW007	**Chloride:** APHA Online Edition 4110 B
NW010	**Nitrate-N:** APHA Online Edition 4110 B
NW020	**Chemical Oxygen Demand:** APHA Online Edition 5220 D
NW030	**Total Hardness:** APHA Online Edition 2340 B
NW103	**Dissolved Boron:** APHA Online Edition 3125 B mod.
NW105	**Dissolved Calcium:** APHA Online Edition 3125 B mod.
NW108	**Dissolved Copper:** APHA Online Edition 3125 B mod.
NW110	**Dissolved Lead:** APHA Online Edition 3125 B mod.
NW113	**Dissolved Manganese:** APHA Online Edition 3125 B mod.
NW116	**Dissolved Nickel:** APHA Online Edition 3125 B mod.
NW120	**Dissolved Sodium:** APHA Online Edition 3125 B mod.
NW179	**Ammonia Nitrogen:** APHA Online Edition 4500-NH3 H
NW195	**pH (Tested beyond 15 minute APHA holding time):** APHA 24th Edition 4500-H B
NW210	**Total Non-Purgeable Organic Carbon:** APHA Online Edition 5310 B
NW229	**VOC (GC-MS):** Internal Method, HS-GC-MS
NW583	**Dissolved Arsenic:** APHA Online Edition 3125 B mod.
ZM2GA	**Escherichia coli E (Water) [NZ] <100 >6 000 000 /100 ml (0-3) m-FC Agar-F:** SMEWW 9222I; APHA 24th Edition

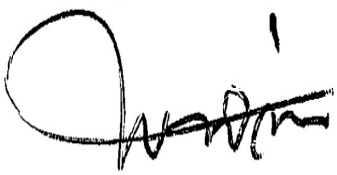
Signature

Marylou Cabral Laboratory Manager
Eurofins ELS Limited

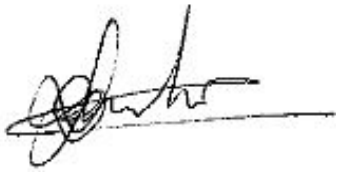
Jennifer Mont Supervisor Eurofins ELS Limited



Divina Cunanan Lagazon Supervisor Eurofins ELS Limited



Maria Norris Laboratory Manager, Microbiology



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Gabriela Carvalhaes Manager Food and Water Testing Chemistry

Cody Forbes Laboratory Analyst
Laboratory Analyst

EXPLANATORY NOTE

① Test is not accredited
② Test is subcontracted within Eurofins group and is accredited
③ Test is subcontracted within Eurofins group and is not accredited
④ Test is subcontracted outside Eurofins group and is accredited
⑤ Test is subcontracted outside Eurofins group and is not accredited
⑥ Test result is provided by the customer and is not accredited
⑦ Tested at the sampling point by Eurofins and is not accredited
⑧ Tested at the sampling point by Eurofins and is accredited
⑨ Test is RLP accredited
⑩ Test is subcontracted within Eurofins group and is RLP accredited

N/A means Not Applicable
Not Detected means not detected at or above the Limit of Quantification (LOQ)
LOQ means Limit of Quantification and the unit of LOQ is the same as the result unit
✗ (Unsatisfactory) means does not meet the specification
✓ (Satisfactory) means meets the specification

END OF REPORT

		RESULTS (UNCERTAINTY)		LOQ
NW105	**Dissolved Calcium**			
	Calcium (Ca)	20.5	mg/l	0.1
NW106	**Dissolved Chromium**			
	Chromium (Cr)	<0.001	mg/l	0.001
NW108	**Dissolved Copper**			
	Copper (Cu)	<0.0005	mg/l	0.0005
NW109	**Dissolved Iron**			
	Iron (Fe)	0.07	mg/l	0.01
NW110	**Dissolved Lead**			
	Lead (Pb)	<0.0005	mg/l	0.0005
NW112	**Dissolved Magnesium**			
	Magnesium (Mg)	6.13	mg/l	0.01
NW113	**Dissolved Manganese**			
	Manganese (Mn)	0.251	mg/l	0.0005
NW114	**Dissolved Mercury**			
	Mercury (Hg)	<0.0005	mg/l	0.0005
NW116	**Dissolved Nickel**			
	Nickel (Ni)	<0.0005	mg/l	0.0005
NW117	**Dissolved Potassium**			
	Potassium (K)	5.71	mg/l	0.01
NW193	**Dissolved Reactive Phosphorus**			
	Phosphorus (soluble reactive)	0.233	mg/l	0.005
NW120	**Dissolved Sodium**			
	Sodium (Na)	27.0	mg/l	0.01
NW125	**Dissolved Zinc**			
	Zinc (Zn)	0.002	mg/l	0.002
ZM2GA	**Enumeration of Escherichia coli By Membrane Filtration**			
	Escherichia coli	<100	cfu/100 ml	100
NW010	**Nitrate-N**			
	Nitrate-N	<0.01	(± 0.00) mg/l	0.01
NW195	**pH (Tested beyond 15 minute APHA holding time)**			
	pH	7.7	(± 0.2)	0.1
NW011	**Sulphate**			
	Sulphate	13.4	(± 1.34) mg/l	0.02
NW206	**Suspended Solids**			
	Suspended Solids	16	mg/l	3
NW228	**SVOC (GC-MSMS)**			
	Acenaphthene	<0.0001	mg/l	0.0001
	Acenaphthylene	<0.001	mg/l	0.001
	Adipatic acid, bis-2-ethylhexyl ester (DEHA)	<0.0001	mg/l	0.0001
	Alachlor	<0.0001	mg/l	0.0001
	Aldicarb	<0.1	mg/l	0.1
	Aldrin	<0.001	mg/l	0.001
	Anthracene	<0.001	mg/l	0.001
	Atrazine	<0.0001	mg/l	0.0001
	Benz(a)anthracene	<0.0001	mg/l	0.0001
	Benzo(a)pyrene	<0.0001	mg/l	0.0001

		RESULTS (UNCERTAINTY)		LOQ
NW228	**SVOC (GC-MSMS)**			
	Benzo(g,h,i)perylene	<0.001	mg/l	0.001
	Bromacil	<0.005	mg/l	0.005
	Carbofuran	<0.001	mg/l	0.001
	Chlordane	<0.0001	mg/l	0.0001
	Chlordane, gamma	<0.001	mg/l	0.001
	Chlorpyrifos (-ethyl)	<0.0001	mg/l	0.0001
	Chrysene	<0.0001	mg/l	0.0001
	Cyanazine	<0.005	mg/l	0.005
	d-BHC	<0.0001	mg/l	0.0001
	DDD, p,p'-	<0.0001	mg/l	0.0001
	DDE, p,p-	<0.0001	mg/l	0.0001
	DDT, p,p'-	<0.001	mg/l	0.001
	Diazinon	<0.0001	mg/l	0.0001
	Dibenz(a,h)anthracene	<0.0001	mg/l	0.0001
	Dieldrin	<0.0001	mg/l	0.0001
	Dimethoate	<0.001	mg/l	0.001
	Diuron	<0.001	mg/l	0.001
	Endosulfan, alpha-	<0.001	mg/l	0.001
	Endosulfan, beta-	<0.005	mg/l	0.005
	Endosulfan-sulfate	<0.0001	mg/l	0.0001
	Endrin	<0.0001	mg/l	0.0001
	Endrin ketone	<0.0001	mg/l	0.0001
	Endrin-aldehyde	<0.001	mg/l	0.01
	Fluoranthene	<0.0001	mg/l	0.0001
	Fluorene	<0.0001	mg/l	0.0001
	HCH, alpha-	<0.0001	mg/l	0.0001
	HCH, beta-	<0.0001	mg/l	0.0001
	Heptachlor	<0.0001	mg/l	0.0001
	Heptachlor epoxide, cis-	<0.0001	mg/l	0.0001
	Hexachlorobenzene (HCB)	<0.0001	mg/l	0.0001
	Hexazinone	<0.001	mg/l	0.001
	Indeno(1,2,3-cd)pyrene	<0.0001	mg/l	0.0001
	Lindane (gamma-HCH)	<0.0001	mg/l	0.0001
	Metalaxyl and metalaxyl-M (metalaxyl including other mixtures of constituent isomers including metalaxyl-M (sum of isomers))	<0.001	mg/l	0.001
	Methoxychlor	<0.0001	mg/l	0.0001
	Metolachlor	<0.0001	mg/l	0.0001
	Metribuzin	<0.0001	mg/l	0.0001
	Molinate	<0.0001	mg/l	0.0001
	Naphthalene	<0.0001	mg/l	0.0001
	Oxadiazon	<0.0001	mg/l	0.0001
	PCB 101	<0.0001	mg/l	0.0001
	PCB 138	<0.001	mg/l	0.001
	PCB 183	<0.0001	mg/l	0.0001
	PCB 28	<0.0001	mg/l	0.0001
	PCB 7	<0.0001	mg/l	0.0001

		RESULTS (UNCERTAINTY)		LOQ
NW228	**SVOC (GC-MSMS)**			
	Pendimethalin	<0.002	mg/l	0.002
	Permethrin (sum of isomers)	<0.0001	mg/l	0.0001
	Phenanthrene	<0.0001	mg/l	0.0001
	Pirimiphos-methyl	<0.0001	mg/l	0.0001
	Procymidone	<0.0001	mg/l	0.0001
	Propanil	<0.001	mg/l	0.001
	Propazine	<0.0001	mg/l	0.0001
	Pyrene	<0.0001	mg/l	0.0001
	Pyriproxyfen	<0.0001	mg/l	0.0001
	Simazine	<0.0001	mg/l	0.0001
	Terbuthylazine	<0.0001	mg/l	0.0001
	Total Benzo(b) and Benzo(k) fluoranthene	<0.001	mg/l	0.001
	Trifluralin	<0.0001	mg/l	0.0001
NW003	**Total Alkalinity**			
	Alkalinity total	92	(± 9) mg CaCO3/l	1
NW030	**Total Hardness**			
	Hardness	76	mg CaCO3/l	1
NW210	**Total Non-Purgeable Organic Carbon**			
	Total Organic Carbon	2.1	(± 0.2) mg/l	0.1
NW229	**VOC (GC-MS)**			
	1,1,1,2-Tetrachloroethane	<0.0005	mg/l	0.0005
	1,1,1-Trichloroethane	<0.0005	mg/l	0.0005
	1,1,2,2-tetrachloroethane	<0.0005	mg/l	0.0005
	1,1,2-Trichloroethane	<0.0005	mg/l	0.0005
	1,1-Dichloroethane	<0.0005	mg/l	0.0005
	1,1-Dichloroethene	<0.0005	mg/l	0.0005
	1,1-Dichloropropene	<0.0005	mg/l	0.0005
	1,2,3-Trichlorobenzene	<0.0005	mg/l	0.0005
	1,2,3-Trichloropropane	<0.0005	mg/l	0.0005
	1,2,4 trimethylbenzen	<0.0005	mg/l	0.0005
	1,2,4-Trichlorobenzene	<0.0005	mg/l	0.0005
	1,2-Dibromo-3-chloropropane	<0.001	mg/l	0.002
	1,2-Dibromoethane	<0.0002	mg/l	0.0002
	1,2-Dichlorobenzene (2)	<0.0005	mg/l	0.0005
	1,2-Dichloroethane	<0.0005	mg/l	0.0005
	1,2-Dichloropropane	<0.0005	mg/l	0.0005
	1,3,5-Trichlorobenzene	<0.0005	mg/l	0.0005
	1,3,5-Trimethylbenzene	<0.0005	mg/l	0.0005
	1,3-Dichlorobenzene	<0.0005	mg/l	0.0005
	1,3-Dichloropropane	<0.0005	mg/l	0.0005
	1,4-dichlorobenzene	<0.0005	mg/l	0.0005
	2,2-Dichloropropane	<0.0005	mg/l	0.0005
	2-Chlorotoluene	<0.0005	mg/l	0.0005
	3-chloropropene	<0.0020	mg/l	0.0005
	4-Chlorotoluene	<0.0005	mg/l	0.0005
	4-methyl-2-pentanone	<0.0005	mg/l	0.0005
	Benzene	<0.0005	mg/l	0.0005

		RESULTS (UNCERTAINTY)		LOQ
NW229	**VOC (GC-MS)**			
	Bromobenzene	<0.0005	mg/l	0.0005
	Bromochloromethane	<0.0012	mg/l	0.0012
	Bromodichloromethane	<0.0005	mg/l	0.0005
	Bromoform	<0.0005	mg/l	0.0005
	Bromomethane (zone 2)	<0.001	mg/l	0.001
	Carbon tetrachloride	<0.0005	mg/l	0.0005
	Carbondisulphide (CS2)	<0.0005	mg/l	0.0005
	Chlorobenzene	<0.0005	mg/l	0.0005
	Chloroethane	<0.001	mg/l	0.001
	Chloroform	<0.0005	mg/l	0.0005
	Chloromethane	<0.006	mg/l	0.006
	cis-1,2-Dichloroethene	<0.0005	mg/l	0.0005
	cis-1,3-Dichloropropene	<0.0005	mg/l	0.0005
	Dibromochloromethane	<0.0005	mg/l	0.0005
	Dibromomethane	<0.0005	mg/l	0.0005
	Dichlorodifluoromethane	NotRecovered	mg/l	0.001
	Dichloromethane	<0.005	mg/l	0.005
	Hexachlorobutadiene	<0.0002	mg/l	0.0002
	Isopropylbenzene (Cumene)	<0.0005	mg/l	0.0005
	m,p-Xylene, Ethylbenzene	<0.0015	mg/l	0.0015
	Naphthalene	<0.0005	mg/l	0.0005
	n-Butylbenzene	<0.0005	mg/l	0.0005
	n-Propylbenzene	<0.0005	mg/l	0.0005
	p-Isopropyltoluene	<0.0005	mg/l	0.0005
	sec-Butylbenzene	<0.0005	mg/l	0.0005
	Styrene	<0.0005	mg/l	0.0005
	tert-Butylbenzene	<0.0005	mg/l	0.0005
	Tetrachloroethene	<0.0005	mg/l	0.0005
	Toluene	<0.0005	mg/l	0.0005
	trans-1,2-Dichloroethene	<0.0005	mg/l	0.0005
	trans-1,3-Dichloropropene	<0.0005	mg/l	0.0005
	Trichloroethene	<0.0005	mg/l	0.0005
	Trichlorofluoromethane	<0.0005	mg/l	0.0005
	Vinyl chloride	<0.0003	mg/l	0.0003
	Xylene (ortho-)	<0.0005	mg/l	0.0005
① **NWWG6**	**Volatile Fatty Acids (VFA)**			
	Acetic acid	<5	mg/l	5
	Butyric acid	<5	mg/l	5
	Heptanoic acid	<5	mg/l	5
	Hexanoic acid	<5	mg/l	5
	Isobutyric acid	<5	mg/l	5
	Isocaproic acid	<5	mg/l	5
	Isovaleric acid	<5	mg/l	5
	Propionic acid	<5	mg/l	5
	Valeric acid	<5	mg/l	5
	Volatile fatty acids as acetic acid	<5	mg/l	5

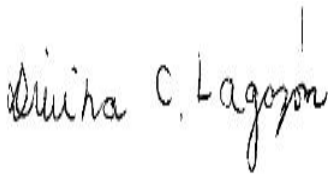
LIST OF METHODS

NW003	**Total Alkalinity:** APHA Online Edition 2320 B	NW007	**Chloride:** APHA Online Edition 4110 B
NW00U	**Chlorophenols:** Internal Method, LC-MS/MS	NW010	**Nitrate-N:** APHA Online Edition 4110 B
NW011	**Sulphate:** APHA Online Edition 4110 B	NW020	**Chemical Oxygen Demand:** APHA Online Edition 5220 D
NW023	**Conductivity:** APHA 24th Edition 2510 B	NW030	**Total Hardness:** APHA Online Edition 2340 B
NW098	**Dissolved Aluminium:** APHA Online Edition 3125 B mod.	NW103	**Dissolved Boron:** APHA Online Edition 3125 B mod.
NW104	**Dissolved Cadmium:** APHA Online Edition 3125 B mod.	NW105	**Dissolved Calcium:** APHA Online Edition 3125 B mod.
NW106	**Dissolved Chromium:** APHA Online Edition 3125 B mod.	NW108	**Dissolved Copper:** APHA Online Edition 3125 B mod.
NW109	**Dissolved Iron:** APHA Online Edition 3125 B mod.	NW110	**Dissolved Lead:** APHA Online Edition 3125 B mod.
NW112	**Dissolved Magnesium:** APHA Online Edition 3125 B mod.	NW113	**Dissolved Manganese:** APHA Online Edition 3125 B mod.
NW114	**Dissolved Mercury:** APHA Online Edition 3125 B mod.	NW116	**Dissolved Nickel:** APHA Online Edition 3125 B mod.
NW117	**Dissolved Potassium:** APHA Online Edition 3125 B mod.	NW120	**Dissolved Sodium:** APHA Online Edition 3125 B mod.
NW125	**Dissolved Zinc:** APHA Online Edition 3125 B mod.	NW179	**Ammonia Nitrogen:** APHA Online Edition 4500-NH3 H
NW193	**Dissolved Reactive Phosphorus:** APHA Online Edition 4500-P G	NW195	**pH (Tested beyond 15 minute APHA holding time):** APHA 24th Edition 4500-H B
NW206	**Suspended Solids:** APHA Online Edition 2540 D	NW210	**Total Non-Purgeable Organic Carbon:** APHA Online Edition 5310 B
NW228	**SVOC (GC-MSMS):** Internal Method, GC-MS/MS	NW229	**VOC (GC-MS):** Internal Method, HS-GC-MS
NW341	**BOD5 - Soluble Carbonaceous:** APHA Online Edition 5210 B	NWWG6	**Volatile Fatty Acids (VFA):** APHA 24th Edition 5560 D mod.
ZM2GA	**Escherichia coli E (Water) [NZ] <100 >6 000 000 /100 ml (0-3) m-FC Agar-F:** SMEWW 9222I; APHA 24th Edition		

Signature

Marylou Cabral Laboratory Manager
Eurofins ELS Limited

Jennifer Mont Supervisor Eurofins ELS Limited



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EXPLANATORY NOTE

① Test is not accredited
② Test is subcontracted within Eurofins group and is accredited
③ Test is subcontracted within Eurofins group and is not accredited
④ Test is subcontracted outside Eurofins group and is accredited
⑤ Test is subcontracted outside Eurofins group and is not accredited
⑥ Test result is provided by the customer and is not accredited
⑦ Tested at the sampling point by Eurofins and is not accredited
⑧ Tested at the sampling point by Eurofins and is accredited
⑨ Test is RLP accredited
⑩ Test is subcontracted within Eurofins group and is RLP accredited

N/A means Not Applicable
Not Detected means not detected at or above the Limit of Quantification (LOQ)
LOQ means Limit of Quantification and the unit of LOQ is the same as the result unit
✗ (Unsatisfactory) means does not meet the specification
✓ (Satisfactory) means meets the specification

The Customer acknowledges and accepts that: (a) where Eurofins is not responsible for sampling, the test result(s) in this report apply only to the sample as received. Customer is solely responsible for the sampling process and warrants that the sample provided to Eurofins is representative of the lot / batch from which the samples were drawn; and (b) Eurofins expresses no opinion and accepts no liability in respect of the Customer's production process or homogeneity of the product.
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The Customer acknowledges that the Services are provided using the current state of technology and methods developed and generally applied by Eurofins and involve analysis, interpretations, consulting work and conclusions. Eurofins shall use commercially reasonable degree of care in providing the Services.
This report is produced and issued on the basis of information, documents and/or samples provided by, or on behalf of, the Customer and solely for the benefit of the Customer who is responsible for acting as it sees fit on the basis of this report. Neither Eurofins nor any of its officers, employees, agents or subcontractors shall be liable to the Customer nor any third party for any actions taken or not taken on the basis of this report nor for any incorrect results arising from unclear, erroneous, incomplete, misleading or false information provided to Eurofins.
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Eurofins General Terms and Conditions apply.

END OF REPORT

Food & Water Testing

ANALYTICAL REPORT

REPORT CODE	AR-24-NW-023905-01	REPORT DATE	19/04/2024

Attention Downer NZ Ltd (EDI Levin)
Horowhenua Admin
P O Box 642
4741 Levin
NEW ZEALAND

Phone (06) 367 2705
Email horowhenuaadmin@downer.co.nz

Copy to: Water and Waste Team (waterandwasteteam@horowhenua.govt.nz), McMillan

Contact for your orders: Gabriela Carvalhaes
Contract: Landfill

Order code: EUNZWE-00177376
Purchase Order Number: Landfill

SAMPLE CODE	812-2024-00051383		
Sample Name	349876-0		
Product:	Ground water		
Sampling Point code:	WIL-F2	**Sampling Point name:**	Levin F2
Reception Date & Time:	08/04/2024 16:45		
Analysis Started on:	08/04/2024	**Analysis Ending Date:**	19/04/2024
Product Type	Ground water	**Sampled Date & Time**	08/04/2024 10:35
Sampler(s)	Client nominated external sampler	**Sampled by Eurofins**	No

		RESULTS	(UNCERTAINTY)	LOQ
NW179	**Ammonia Nitrogen**			
	Ammoniacal nitrogen (N)	<0.01	(± 0.00) mg/l	0.01
NW341	**BOD5 - Soluble Carbonaceous**			
	BOD5	<1	mg/l	1
NW020	**Chemical Oxygen Demand**			
	Chemical oxygen demand (COD)	<15	(± 5) mg/l	15
NW007	**Chloride**			
	Chloride (Cl)	23.3	(± 2.33) mg/l	0.02
NW00U	**Chlorophenols**			
	2,3,4,6-Tetrachlorophenol	<0.01	mg/l	0.01
	2,4-Dichlorophenol	<0.01	mg/l	0.01
	2,6-Dichlorophenol	<0.2	mg/l	0.2
	2-Chlorophenol (o-chlorophenol)	<0.01	mg/l	0.01
	3,4,5-Trichlorophenol	<0.01	mg/l	0.01
	4-Chloro-3-cresol	<0.01	mg/l	0.01
	Pentachlorophenol	<0.005	mg/l	0.005
	Phenol	<0.01	mg/l	0.01
	Total of 2,4,5 & 2,4,6 -Trichlorophenol	<0.02	mg/l	0.02
NW023	**Conductivity**			
	Conductivity	22.2	(± 0.4) mS/m	0.1
NW098	**Dissolved Aluminium**			
	Aluminium	0.004	mg/l	0.002
NW583	**Dissolved Arsenic**			
	Arsenic (As)	0.002	mg/l	0.001
NW103	**Dissolved Boron**			
	Boron (B)	0.05	mg/l	0.03

		RESULTS (UNCERTAINTY)		LOQ
NW104	**Dissolved Cadmium**			
	Cadmium (Cd)	<0.0002	mg/l	0.0002
NW105	**Dissolved Calcium**			
	Calcium (Ca)	6.5	mg/l	0.1
NW106	**Dissolved Chromium**			
	Chromium (Cr)	0.003	mg/l	0.001
NW108	**Dissolved Copper**			
	Copper (Cu)	0.0071	mg/l	0.0005
NW109	**Dissolved Iron**			
	Iron (Fe)	0.03	mg/l	0.01
NW110	**Dissolved Lead**			
	Lead (Pb)	<0.0005	mg/l	0.0005
NW112	**Dissolved Magnesium**			
	Magnesium (Mg)	5.94	mg/l	0.01
NW113	**Dissolved Manganese**			
	Manganese (Mn)	0.0120	mg/l	0.0005
NW114	**Dissolved Mercury**			
	Mercury (Hg)	<0.0005	mg/l	0.0005
NW116	**Dissolved Nickel**			
	Nickel (Ni)	0.0006	mg/l	0.0005
NW117	**Dissolved Potassium**			
	Potassium (K)	5.12	mg/l	0.01
NW193	**Dissolved Reactive Phosphorus**			
	Phosphorus (soluble reactive)	0.144	mg/l	0.005
NW120	**Dissolved Sodium**			
	Sodium (Na)	25.0	mg/l	0.01
NW125	**Dissolved Zinc**			
	Zinc (Zn)	0.002	mg/l	0.002
ZM2GA	**Enumeration of Escherichia coli By Membrane Filtration**			
	Escherichia coli	<100	cfu/100 ml	100
NW010	**Nitrate-N**			
	Nitrate-N	0.38	(± 0.04) mg/l	0.01
NW195	**pH (Tested beyond 15 minute APHA holding time)**			
	pH	7.0	(± 0.2)	0.1
NW011	**Sulphate**			
	Sulphate	11.3	(± 1.14) mg/l	0.02
NW206	**Suspended Solids**			
	Suspended Solids	7	mg/l	3
NW228	**SVOC (GC-MSMS)**			
	Acenaphthene	<0.0001	mg/l	0.0001
	Acenaphthylene	<0.001	mg/l	0.001
	Adipatic acid, bis-2-ethylhexyl ester (DEHA)	<0.0001	mg/l	0.0001
	Alachlor	<0.0001	mg/l	0.0001
	Aldicarb	<0.1	mg/l	0.1
	Aldrin	<0.001	mg/l	0.001
	Anthracene	<0.001	mg/l	0.001
	Atrazine	<0.0001	mg/l	0.0001

		RESULTS (UNCERTAINTY)		LOQ
NW228	**SVOC (GC-MSMS)**			
	Benz(a)anthracene	<0.0001	mg/l	0.0001
	Benzo(a)pyrene	<0.0001	mg/l	0.0001
	Benzo(g,h,i)perylene	<0.001	mg/l	0.001
	Bromacil	<0.005	mg/l	0.005
	Carbofuran	<0.001	mg/l	0.001
	Chlordane	<0.0001	mg/l	0.0001
	Chlordane, gamma	<0.001	mg/l	0.001
	Chlorpyrifos (-ethyl)	<0.0001	mg/l	0.0001
	Chrysene	<0.0001	mg/l	0.0001
	Cyanazine	<0.005	mg/l	0.005
	d-BHC	<0.0001	mg/l	0.0001
	DDD, p,p'-	<0.0001	mg/l	0.0001
	DDE, p,p-	<0.0001	mg/l	0.0001
	DDT, p,p'-	<0.001	mg/l	0.001
	Diazinon	<0.0001	mg/l	0.0001
	Dibenz(a,h)anthracene	<0.0001	mg/l	0.0001
	Dieldrin	<0.0001	mg/l	0.0001
	Dimethoate	<0.001	mg/l	0.001
	Diuron	<0.001	mg/l	0.001
	Endosulfan, alpha-	<0.001	mg/l	0.001
	Endosulfan, beta-	<0.005	mg/l	0.005
	Endosulfan-sulfate	<0.0001	mg/l	0.0001
	Endrin	<0.0001	mg/l	0.0001
	Endrin ketone	<0.0001	mg/l	0.0001
	Endrin-aldehyde	<0.001	mg/l	0.01
	Fluoranthene	<0.0001	mg/l	0.0001
	Fluorene	<0.0001	mg/l	0.0001
	HCH, alpha-	<0.0001	mg/l	0.0001
	HCH, beta-	<0.0001	mg/l	0.0001
	Heptachlor	<0.0001	mg/l	0.0001
	Heptachlor epoxide, cis-	<0.0001	mg/l	0.0001
	Hexachlorobenzene (HCB)	<0.0001	mg/l	0.0001
	Hexazinone	<0.001	mg/l	0.001
	Indeno(1,2,3-cd)pyrene	<0.0001	mg/l	0.0001
	Lindane (gamma-HCH)	<0.0001	mg/l	0.0001
	Metalaxyl and metalaxyl-M (metalaxyl including other mixtures of constituent isomers including metalaxyl-M (sum of isomers))	<0.001	mg/l	0.001
	Methoxychlor	<0.0001	mg/l	0.0001
	Metolachlor	<0.0001	mg/l	0.0001
	Metribuzin	<0.0001	mg/l	0.0001
	Molinate	<0.0001	mg/l	0.0001
	Naphthalene	<0.0001	mg/l	0.0001
	Oxadiazon	<0.0001	mg/l	0.0001
	PCB 101	<0.0001	mg/l	0.0001
	PCB 138	<0.001	mg/l	0.001
	PCB 183	<0.0001	mg/l	0.0001

		RESULTS (UNCERTAINTY)		LOQ
NW228	**SVOC (GC-MSMS)**			
	PCB 28	<0.0001	mg/l	0.0001
	PCB 7	<0.0001	mg/l	0.0001
	Pendimethalin	<0.002	mg/l	0.002
	Permethrin (sum of isomers)	<0.0001	mg/l	0.0001
	Phenanthrene	<0.0001	mg/l	0.0001
	Pirimiphos-methyl	<0.0001	mg/l	0.0001
	Procymidone	<0.0001	mg/l	0.0001
	Propanil	<0.001	mg/l	0.001
	Propazine	<0.0001	mg/l	0.0001
	Pyrene	<0.0001	mg/l	0.0001
	Pyriproxyfen	<0.0001	mg/l	0.0001
	Simazine	<0.0001	mg/l	0.0001
	Terbuthylazine	<0.0001	mg/l	0.0001
	Total Benzo(b) and Benzo(k) fluoranthene	<0.001	mg/l	0.001
	Trifluralin	<0.0001	mg/l	0.0001
NW003	**Total Alkalinity**			
	Alkalinity total	57	(± 6) mg CaCO3/l	1
NW030	**Total Hardness**			
	Hardness	41	mg CaCO3/l	1
NW210	**Total Non-Purgeable Organic Carbon**			
	Total Organic Carbon	1.5	(± 0.2) mg/l	0.1
NW229	**VOC (GC-MS)**			
	1,1,1,2-Tetrachloroethane	<0.0005	mg/l	0.0005
	1,1,1-Trichloroethane	<0.0005	mg/l	0.0005
	1,1,2,2-tetrachloroethane	<0.0005	mg/l	0.0005
	1,1,2-Trichloroethane	<0.0005	mg/l	0.0005
	1,1-Dichloroethane	<0.0005	mg/l	0.0005
	1,1-Dichloroethene	<0.0005	mg/l	0.0005
	1,1-Dichloropropene	<0.0005	mg/l	0.0005
	1,2,3-Trichlorobenzene	<0.0005	mg/l	0.0005
	1,2,3-Trichloropropane	<0.0005	mg/l	0.0005
	1,2,4 trimethylbenzen	<0.0005	mg/l	0.0005
	1,2,4-Trichlorobenzene	<0.0005	mg/l	0.0005
	1,2-Dibromo-3-chloropropane	<0.001	mg/l	0.002
	1,2-Dibromoethane	<0.0002	mg/l	0.0002
	1,2-Dichlorobenzene (2)	<0.0005	mg/l	0.0005
	1,2-Dichloroethane	<0.0005	mg/l	0.0005
	1,2-Dichloropropane	<0.0005	mg/l	0.0005
	1,3,5-Trichlorobenzene	<0.0005	mg/l	0.0005
	1,3,5-Trimethylbenzene	<0.0005	mg/l	0.0005
	1,3-Dichlorobenzene	<0.0005	mg/l	0.0005
	1,3-Dichloropropane	<0.0005	mg/l	0.0005
	1,4-dichlorobenzene	<0.0005	mg/l	0.0005
	2,2-Dichloropropane	<0.0005	mg/l	0.0005
	2-Chlorotoluene	<0.0005	mg/l	0.0005
	3-chloropropene	<0.0005	mg/l	0.0005
	4-Chlorotoluene	<0.0005	mg/l	0.0005

		RESULTS (UNCERTAINTY)		LOQ
NW229	**VOC (GC-MS)**			
	4-methyl-2-pentanone	<0.0005	mg/l	0.0005
	Benzene	<0.0005	mg/l	0.0005
	Bromobenzene	<0.0005	mg/l	0.0005
	Bromochloromethane	<0.0012	mg/l	0.0012
	Bromodichloromethane	<0.0005	mg/l	0.0005
	Bromoform	<0.0005	mg/l	0.0005
	Bromomethane (zone 2)	<0.001	mg/l	0.001
	Carbon tetrachloride	<0.0005	mg/l	0.0005
	Carbondisulphide (CS2)	<0.0005	mg/l	0.0005
	Chlorobenzene	<0.0005	mg/l	0.0005
	Chloroethane	<0.001	mg/l	0.001
	Chloroform	<0.0005	mg/l	0.0005
	Chloromethane	<0.006	mg/l	0.006
	cis-1,2-Dichloroethene	<0.0005	mg/l	0.0005
	cis-1,3-Dichloropropene	<0.0005	mg/l	0.0005
	Dibromochloromethane	<0.0005	mg/l	0.0005
	Dibromomethane	<0.0005	mg/l	0.0005
	Dichlorodifluoromethane	NotRecovered	mg/l	0.001
	Dichloromethane	<0.005	mg/l	0.005
	Hexachlorobutadiene	<0.0002	mg/l	0.0002
	Isopropylbenzene (Cumene)	<0.0005	mg/l	0.0005
	m,p-Xylene, Ethylbenzene	<0.0015	mg/l	0.0015
	Naphthalene	<0.0005	mg/l	0.0005
	n-Butylbenzene	<0.0005	mg/l	0.0005
	n-Propylbenzene	<0.0005	mg/l	0.0005
	p-Isopropyltoluene	<0.0005	mg/l	0.0005
	sec-Butylbenzene	<0.0005	mg/l	0.0005
	Styrene	<0.0005	mg/l	0.0005
	tert-Butylbenzene	<0.0005	mg/l	0.0005
	Tetrachloroethene	<0.0005	mg/l	0.0005
	Toluene	<0.0005	mg/l	0.0005
	trans-1,2-Dichloroethene	<0.0005	mg/l	0.0005
	trans-1,3-Dichloropropene	<0.0005	mg/l	0.0005
	Trichloroethene	<0.0005	mg/l	0.0005
	Trichlorofluoromethane	<0.0005	mg/l	0.0005
	Vinyl chloride	<0.0003	mg/l	0.0003
	Xylene (ortho-)	<0.0005	mg/l	0.0005
①**NWWG6**	**Volatile Fatty Acids (VFA)**			
	Acetic acid	<5	mg/l	5
	Butyric acid	<5	mg/l	5
	Heptanoic acid	<5	mg/l	5
	Hexanoic acid	<5	mg/l	5
	Isobutyric acid	<5	mg/l	5
	Isocaproic acid	<5	mg/l	5
	Isovaleric acid	<5	mg/l	5
	Propionic acid	<5	mg/l	5
	Valeric acid	<5	mg/l	5
	Volatile fatty acids as acetic acid	<5	mg/l	5

RESULTS (UNCERTAINTY)	LOQ

LIST OF METHODS

NW003	**Total Alkalinity:** APHA Online Edition 2320 B
NW00U	**Chlorophenols:** Internal Method, LC-MS/MS
NW011	**Sulphate:** APHA Online Edition 4110 B
NW023	**Conductivity:** APHA 24th Edition 2510 B
NW098	**Dissolved Aluminium:** APHA Online Edition 3125 B mod.
NW104	**Dissolved Cadmium:** APHA Online Edition 3125 B mod.
NW106	**Dissolved Chromium:** APHA Online Edition 3125 B mod.
NW109	**Dissolved Iron:** APHA Online Edition 3125 B mod.
NW112	**Dissolved Magnesium:** APHA Online Edition 3125 B mod.
NW114	**Dissolved Mercury:** APHA Online Edition 3125 B mod.
NW117	**Dissolved Potassium:** APHA Online Edition 3125 B mod.
NW125	**Dissolved Zinc:** APHA Online Edition 3125 B mod.
NW193	**Dissolved Reactive Phosphorus:** APHA Online Edition 4500-P G
NW206	**Suspended Solids:** APHA Online Edition 2540 D
NW228	**SVOC (GC-MSMS):** Internal Method, GC-MS/MS
NW341	**BOD5 - Soluble Carbonaceous:** APHA Online Edition 5210 B
NWWG6	**Volatile Fatty Acids (VFA):** APHA 24th Edition 5560 D mod.
NW007	**Chloride:** APHA Online Edition 4110 B
NW010	**Nitrate-N:** APHA Online Edition 4110 B
NW020	**Chemical Oxygen Demand:** APHA Online Edition 5220 D
NW030	**Total Hardness:** APHA Online Edition 2340 B
NW103	**Dissolved Boron:** APHA Online Edition 3125 B mod.
NW105	**Dissolved Calcium:** APHA Online Edition 3125 B mod.
NW108	**Dissolved Copper:** APHA Online Edition 3125 B mod.
NW110	**Dissolved Lead:** APHA Online Edition 3125 B mod.
NW113	**Dissolved Manganese:** APHA Online Edition 3125 B mod.
NW116	**Dissolved Nickel:** APHA Online Edition 3125 B mod.
NW120	**Dissolved Sodium:** APHA Online Edition 3125 B mod.
NW179	**Ammonia Nitrogen:** APHA Online Edition 4500-NH3 H
NW195	**pH (Tested beyond 15 minute APHA holding time):** APHA 24th Edition 4500-H B
NW210	**Total Non-Purgeable Organic Carbon:** APHA Online Edition 5310 B
NW229	**VOC (GC-MS):** Internal Method, HS-GC-MS
NW583	**Dissolved Arsenic:** APHA Online Edition 3125 B mod.
ZM2GA	**Escherichia coli E (Water) [NZ] <100 >6 000 000 /100 ml (0-3) m-FC Agar-F:** SMEWW 9222I; APHA 24th Edition

Signature

Marylou Cabral Laboratory Manager Eurofins ELS Limited

Jennifer Mont Supervisor Eurofins ELS Limited

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Cody Forbes Laboratory Analyst Laboratory Analyst

EXPLANATORY NOTE

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⑧ Tested at the sampling point by Eurofins and is accredited
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N/A means Not Applicable
Not Detected means not detected at or above the Limit of Quantification (LOQ)
LOQ means Limit of Quantification and the unit of LOQ is the same as the result unit
✗ (Unsatisfactory) means does not meet the specification
✓ (Satisfactory) means meets the specification

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END OF REPORT

Food & Water Testing

ANALYTICAL REPORT

REPORT CODE	AR-24-NW-023907-01	REPORT DATE	19/04/2024

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Copy to: Water and Waste Team (waterandwasteteam@horowhenua.govt.nz), McMillan

Contact for your orders: Gabriela Carvalhaes
Contract: Landfill

Order code: EUNZWE-00177376
Purchase Order Number: Landfill

SAMPLE CODE	812-2024-00051385		
Sample Name	349877-0		
Product:	Ground water		
Sampling Point code:	WIL-F3	**Sampling Point name:**	Levin F3
Reception Date & Time:	08/04/2024 16:45		
Analysis Started on:	08/04/2024	**Analysis Ending Date:**	19/04/2024
Product Type	Ground water	**Sampled Date & Time**	08/04/2024 11:03
Sampler(s)	Client nominated external sampler	**Sampled by Eurofins**	No

		RESULTS	(UNCERTAINTY)	LOQ
NW179	**Ammonia Nitrogen**			
	Ammoniacal nitrogen (N)	<0.01	(± 0.00) mg/l	0.01
NW341	**BOD5 - Soluble Carbonaceous**			
	BOD5	<1	mg/l	1
NW020	**Chemical Oxygen Demand**			
	Chemical oxygen demand (COD)	<15	(± 5) mg/l	15
NW007	**Chloride**			
	Chloride (Cl)	14.6	(± 1.46) mg/l	0.02
NW00U	**Chlorophenols**			
	2,3,4,6-Tetrachlorophenol	<0.01	mg/l	0.01
	2,4-Dichlorophenol	<0.01	mg/l	0.01
	2,6-Dichlorophenol	<0.2	mg/l	0.2
	2-Chlorophenol (o-chlorophenol)	<0.01	mg/l	0.01
	3,4,5-Trichlorophenol	<0.01	mg/l	0.01
	4-Chloro-3-cresol	<0.01	mg/l	0.01
	Pentachlorophenol	<0.005	mg/l	0.005
	Phenol	<0.01	mg/l	0.01
	Total of 2,4,5 & 2,4,6 -Trichlorophenol	<0.02	mg/l	0.02
NW023	**Conductivity**			
	Conductivity	17.8	(± 0.4) mS/m	0.1
NW098	**Dissolved Aluminium**			
	Aluminium	0.002	mg/l	0.002
NW583	**Dissolved Arsenic**			
	Arsenic (As)	0.002	mg/l	0.001
NW103	**Dissolved Boron**			
	Boron (B)	0.03	mg/l	0.03

		RESULTS (UNCERTAINTY)		LOQ
NW104	**Dissolved Cadmium**			
	Cadmium (Cd)	<0.0002	mg/l	0.0002
NW105	**Dissolved Calcium**			
	Calcium (Ca)	5.2	mg/l	0.1
NW106	**Dissolved Chromium**			
	Chromium (Cr)	0.003	mg/l	0.001
NW108	**Dissolved Copper**			
	Copper (Cu)	0.0011	mg/l	0.0005
NW109	**Dissolved Iron**			
	Iron (Fe)	<0.01	mg/l	0.01
NW110	**Dissolved Lead**			
	Lead (Pb)	<0.0005	mg/l	0.0005
NW112	**Dissolved Magnesium**			
	Magnesium (Mg)	5.17	mg/l	0.01
NW113	**Dissolved Manganese**			
	Manganese (Mn)	<0.0005	mg/l	0.0005
NW114	**Dissolved Mercury**			
	Mercury (Hg)	<0.0005	mg/l	0.0005
NW116	**Dissolved Nickel**			
	Nickel (Ni)	<0.0005	mg/l	0.0005
NW117	**Dissolved Potassium**			
	Potassium (K)	4.34	mg/l	0.01
NW193	**Dissolved Reactive Phosphorus**			
	Phosphorus (soluble reactive)	0.151	mg/l	0.005
NW120	**Dissolved Sodium**			
	Sodium (Na)	24.9	mg/l	0.01
NW125	**Dissolved Zinc**			
	Zinc (Zn)	0.003	mg/l	0.002
ZM2GA	**Enumeration of Escherichia coli By Membrane Filtration**			
	Escherichia coli	<100	cfu/100 ml	100
NW010	**Nitrate-N**			
	Nitrate-N	1.62	(± 0.16) mg/l	0.01
NW195	**pH (Tested beyond 15 minute APHA holding time)**			
	pH	6.9	(± 0.2)	0.1
NW011	**Sulphate**			
	Sulphate	4.69	(± 0.47) mg/l	0.02
NW206	**Suspended Solids**			
	Suspended Solids	<5	mg/l	3
NW228	**SVOC (GC-MSMS)**			
	Acenaphthene	<0.0001	mg/l	0.0001
	Acenaphthylene	<0.001	mg/l	0.001
	Adipatic acid, bis-2-ethylhexyl ester (DEHA)	<0.0001	mg/l	0.0001
	Alachlor	<0.0001	mg/l	0.0001
	Aldicarb	<0.1	mg/l	0.1
	Aldrin	<0.001	mg/l	0.001
	Anthracene	<0.001	mg/l	0.001
	Atrazine	<0.0001	mg/l	0.0001

		RESULTS (UNCERTAINTY)		LOQ
NW228	**SVOC (GC-MSMS)**			
	Benz(a)anthracene	<0.0001	mg/l	0.0001
	Benzo(a)pyrene	<0.0001	mg/l	0.0001
	Benzo(g,h,i)perylene	<0.001	mg/l	0.001
	Bromacil	<0.005	mg/l	0.005
	Carbofuran	<0.001	mg/l	0.001
	Chlordane	<0.0001	mg/l	0.0001
	Chlordane, gamma	<0.001	mg/l	0.001
	Chlorpyrifos (-ethyl)	<0.0001	mg/l	0.0001
	Chrysene	<0.0001	mg/l	0.0001
	Cyanazine	<0.005	mg/l	0.005
	d-BHC	<0.0001	mg/l	0.0001
	DDD, p,p'-	<0.0001	mg/l	0.0001
	DDE, p,p-	<0.0001	mg/l	0.0001
	DDT, p,p'-	<0.001	mg/l	0.001
	Diazinon	<0.0001	mg/l	0.0001
	Dibenz(a,h)anthracene	<0.0001	mg/l	0.0001
	Dieldrin	<0.0001	mg/l	0.0001
	Dimethoate	<0.001	mg/l	0.001
	Diuron	<0.001	mg/l	0.001
	Endosulfan, alpha-	<0.001	mg/l	0.001
	Endosulfan, beta-	<0.005	mg/l	0.005
	Endosulfan-sulfate	<0.0001	mg/l	0.0001
	Endrin	<0.0001	mg/l	0.0001
	Endrin ketone	<0.0001	mg/l	0.0001
	Endrin-aldehyde	<0.001	mg/l	0.01
	Fluoranthene	<0.0001	mg/l	0.0001
	Fluorene	<0.0001	mg/l	0.0001
	HCH, alpha-	<0.0001	mg/l	0.0001
	HCH, beta-	<0.0001	mg/l	0.0001
	Heptachlor	<0.0001	mg/l	0.0001
	Heptachlor epoxide, cis-	<0.0001	mg/l	0.0001
	Hexachlorobenzene (HCB)	<0.0001	mg/l	0.0001
	Hexazinone	<0.001	mg/l	0.001
	Indeno(1,2,3-cd)pyrene	<0.0001	mg/l	0.0001
	Lindane (gamma-HCH)	<0.0001	mg/l	0.0001
	Metalaxyl and metalaxyl-M (metalaxyl including other mixtures of constituent isomers including metalaxyl-M (sum of isomers))	<0.001	mg/l	0.001
	Methoxychlor	<0.0001	mg/l	0.0001
	Metolachlor	<0.0001	mg/l	0.0001
	Metribuzin	<0.0001	mg/l	0.0001
	Molinate	<0.0001	mg/l	0.0001
	Naphthalene	<0.0001	mg/l	0.0001
	Oxadiazon	<0.0001	mg/l	0.0001
	PCB 101	<0.0001	mg/l	0.0001
	PCB 138	<0.001	mg/l	0.001
	PCB 183	<0.0001	mg/l	0.0001

		RESULTS	(UNCERTAINTY)	LOQ
NW228	**SVOC (GC-MSMS)**			
	PCB 28	<0.0001	mg/l	0.0001
	PCB 7	<0.0001	mg/l	0.0001
	Pendimethalin	<0.002	mg/l	0.002
	Permethrin (sum of isomers)	<0.0001	mg/l	0.0001
	Phenanthrene	<0.0001	mg/l	0.0001
	Pirimiphos-methyl	<0.0001	mg/l	0.0001
	Procymidone	<0.0001	mg/l	0.0001
	Propanil	<0.001	mg/l	0.001
	Propazine	<0.0001	mg/l	0.0001
	Pyrene	<0.0001	mg/l	0.0001
	Pyriproxyfen	<0.0001	mg/l	0.0001
	Simazine	<0.0001	mg/l	0.0001
	Terbuthylazine	<0.0001	mg/l	0.0001
	Total Benzo(b) and Benzo(k) fluoranthene	<0.001	mg/l	0.001
	Trifluralin	<0.0001	mg/l	0.0001
NW003	**Total Alkalinity**			
	Alkalinity total	52	(± 5) mg CaCO3/l	1
NW030	**Total Hardness**			
	Hardness	34	mg CaCO3/l	1
NW210	**Total Non-Purgeable Organic Carbon**			
	Total Organic Carbon	1.1	(± 0.1) mg/l	0.1
NW229	**VOC (GC-MS)**			
	1,1,1,2-Tetrachloroethane	<0.0005	mg/l	0.0005
	1,1,1-Trichloroethane	<0.0005	mg/l	0.0005
	1,1,2,2-tetrachloroethane	<0.0005	mg/l	0.0005
	1,1,2-Trichloroethane	<0.0005	mg/l	0.0005
	1,1-Dichloroethane	<0.0005	mg/l	0.0005
	1,1-Dichloroethene	<0.0005	mg/l	0.0005
	1,1-Dichloropropene	<0.0005	mg/l	0.0005
	1,2,3-Trichlorobenzene	<0.0005	mg/l	0.0005
	1,2,3-Trichloropropane	<0.0005	mg/l	0.0005
	1,2,4 trimethylbenzen	<0.0005	mg/l	0.0005
	1,2,4-Trichlorobenzene	<0.0005	mg/l	0.0005
	1,2-Dibromo-3-chloropropane	<0.001	mg/l	0.002
	1,2-Dibromoethane	<0.0002	mg/l	0.0002
	1,2-Dichlorobenzene (2)	<0.0005	mg/l	0.0005
	1,2-Dichloroethane	<0.0005	mg/l	0.0005
	1,2-Dichloropropane	<0.0005	mg/l	0.0005
	1,3,5-Trichlorobenzene	<0.0005	mg/l	0.0005
	1,3,5-Trimethylbenzene	<0.0005	mg/l	0.0005
	1,3-Dichlorobenzene	<0.0005	mg/l	0.0005
	1,3-Dichloropropane	<0.0005	mg/l	0.0005
	1,4-dichlorobenzene	<0.0005	mg/l	0.0005
	2,2-Dichloropropane	<0.0005	mg/l	0.0005
	2-Chlorotoluene	<0.0005	mg/l	0.0005
	3-chloropropene	<0.0005	mg/l	0.0005
	4-Chlorotoluene	<0.0005	mg/l	0.0005

		RESULTS (UNCERTAINTY)		LOQ
NW229	**VOC (GC-MS)**			
	4-methyl-2-pentanone	<0.0005	mg/l	0.0005
	Benzene	<0.0005	mg/l	0.0005
	Bromobenzene	<0.0005	mg/l	0.0005
	Bromochloromethane	<0.0012	mg/l	0.0012
	Bromodichloromethane	<0.0005	mg/l	0.0005
	Bromoform	<0.0005	mg/l	0.0005
	Bromomethane (zone 2)	<0.001	mg/l	0.001
	Carbon tetrachloride	<0.0005	mg/l	0.0005
	Carbondisulphide (CS2)	<0.0005	mg/l	0.0005
	Chlorobenzene	<0.0005	mg/l	0.0005
	Chloroethane	<0.001	mg/l	0.001
	Chloroform	<0.0005	mg/l	0.0005
	Chloromethane	<0.006	mg/l	0.006
	cis-1,2-Dichloroethene	<0.0005	mg/l	0.0005
	cis-1,3-Dichloropropene	<0.0005	mg/l	0.0005
	Dibromochloromethane	<0.0005	mg/l	0.0005
	Dibromomethane	<0.0005	mg/l	0.0005
	Dichlorodifluoromethane	NotRecovered	mg/l	0.001
	Dichloromethane	<0.005	mg/l	0.005
	Hexachlorobutadiene	<0.0002	mg/l	0.0002
	Isopropylbenzene (Cumene)	<0.0005	mg/l	0.0005
	m,p-Xylene, Ethylbenzene	<0.0015	mg/l	0.0015
	Naphthalene	<0.0005	mg/l	0.0005
	n-Butylbenzene	<0.0005	mg/l	0.0005
	n-Propylbenzene	<0.0005	mg/l	0.0005
	p-Isopropyltoluene	<0.0005	mg/l	0.0005
	sec-Butylbenzene	<0.0005	mg/l	0.0005
	Styrene	<0.0005	mg/l	0.0005
	tert-Butylbenzene	<0.0005	mg/l	0.0005
	Tetrachloroethene	<0.0005	mg/l	0.0005
	Toluene	<0.0005	mg/l	0.0005
	trans-1,2-Dichloroethene	<0.0005	mg/l	0.0005
	trans-1,3-Dichloropropene	<0.0005	mg/l	0.0005
	Trichloroethene	<0.0005	mg/l	0.0005
	Trichlorofluoromethane	<0.0005	mg/l	0.0005
	Vinyl chloride	<0.0003	mg/l	0.0003
	Xylene (ortho-)	<0.0005	mg/l	0.0005
①**NWWG6**	**Volatile Fatty Acids (VFA)**			
	Acetic acid	<5	mg/l	5
	Butyric acid	<5	mg/l	5
	Heptanoic acid	<5	mg/l	5
	Hexanoic acid	<5	mg/l	5
	Isobutyric acid	<5	mg/l	5
	Isocaproic acid	<5	mg/l	5
	Isovaleric acid	<5	mg/l	5
	Propionic acid	<5	mg/l	5
	Valeric acid	<5	mg/l	5
	Volatile fatty acids as acetic acid	<5	mg/l	5

RESULTS (UNCERTAINTY)	LOQ

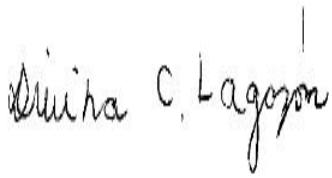
LIST OF METHODS

NW003	**Total Alkalinity:** APHA Online Edition 2320 B
NW00U	**Chlorophenols:** Internal Method, LC-MS/MS
NW011	**Sulphate:** APHA Online Edition 4110 B
NW023	**Conductivity:** APHA 24th Edition 2510 B
NW098	**Dissolved Aluminium:** APHA Online Edition 3125 B mod.
NW104	**Dissolved Cadmium:** APHA Online Edition 3125 B mod.
NW106	**Dissolved Chromium:** APHA Online Edition 3125 B mod.
NW109	**Dissolved Iron:** APHA Online Edition 3125 B mod.
NW112	**Dissolved Magnesium:** APHA Online Edition 3125 B mod.
NW114	**Dissolved Mercury:** APHA Online Edition 3125 B mod.
NW117	**Dissolved Potassium:** APHA Online Edition 3125 B mod.
NW125	**Dissolved Zinc:** APHA Online Edition 3125 B mod.
NW193	**Dissolved Reactive Phosphorus:** APHA Online Edition 4500-P G
NW206	**Suspended Solids:** APHA Online Edition 2540 D
NW228	**SVOC (GC-MSMS):** Internal Method, GC-MS/MS
NW341	**BOD5 - Soluble Carbonaceous:** APHA Online Edition 5210 B
NWWG6	**Volatile Fatty Acids (VFA):** APHA 24th Edition 5560 D mod.
NW007	**Chloride:** APHA Online Edition 4110 B
NW010	**Nitrate-N:** APHA Online Edition 4110 B
NW020	**Chemical Oxygen Demand:** APHA Online Edition 5220 D
NW030	**Total Hardness:** APHA Online Edition 2340 B
NW103	**Dissolved Boron:** APHA Online Edition 3125 B mod.
NW105	**Dissolved Calcium:** APHA Online Edition 3125 B mod.
NW108	**Dissolved Copper:** APHA Online Edition 3125 B mod.
NW110	**Dissolved Lead:** APHA Online Edition 3125 B mod.
NW113	**Dissolved Manganese:** APHA Online Edition 3125 B mod.
NW116	**Dissolved Nickel:** APHA Online Edition 3125 B mod.
NW120	**Dissolved Sodium:** APHA Online Edition 3125 B mod.
NW179	**Ammonia Nitrogen:** APHA Online Edition 4500-NH3 H
NW195	**pH (Tested beyond 15 minute APHA holding time):** APHA 24th Edition 4500-H B
NW210	**Total Non-Purgeable Organic Carbon:** APHA Online Edition 5310 B
NW229	**VOC (GC-MS):** Internal Method, HS-GC-MS
NW583	**Dissolved Arsenic:** APHA Online Edition 3125 B mod.
ZM2GA	**Escherichia coli E (Water) [NZ] <100 >6 000 000 /100 ml (0-3) m-FC Agar-F:** SMEWW 9222I; APHA 24th Edition

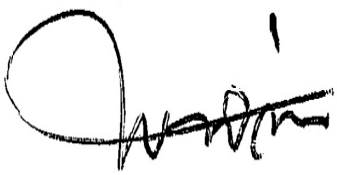
Signature

Marylou Cabral Laboratory Manager
Eurofins ELS Limited

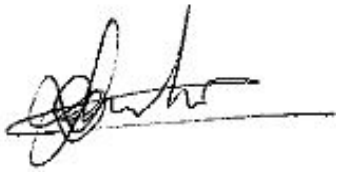
Jennifer Mont Supervisor Eurofins ELS Limited



Divina Cunanan Lagazon Supervisor Eurofins ELS Limited



Maria Norris Laboratory Manager, Microbiology



Ganesh Ilancko Supervisor Eurofins ELS Limited

Gabriela Carvalhaes Manager Food and Water Testing Chemistry

Cody Forbes Laboratory Analyst
Laboratory Analyst

EXPLANATORY NOTE

① Test is not accredited
② Test is subcontracted within Eurofins group and is accredited
③ Test is subcontracted within Eurofins group and is not accredited
④ Test is subcontracted outside Eurofins group and is accredited
⑤ Test is subcontracted outside Eurofins group and is not accredited
⑥ Test result is provided by the customer and is not accredited
⑦ Tested at the sampling point by Eurofins and is not accredited
⑧ Tested at the sampling point by Eurofins and is accredited
⑨ Test is RLP accredited
⑩ Test is subcontracted within Eurofins group and is RLP accredited

N/A means Not Applicable
Not Detected means not detected at or above the Limit of Quantification (LOQ)
LOQ means Limit of Quantification and the unit of LOQ is the same as the result unit
✗ (Unsatisfactory) means does not meet the specification
✓ (Satisfactory) means meets the specification

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END OF REPORT

Food & Water Testing

ANALYTICAL REPORT

REPORT CODE	AR-24-NW-023903-01	REPORT DATE	19/04/2024

Attention Downer NZ Ltd (EDI Levin)
Horowhenua Admin
P O Box 642
4741 Levin
NEW ZEALAND

Phone (06) 367 2705
Email horowhenuaadmin@downer.co.nz

Copy to: Water and Waste Team (waterandwasteteam@horowhenua.govt.nz), McMillan

Contact for your orders: Gabriela Carvalhaes
Contract: Landfill

Order code: EUNZWE-00177376
Purchase Order Number: Landfill

SAMPLE CODE	812-2024-00051381		
Sample Name	349878-0		
Product:	Ground water		
Sampling Point code:	WIL-G1D	**Sampling Point name:**	Levin G1D
Reception Date & Time:	08/04/2024 16:45		
Analysis Started on:	08/04/2024	**Analysis Ending Date:**	19/04/2024
Product Type	Ground water	**Sampled Date & Time**	08/04/2024 06:55
Sampler(s)	Client nominated external sampler	**Sampled by Eurofins**	No

		RESULTS	(UNCERTAINTY)	LOQ
NW179	**Ammonia Nitrogen**			
	Ammoniacal nitrogen (N)	0.10	(± 0.01) mg/l	0.01
NW341	**BOD5 - Soluble Carbonaceous**			
	BOD5	<1	mg/l	1
NW020	**Chemical Oxygen Demand**			
	Chemical oxygen demand (COD)	<15	(± 5) mg/l	15
NW007	**Chloride**			
	Chloride (Cl)	28.9	(± 2.89) mg/l	0.02
NW00U	**Chlorophenols**			
	2,3,4,6-Tetrachlorophenol	<0.01	mg/l	0.01
	2,4-Dichlorophenol	<0.01	mg/l	0.01
	2,6-Dichlorophenol	<0.2	mg/l	0.2
	2-Chlorophenol (o-chlorophenol)	<0.01	mg/l	0.01
	3,4,5-Trichlorophenol	<0.01	mg/l	0.01
	4-Chloro-3-cresol	<0.01	mg/l	0.01
	Pentachlorophenol	<0.005	mg/l	0.005
	Phenol	<0.01	mg/l	0.01
	Total of 2,4,5 & 2,4,6 -Trichlorophenol	<0.02	mg/l	0.02
NW023	**Conductivity**			
	Conductivity	26.1	(± 0.5) mS/m	0.1
NW098	**Dissolved Aluminium**			
	Aluminium	<0.002	mg/l	0.002
NW583	**Dissolved Arsenic**			
	Arsenic (As)	0.002	mg/l	0.001
NW103	**Dissolved Boron**			
	Boron (B)	0.05	mg/l	0.03

Food & Water Testing

ANALYTICAL REPORT

REPORT CODE	AR-24-NW-023901-01	REPORT DATE	19/04/2024

Attention Downer NZ Ltd (EDI Levin)
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Copy to: Water and Waste Team (waterandwasteteam@horowhenua.govt.nz), McMillan

Contact for your orders: Gabriela Carvalhaes
Contract: Landfill

Order code: EUNZWE-00177376

Purchase Order Number: Landfill

SAMPLE CODE	812-2024-00051379		
Sample Name	349879-0		
Product:	Ground water		
Sampling Point code:	WIL-G1S	**Sampling Point name:**	Levin G1S
Reception Date & Time:	08/04/2024 16:45		
Analysis Started on:	08/04/2024	**Analysis Ending Date:**	19/04/2024
Product Type	Ground water	**Sampled Date & Time**	08/04/2024 07:17
Sampler(s)	Client nominated external sampler	**Sampled by Eurofins**	No

		RESULTS	(UNCERTAINTY)	LOQ
NW179	**Ammonia Nitrogen**			
	Ammoniacal nitrogen (N)	0.04	(± 0.01) mg/l	0.01
NW341	**BOD5 - Soluble Carbonaceous**			
	BOD5	<1	mg/l	1
NW020	**Chemical Oxygen Demand**			
	Chemical oxygen demand (COD)	64	(± 11) mg/l	15
NW007	**Chloride**			
	Chloride (Cl)	50.2	(± 5.02) mg/l	0.02
NW00U	**Chlorophenols**			
	2,3,4,6-Tetrachlorophenol	<0.01	mg/l	0.01
	2,4-Dichlorophenol	<0.01	mg/l	0.01
	2,6-Dichlorophenol	<0.2	mg/l	0.2
	2-Chlorophenol (o-chlorophenol)	<0.01	mg/l	0.01
	3,4,5-Trichlorophenol	<0.01	mg/l	0.01
	4-Chloro-3-cresol	<0.01	mg/l	0.01
	Pentachlorophenol	<0.005	mg/l	0.005
	Phenol	<0.01	mg/l	0.01
	Total of 2,4,5 & 2,4,6 -Trichlorophenol	<0.02	mg/l	0.02
NW023	**Conductivity**			
	Conductivity	33.4	(± 0.7) mS/m	0.1
NW098	**Dissolved Aluminium**			
	Aluminium	0.106	mg/l	0.002
NW583	**Dissolved Arsenic**			
	Arsenic (As)	0.002	mg/l	0.001
NW103	**Dissolved Boron**			
	Boron (B)	0.03	mg/l	0.03

		RESULTS (UNCERTAINTY)		LOQ
NW104	**Dissolved Cadmium**			
	Cadmium (Cd)	<0.0002	mg/l	0.0002
NW105	**Dissolved Calcium**			
	Calcium (Ca)	7.3	mg/l	0.1
NW106	**Dissolved Chromium**			
	Chromium (Cr)	0.002	mg/l	0.001
NW108	**Dissolved Copper**			
	Copper (Cu)	0.0072	mg/l	0.0005
NW109	**Dissolved Iron**			
	Iron (Fe)	1.79	mg/l	0.01
NW110	**Dissolved Lead**			
	Lead (Pb)	<0.0005	mg/l	0.0005
NW112	**Dissolved Magnesium**			
	Magnesium (Mg)	5.05	mg/l	0.01
NW113	**Dissolved Manganese**			
	Manganese (Mn)	0.0355	mg/l	0.0005
NW114	**Dissolved Mercury**			
	Mercury (Hg)	<0.0005	mg/l	0.0005
NW116	**Dissolved Nickel**			
	Nickel (Ni)	0.0014	mg/l	0.0005
NW117	**Dissolved Potassium**			
	Potassium (K)	3.50	mg/l	0.01
NW193	**Dissolved Reactive Phosphorus**			
	Phosphorus (soluble reactive)	0.097	mg/l	0.005
NW120	**Dissolved Sodium**			
	Sodium (Na)	55.3	mg/l	0.01
NW125	**Dissolved Zinc**			
	Zinc (Zn)	<0.002	mg/l	0.002
ZM2GA	**Enumeration of Escherichia coli By Membrane Filtration**			
	Escherichia coli	<100	cfu/100 ml	100
NW010	**Nitrate-N**			
	Nitrate-N	0.01	(± 0.00) mg/l	0.01
NW195	**pH (Tested beyond 15 minute APHA holding time)**			
	pH	6.5	(± 0.2)	0.1
NW011	**Sulphate**			
	Sulphate	9.07	(± 0.91) mg/l	0.02
NW206	**Suspended Solids**			
	Suspended Solids	13	mg/l	3
NW228	**SVOC (GC-MSMS)**			
	Acenaphthene	<0.0001	mg/l	0.0001
	Acenaphthylene	<0.001	mg/l	0.001
	Adipatic acid, bis-2-ethylhexyl ester (DEHA)	<0.0001	mg/l	0.0001
	Alachlor	<0.0001	mg/l	0.0001
	Aldicarb	<0.1	mg/l	0.1
	Aldrin	<0.001	mg/l	0.001
	Anthracene	<0.001	mg/l	0.001
	Atrazine	<0.0001	mg/l	0.0001

		RESULTS (UNCERTAINTY)		LOQ
NW228	**SVOC (GC-MSMS)**			
	Benz(a)anthracene	<0.0001	mg/l	0.0001
	Benzo(a)pyrene	<0.0001	mg/l	0.0001
	Benzo(g,h,i)perylene	<0.001	mg/l	0.001
	Bromacil	<0.005	mg/l	0.005
	Carbofuran	<0.001	mg/l	0.001
	Chlordane	<0.0001	mg/l	0.0001
	Chlordane, gamma	<0.001	mg/l	0.001
	Chlorpyrifos (-ethyl)	<0.0001	mg/l	0.0001
	Chrysene	<0.0001	mg/l	0.0001
	Cyanazine	<0.005	mg/l	0.005
	d-BHC	<0.0001	mg/l	0.0001
	DDD, p,p'-	<0.0001	mg/l	0.0001
	DDE, p,p-	<0.0001	mg/l	0.0001
	DDT, p,p'-	<0.001	mg/l	0.001
	Diazinon	<0.0001	mg/l	0.0001
	Dibenz(a,h)anthracene	<0.0001	mg/l	0.0001
	Dieldrin	<0.0001	mg/l	0.0001
	Dimethoate	<0.001	mg/l	0.001
	Diuron	<0.001	mg/l	0.001
	Endosulfan, alpha-	<0.001	mg/l	0.001
	Endosulfan, beta-	<0.005	mg/l	0.005
	Endosulfan-sulfate	<0.0001	mg/l	0.0001
	Endrin	<0.0001	mg/l	0.0001
	Endrin ketone	<0.0001	mg/l	0.0001
	Endrin-aldehyde	<0.001	mg/l	0.01
	Fluoranthene	<0.0001	mg/l	0.0001
	Fluorene	<0.0001	mg/l	0.0001
	HCH, alpha-	<0.0001	mg/l	0.0001
	HCH, beta-	<0.0001	mg/l	0.0001
	Heptachlor	<0.0001	mg/l	0.0001
	Heptachlor epoxide, cis-	<0.0001	mg/l	0.0001
	Hexachlorobenzene (HCB)	<0.0001	mg/l	0.0001
	Hexazinone	<0.001	mg/l	0.001
	Indeno(1,2,3-cd)pyrene	<0.0001	mg/l	0.0001
	Lindane (gamma-HCH)	<0.0001	mg/l	0.0001
	Metalaxyl and metalaxyl-M (metalaxyl including other mixtures of constituent isomers including metalaxyl-M (sum of isomers))	<0.001	mg/l	0.001
	Methoxychlor	<0.0001	mg/l	0.0001
	Metolachlor	<0.0001	mg/l	0.0001
	Metribuzin	<0.0001	mg/l	0.0001
	Molinate	<0.0001	mg/l	0.0001
	Naphthalene	<0.0001	mg/l	0.0001
	Oxadiazon	<0.0001	mg/l	0.0001
	PCB 101	<0.0001	mg/l	0.0001
	PCB 138	<0.001	mg/l	0.001
	PCB 183	<0.0001	mg/l	0.0001

		RESULTS	(UNCERTAINTY)	LOQ
NW228	**SVOC (GC-MSMS)**			
	PCB 28	<0.0001	mg/l	0.0001
	PCB 7	<0.0001	mg/l	0.0001
	Pendimethalin	<0.002	mg/l	0.002
	Permethrin (sum of isomers)	<0.0001	mg/l	0.0001
	Phenanthrene	<0.0001	mg/l	0.0001
	Pirimiphos-methyl	<0.0001	mg/l	0.0001
	Procymidone	<0.0001	mg/l	0.0001
	Propanil	<0.001	mg/l	0.001
	Propazine	<0.0001	mg/l	0.0001
	Pyrene	<0.0001	mg/l	0.0001
	Pyriproxyfen	<0.0001	mg/l	0.0001
	Simazine	<0.0001	mg/l	0.0001
	Terbuthylazine	<0.0001	mg/l	0.0001
	Total Benzo(b) and Benzo(k) fluoranthene	<0.001	mg/l	0.001
	Trifluralin	<0.0001	mg/l	0.0001
NW003	**Total Alkalinity**			
	Alkalinity total	70	(± 7) mg CaCO3/l	1
NW030	**Total Hardness**			
	Hardness	39	mg CaCO3/l	1
NW210	**Total Non-Purgeable Organic Carbon**			
	Total Organic Carbon	25.7	(± 2.6) mg/l	0.1
NW229	**VOC (GC-MS)**			
	1,1,1,2-Tetrachloroethane	<0.0005	mg/l	0.0005
	1,1,1-Trichloroethane	<0.0005	mg/l	0.0005
	1,1,2,2-tetrachloroethane	<0.0005	mg/l	0.0005
	1,1,2-Trichloroethane	<0.0005	mg/l	0.0005
	1,1-Dichloroethane	<0.0005	mg/l	0.0005
	1,1-Dichloroethene	<0.0005	mg/l	0.0005
	1,1-Dichloropropene	<0.0005	mg/l	0.0005
	1,2,3-Trichlorobenzene	<0.0005	mg/l	0.0005
	1,2,3-Trichloropropane	<0.0005	mg/l	0.0005
	1,2,4 trimethylbenzen	<0.0005	mg/l	0.0005
	1,2,4-Trichlorobenzene	<0.0005	mg/l	0.0005
	1,2-Dibromo-3-chloropropane	<0.001	mg/l	0.002
	1,2-Dibromoethane	<0.0002	mg/l	0.0002
	1,2-Dichlorobenzene (2)	<0.0005	mg/l	0.0005
	1,2-Dichloroethane	<0.0005	mg/l	0.0005
	1,2-Dichloropropane	<0.0005	mg/l	0.0005
	1,3,5-Trichlorobenzene	<0.0005	mg/l	0.0005
	1,3,5-Trimethylbenzene	<0.0005	mg/l	0.0005
	1,3-Dichlorobenzene	<0.0005	mg/l	0.0005
	1,3-Dichloropropane	<0.0005	mg/l	0.0005
	1,4-dichlorobenzene	<0.0005	mg/l	0.0005
	2,2-Dichloropropane	<0.0005	mg/l	0.0005
	2-Chlorotoluene	<0.0005	mg/l	0.0005
	3-chloropropene	<0.0005	mg/l	0.0005
	4-Chlorotoluene	<0.0005	mg/l	0.0005

		RESULTS (UNCERTAINTY)		LOQ
NW229	**VOC (GC-MS)**			
	4-methyl-2-pentanone	<0.0005	mg/l	0.0005
	Benzene	<0.0005	mg/l	0.0005
	Bromobenzene	<0.0005	mg/l	0.0005
	Bromochloromethane	<0.0012	mg/l	0.0012
	Bromodichloromethane	<0.0005	mg/l	0.0005
	Bromoform	<0.0005	mg/l	0.0005
	Bromomethane (zone 2)	<0.001	mg/l	0.001
	Carbon tetrachloride	<0.0005	mg/l	0.0005
	Carbondisulphide (CS2)	<0.0005	mg/l	0.0005
	Chlorobenzene	<0.0005	mg/l	0.0005
	Chloroethane	<0.001	mg/l	0.001
	Chloroform	<0.0005	mg/l	0.0005
	Chloromethane	<0.006	mg/l	0.006
	cis-1,2-Dichloroethene	<0.0005	mg/l	0.0005
	cis-1,3-Dichloropropene	<0.0005	mg/l	0.0005
	Dibromochloromethane	<0.0005	mg/l	0.0005
	Dibromomethane	<0.0005	mg/l	0.0005
	Dichlorodifluoromethane	NotRecovered	mg/l	0.001
	Dichloromethane	<0.005	mg/l	0.005
	Hexachlorobutadiene	<0.0002	mg/l	0.0002
	Isopropylbenzene (Cumene)	<0.0005	mg/l	0.0005
	m,p-Xylene, Ethylbenzene	<0.0015	mg/l	0.0015
	Naphthalene	<0.0005	mg/l	0.0005
	n-Butylbenzene	<0.0005	mg/l	0.0005
	n-Propylbenzene	<0.0005	mg/l	0.0005
	p-Isopropyltoluene	<0.0005	mg/l	0.0005
	sec-Butylbenzene	<0.0005	mg/l	0.0005
	Styrene	<0.0005	mg/l	0.0005
	tert-Butylbenzene	<0.0005	mg/l	0.0005
	Tetrachloroethene	<0.0005	mg/l	0.0005
	Toluene	<0.0005	mg/l	0.0005
	trans-1,2-Dichloroethene	<0.0005	mg/l	0.0005
	trans-1,3-Dichloropropene	<0.0005	mg/l	0.0005
	Trichloroethene	<0.0005	mg/l	0.0005
	Trichlorofluoromethane	<0.0005	mg/l	0.0005
	Vinyl chloride	<0.0003	mg/l	0.0003
	Xylene (ortho-)	<0.0005	mg/l	0.0005
①**NWWG6**	**Volatile Fatty Acids (VFA)**			
	Acetic acid	<5	mg/l	5
	Butyric acid	<5	mg/l	5
	Heptanoic acid	<5	mg/l	5
	Hexanoic acid	<5	mg/l	5
	Isobutyric acid	<5	mg/l	5
	Isocaproic acid	<5	mg/l	5
	Isovaleric acid	<5	mg/l	5
	Propionic acid	<5	mg/l	5
	Valeric acid	<5	mg/l	5
	Volatile fatty acids as acetic acid	<5	mg/l	5

RESULTS (UNCERTAINTY)	LOQ

LIST OF METHODS

NW003	**Total Alkalinity:** APHA Online Edition 2320 B
NW00U	**Chlorophenols:** Internal Method, LC-MS/MS
NW011	**Sulphate:** APHA Online Edition 4110 B
NW023	**Conductivity:** APHA 24th Edition 2510 B
NW098	**Dissolved Aluminium:** APHA Online Edition 3125 B mod.
NW104	**Dissolved Cadmium:** APHA Online Edition 3125 B mod.
NW106	**Dissolved Chromium:** APHA Online Edition 3125 B mod.
NW109	**Dissolved Iron:** APHA Online Edition 3125 B mod.
NW112	**Dissolved Magnesium:** APHA Online Edition 3125 B mod.
NW114	**Dissolved Mercury:** APHA Online Edition 3125 B mod.
NW117	**Dissolved Potassium:** APHA Online Edition 3125 B mod.
NW125	**Dissolved Zinc:** APHA Online Edition 3125 B mod.
NW193	**Dissolved Reactive Phosphorus:** APHA Online Edition 4500-P G
NW206	**Suspended Solids:** APHA Online Edition 2540 D
NW228	**SVOC (GC-MSMS):** Internal Method, GC-MS/MS
NW341	**BOD5 - Soluble Carbonaceous:** APHA Online Edition 5210 B
NWWG6	**Volatile Fatty Acids (VFA):** APHA 24th Edition 5560 D mod.
NW007	**Chloride:** APHA Online Edition 4110 B
NW010	**Nitrate-N:** APHA Online Edition 4110 B
NW020	**Chemical Oxygen Demand:** APHA Online Edition 5220 D
NW030	**Total Hardness:** APHA Online Edition 2340 B
NW103	**Dissolved Boron:** APHA Online Edition 3125 B mod.
NW105	**Dissolved Calcium:** APHA Online Edition 3125 B mod.
NW108	**Dissolved Copper:** APHA Online Edition 3125 B mod.
NW110	**Dissolved Lead:** APHA Online Edition 3125 B mod.
NW113	**Dissolved Manganese:** APHA Online Edition 3125 B mod.
NW116	**Dissolved Nickel:** APHA Online Edition 3125 B mod.
NW120	**Dissolved Sodium:** APHA Online Edition 3125 B mod.
NW179	**Ammonia Nitrogen:** APHA Online Edition 4500-NH3 H
NW195	**pH (Tested beyond 15 minute APHA holding time):** APHA 24th Edition 4500-H B
NW210	**Total Non-Purgeable Organic Carbon:** APHA Online Edition 5310 B
NW229	**VOC (GC-MS):** Internal Method, HS-GC-MS
NW583	**Dissolved Arsenic:** APHA Online Edition 3125 B mod.
ZM2GA	**Escherichia coli E (Water) [NZ] <100 >6 000 000 /100 ml (0-3) m-FC Agar-F:** SMEWW 9222I; APHA 24th Edition

Signature

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EXPLANATORY NOTE

① Test is not accredited
② Test is subcontracted within Eurofins group and is accredited
③ Test is subcontracted within Eurofins group and is not accredited
④ Test is subcontracted outside Eurofins group and is accredited
⑤ Test is subcontracted outside Eurofins group and is not accredited
⑥ Test result is provided by the customer and is not accredited
⑦ Tested at the sampling point by Eurofins and is not accredited
⑧ Tested at the sampling point by Eurofins and is accredited
⑨ Test is RLP accredited
⑩ Test is subcontracted within Eurofins group and is RLP accredited

N/A means Not Applicable
Not Detected means not detected at or above the Limit of Quantification (LOQ)
LOQ means Limit of Quantification and the unit of LOQ is the same as the result unit
✗ (Unsatisfactory) means does not meet the specification
✓ (Satisfactory) means meets the specification

END OF REPORT

		RESULTS (UNCERTAINTY)		LOQ
NW104	**Dissolved Cadmium**			
	Cadmium (Cd)	<0.0002	mg/l	0.0002
NW105	**Dissolved Calcium**			
	Calcium (Ca)	8.9	mg/l	0.1
NW106	**Dissolved Chromium**			
	Chromium (Cr)	0.002	mg/l	0.001
NW108	**Dissolved Copper**			
	Copper (Cu)	<0.0005	mg/l	0.0005
NW109	**Dissolved Iron**			
	Iron (Fe)	0.37	mg/l	0.01
NW110	**Dissolved Lead**			
	Lead (Pb)	<0.0005	mg/l	0.0005
NW112	**Dissolved Magnesium**			
	Magnesium (Mg)	8.66	mg/l	0.01
NW113	**Dissolved Manganese**			
	Manganese (Mn)	0.0614	mg/l	0.0005
NW114	**Dissolved Mercury**			
	Mercury (Hg)	<0.0005	mg/l	0.0005
NW116	**Dissolved Nickel**			
	Nickel (Ni)	<0.0005	mg/l	0.0005
NW117	**Dissolved Potassium**			
	Potassium (K)	5.51	mg/l	0.01
NW193	**Dissolved Reactive Phosphorus**			
	Phosphorus (soluble reactive)	0.035	mg/l	0.005
NW120	**Dissolved Sodium**			
	Sodium (Na)	33.6	mg/l	0.01
NW125	**Dissolved Zinc**			
	Zinc (Zn)	<0.002	mg/l	0.002
ZMF1E	**Enumeration of Escherichia coli By Membrane Filtration**			
	Escherichia coli	<1	cfu/100 ml	1
NW010	**Nitrate-N**			
	Nitrate-N	<0.01	(± 0.00) mg/l	0.01
NW195	**pH (Tested beyond 15 minute APHA holding time)**			
	pH	7.0	(± 0.2)	0.1
NW011	**Sulphate**			
	Sulphate	18.3	(± 1.83) mg/l	0.02
NW206	**Suspended Solids**			
	Suspended Solids	8	mg/l	3
NW228	**SVOC (GC-MSMS)**			
	Acenaphthene	<0.0001	mg/l	0.0001
	Acenaphthylene	<0.001	mg/l	0.001
	Adipatic acid, bis-2-ethylhexyl ester (DEHA)	<0.0001	mg/l	0.0001
	Alachlor	<0.0001	mg/l	0.0001
	Aldicarb	<0.1	mg/l	0.1
	Aldrin	<0.001	mg/l	0.001
	Anthracene	<0.001	mg/l	0.001
	Atrazine	<0.0001	mg/l	0.0001

		RESULTS (UNCERTAINTY)		LOQ
NW228	**SVOC (GC-MSMS)**			
	Benz(a)anthracene	<0.0001	mg/l	0.0001
	Benzo(a)pyrene	<0.0001	mg/l	0.0001
	Benzo(g,h,i)perylene	<0.001	mg/l	0.001
	Bromacil	<0.005	mg/l	0.005
	Carbofuran	<0.001	mg/l	0.001
	Chlordane	<0.0001	mg/l	0.0001
	Chlordane, gamma	<0.001	mg/l	0.001
	Chlorpyrifos (-ethyl)	<0.0001	mg/l	0.0001
	Chrysene	<0.0001	mg/l	0.0001
	Cyanazine	<0.005	mg/l	0.005
	d-BHC	<0.0001	mg/l	0.0001
	DDD, p,p'-	<0.0001	mg/l	0.0001
	DDE, p,p-	<0.0001	mg/l	0.0001
	DDT, p,p'-	<0.001	mg/l	0.001
	Diazinon	<0.0001	mg/l	0.0001
	Dibenz(a,h)anthracene	<0.0001	mg/l	0.0001
	Dieldrin	<0.0001	mg/l	0.0001
	Dimethoate	<0.001	mg/l	0.001
	Diuron	<0.001	mg/l	0.001
	Endosulfan, alpha-	<0.001	mg/l	0.001
	Endosulfan, beta-	<0.005	mg/l	0.005
	Endosulfan-sulfate	<0.0001	mg/l	0.0001
	Endrin	<0.0001	mg/l	0.0001
	Endrin ketone	<0.0001	mg/l	0.0001
	Endrin-aldehyde	<0.001	mg/l	0.01
	Fluoranthene	<0.0001	mg/l	0.0001
	Fluorene	<0.0001	mg/l	0.0001
	HCH, alpha-	<0.0001	mg/l	0.0001
	HCH, beta-	<0.0001	mg/l	0.0001
	Heptachlor	<0.0001	mg/l	0.0001
	Heptachlor epoxide, cis-	<0.0001	mg/l	0.0001
	Hexachlorobenzene (HCB)	<0.0001	mg/l	0.0001
	Hexazinone	<0.001	mg/l	0.001
	Indeno(1,2,3-cd)pyrene	<0.0001	mg/l	0.0001
	Lindane (gamma-HCH)	<0.0001	mg/l	0.0001
	Metalaxyl and metalaxyl-M (metalaxyl including other mixtures of constituent isomers including metalaxyl-M (sum of isomers))	<0.001	mg/l	0.001
	Methoxychlor	<0.0001	mg/l	0.0001
	Metolachlor	<0.0001	mg/l	0.0001
	Metribuzin	<0.0001	mg/l	0.0001
	Molinate	<0.0001	mg/l	0.0001
	Naphthalene	<0.0001	mg/l	0.0001
	Oxadiazon	<0.0001	mg/l	0.0001
	PCB 101	<0.0001	mg/l	0.0001
	PCB 138	<0.001	mg/l	0.001
	PCB 183	<0.0001	mg/l	0.0001

		RESULTS (UNCERTAINTY)		LOQ
NW228	**SVOC (GC-MSMS)**			
	PCB 28	<0.0001	mg/l	0.0001
	PCB 7	<0.0001	mg/l	0.0001
	Pendimethalin	<0.002	mg/l	0.002
	Permethrin (sum of isomers)	<0.0001	mg/l	0.0001
	Phenanthrene	<0.0001	mg/l	0.0001
	Pirimiphos-methyl	<0.0001	mg/l	0.0001
	Procymidone	<0.0001	mg/l	0.0001
	Propanil	<0.001	mg/l	0.001
	Propazine	<0.0001	mg/l	0.0001
	Pyrene	<0.0001	mg/l	0.0001
	Pyriproxyfen	<0.0001	mg/l	0.0001
	Simazine	<0.0001	mg/l	0.0001
	Terbuthylazine	<0.0001	mg/l	0.0001
	Total Benzo(b) and Benzo(k) fluoranthene	<0.001	mg/l	0.001
	Trifluralin	<0.0001	mg/l	0.0001
NW003	**Total Alkalinity**			
	Alkalinity total	61	(± 6) mg CaCO3/l	1
NW030	**Total Hardness**			
	Hardness	58	mg CaCO3/l	1
NW210	**Total Non-Purgeable Organic Carbon**			
	Total Organic Carbon	1.8	(± 0.2) mg/l	0.1
NW229	**VOC (GC-MS)**			
	1,1,1,2-Tetrachloroethane	<0.0005	mg/l	0.0005
	1,1,1-Trichloroethane	<0.0005	mg/l	0.0005
	1,1,2,2-tetrachloroethane	<0.0005	mg/l	0.0005
	1,1,2-Trichloroethane	<0.0005	mg/l	0.0005
	1,1-Dichloroethane	<0.0005	mg/l	0.0005
	1,1-Dichloroethene	<0.0005	mg/l	0.0005
	1,1-Dichloropropene	<0.0005	mg/l	0.0005
	1,2,3-Trichlorobenzene	<0.0005	mg/l	0.0005
	1,2,3-Trichloropropane	<0.0005	mg/l	0.0005
	1,2,4 trimethylbenzen	<0.0005	mg/l	0.0005
	1,2,4-Trichlorobenzene	<0.0005	mg/l	0.0005
	1,2-Dibromo-3-chloropropane	<0.001	mg/l	0.002
	1,2-Dibromoethane	<0.0002	mg/l	0.0002
	1,2-Dichlorobenzene (2)	<0.0005	mg/l	0.0005
	1,2-Dichloroethane	<0.0005	mg/l	0.0005
	1,2-Dichloropropane	<0.0005	mg/l	0.0005
	1,3,5-Trichlorobenzene	<0.0005	mg/l	0.0005
	1,3,5-Trimethylbenzene	<0.0005	mg/l	0.0005
	1,3-Dichlorobenzene	<0.0005	mg/l	0.0005
	1,3-Dichloropropane	<0.0005	mg/l	0.0005
	1,4-dichlorobenzene	<0.0005	mg/l	0.0005
	2,2-Dichloropropane	<0.0005	mg/l	0.0005
	2-Chlorotoluene	<0.0005	mg/l	0.0005
	3-chloropropene	<0.0005	mg/l	0.0005
	4-Chlorotoluene	<0.0005	mg/l	0.0005

		RESULTS (UNCERTAINTY)		LOQ
NW229	**VOC (GC-MS)**			
	4-methyl-2-pentanone	<0.0005	mg/l	0.0005
	Benzene	<0.0005	mg/l	0.0005
	Bromobenzene	<0.0005	mg/l	0.0005
	Bromochloromethane	<0.0012	mg/l	0.0012
	Bromodichloromethane	<0.0005	mg/l	0.0005
	Bromoform	<0.0005	mg/l	0.0005
	Bromomethane (zone 2)	<0.001	mg/l	0.001
	Carbon tetrachloride	<0.0005	mg/l	0.0005
	Carbondisulphide (CS2)	<0.0005	mg/l	0.0005
	Chlorobenzene	<0.0005	mg/l	0.0005
	Chloroethane	<0.001	mg/l	0.001
	Chloroform	<0.0005	mg/l	0.0005
	Chloromethane	<0.006	mg/l	0.006
	cis-1,2-Dichloroethene	<0.0005	mg/l	0.0005
	cis-1,3-Dichloropropene	<0.0005	mg/l	0.0005
	Dibromochloromethane	<0.0005	mg/l	0.0005
	Dibromomethane	<0.0005	mg/l	0.0005
	Dichlorodifluoromethane	NotRecovered	mg/l	0.001
	Dichloromethane	<0.005	mg/l	0.005
	Hexachlorobutadiene	<0.0002	mg/l	0.0002
	Isopropylbenzene (Cumene)	<0.0005	mg/l	0.0005
	m,p-Xylene, Ethylbenzene	<0.0015	mg/l	0.0015
	Naphthalene	<0.0005	mg/l	0.0005
	n-Butylbenzene	<0.0005	mg/l	0.0005
	n-Propylbenzene	<0.0005	mg/l	0.0005
	p-Isopropyltoluene	<0.0005	mg/l	0.0005
	sec-Butylbenzene	<0.0005	mg/l	0.0005
	Styrene	<0.0005	mg/l	0.0005
	tert-Butylbenzene	<0.0005	mg/l	0.0005
	Tetrachloroethene	<0.0005	mg/l	0.0005
	Toluene	<0.0005	mg/l	0.0005
	trans-1,2-Dichloroethene	<0.0005	mg/l	0.0005
	trans-1,3-Dichloropropene	<0.0005	mg/l	0.0005
	Trichloroethene	<0.0005	mg/l	0.0005
	Trichlorofluoromethane	<0.0005	mg/l	0.0005
	Vinyl chloride	<0.0003	mg/l	0.0003
	Xylene (ortho-)	<0.0005	mg/l	0.0005
①**NWWG6**	**Volatile Fatty Acids (VFA)**			
	Acetic acid	<5	mg/l	5
	Butyric acid	<5	mg/l	5
	Heptanoic acid	<5	mg/l	5
	Hexanoic acid	<5	mg/l	5
	Isobutyric acid	<5	mg/l	5
	Isocaproic acid	<5	mg/l	5
	Isovaleric acid	<5	mg/l	5
	Propionic acid	<5	mg/l	5
	Valeric acid	<5	mg/l	5
	Volatile fatty acids as acetic acid	<5	mg/l	5

RESULTS (UNCERTAINTY)	LOQ

LIST OF METHODS

NW003	**Total Alkalinity:** APHA Online Edition 2320 B
NW00U	**Chlorophenols:** Internal Method, LC-MS/MS
NW011	**Sulphate:** APHA Online Edition 4110 B
NW023	**Conductivity:** APHA 24th Edition 2510 B
NW098	**Dissolved Aluminium:** APHA Online Edition 3125 B mod.
NW104	**Dissolved Cadmium:** APHA Online Edition 3125 B mod.
NW106	**Dissolved Chromium:** APHA Online Edition 3125 B mod.
NW109	**Dissolved Iron:** APHA Online Edition 3125 B mod.
NW112	**Dissolved Magnesium:** APHA Online Edition 3125 B mod.
NW114	**Dissolved Mercury:** APHA Online Edition 3125 B mod.
NW117	**Dissolved Potassium:** APHA Online Edition 3125 B mod.
NW125	**Dissolved Zinc:** APHA Online Edition 3125 B mod.
NW193	**Dissolved Reactive Phosphorus:** APHA Online Edition 4500-P G
NW206	**Suspended Solids:** APHA Online Edition 2540 D
NW228	**SVOC (GC-MSMS):** Internal Method, GC-MS/MS
NW341	**BOD5 - Soluble Carbonaceous:** APHA Online Edition 5210 B
NWWG6	**Volatile Fatty Acids (VFA):** APHA 24th Edition 5560 D mod.
NW007	**Chloride:** APHA Online Edition 4110 B
NW010	**Nitrate-N:** APHA Online Edition 4110 B
NW020	**Chemical Oxygen Demand:** APHA Online Edition 5220 D
NW030	**Total Hardness:** APHA Online Edition 2340 B
NW103	**Dissolved Boron:** APHA Online Edition 3125 B mod.
NW105	**Dissolved Calcium:** APHA Online Edition 3125 B mod.
NW108	**Dissolved Copper:** APHA Online Edition 3125 B mod.
NW110	**Dissolved Lead:** APHA Online Edition 3125 B mod.
NW113	**Dissolved Manganese:** APHA Online Edition 3125 B mod.
NW116	**Dissolved Nickel:** APHA Online Edition 3125 B mod.
NW120	**Dissolved Sodium:** APHA Online Edition 3125 B mod.
NW179	**Ammonia Nitrogen:** APHA Online Edition 4500-NH3 H
NW195	**pH (Tested beyond 15 minute APHA holding time):** APHA 24th Edition 4500-H B
NW210	**Total Non-Purgeable Organic Carbon:** APHA Online Edition 5310 B
NW229	**VOC (GC-MS):** Internal Method, HS-GC-MS
NW583	**Dissolved Arsenic:** APHA Online Edition 3125 B mod.
ZMF1E	**Escherichia coli E (Water) [NZ] <1 >80 /100 ml (0) Ml Agar-F:** SMEWW 9222K; APHA 24th Edition

Signature

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EXPLANATORY NOTE

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⑧ Tested at the sampling point by Eurofins and is accredited
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LOQ means Limit of Quantification and the unit of LOQ is the same as the result unit
✗ (Unsatisfactory) means does not meet the specification
✓ (Satisfactory) means meets the specification

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END OF REPORT

Food & Water Testing

ANALYTICAL REPORT

REPORT CODE	AR-24-NW-023902-01	REPORT DATE	19/04/2024

Attention Downer NZ Ltd (EDI Levin)
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Copy to: Water and Waste Team (waterandwasteteam@horowhenua.govt.nz), McMillan

Contact for your orders: Gabriela Carvalhaes
Contract: Landfill

Order code: EUNZWE-00177376
Purchase Order Number: Landfill

SAMPLE CODE	812-2024-00051380		
Sample Name	349880-0		
Product:	Ground water		
Sampling Point code:	WIL-G2	**Sampling Point name:**	Levin G2s
Reception Date & Time:	08/04/2024 16:45		
Analysis Started on:	08/04/2024	**Analysis Ending Date:**	19/04/2024
Product Type	Ground water	**Sampled Date & Time**	08/04/2024 08:06
Sampler(s)	Client nominated external sampler	**Sampled by Eurofins**	No

		RESULTS	(UNCERTAINTY)	LOQ
NW179	**Ammonia Nitrogen**			
	Ammoniacal nitrogen (N)	0.03	(± 0.00) mg/l	0.01
NW341	**BOD5 - Soluble Carbonaceous**			
	BOD5	<1	mg/l	1
NW020	**Chemical Oxygen Demand**			
	Chemical oxygen demand (COD)	41	(± 8) mg/l	15
NW007	**Chloride**			
	Chloride (Cl)	140	(± 14.0) mg/l	0.02
NW00U	**Chlorophenols**			
	2,3,4,6-Tetrachlorophenol	<0.01	mg/l	0.01
	2,4-Dichlorophenol	<0.01	mg/l	0.01
	2,6-Dichlorophenol	<0.2	mg/l	0.2
	2-Chlorophenol (o-chlorophenol)	<0.01	mg/l	0.01
	3,4,5-Trichlorophenol	<0.01	mg/l	0.01
	4-Chloro-3-cresol	<0.01	mg/l	0.01
	Pentachlorophenol	<0.005	mg/l	0.005
	Phenol	<0.01	mg/l	0.01
	Total of 2,4,5 & 2,4,6 -Trichlorophenol	<0.02	mg/l	0.02
NW023	**Conductivity**			
	Conductivity	106	(± 2.1) mS/m	0.1
NW098	**Dissolved Aluminium**			
	Aluminium	0.005	mg/l	0.002
NW583	**Dissolved Arsenic**			
	Arsenic (As)	<0.001	mg/l	0.001
NW103	**Dissolved Boron**			
	Boron (B)	0.79	mg/l	0.03

		RESULTS (UNCERTAINTY)		LOQ
NW104	**Dissolved Cadmium**			
	Cadmium (Cd)	<0.0002	mg/l	0.0002
NW105	**Dissolved Calcium**			
	Calcium (Ca)	40.5	mg/l	0.1
NW106	**Dissolved Chromium**			
	Chromium (Cr)	<0.001	mg/l	0.001
NW108	**Dissolved Copper**			
	Copper (Cu)	0.0073	mg/l	0.0005
NW109	**Dissolved Iron**			
	Iron (Fe)	0.06	mg/l	0.01
NW110	**Dissolved Lead**			
	Lead (Pb)	<0.0005	mg/l	0.0005
NW112	**Dissolved Magnesium**			
	Magnesium (Mg)	30.0	mg/l	0.01
NW113	**Dissolved Manganese**			
	Manganese (Mn)	0.220	mg/l	0.0005
NW114	**Dissolved Mercury**			
	Mercury (Hg)	<0.0005	mg/l	0.0005
NW116	**Dissolved Nickel**			
	Nickel (Ni)	0.0031	mg/l	0.0005
NW117	**Dissolved Potassium**			
	Potassium (K)	10.5	mg/l	0.01
NW193	**Dissolved Reactive Phosphorus**			
	Phosphorus (soluble reactive)	0.022	mg/l	0.005
NW120	**Dissolved Sodium**			
	Sodium (Na)	156	mg/l	0.01
NW125	**Dissolved Zinc**			
	Zinc (Zn)	0.009	mg/l	0.002
ZM2GA	**Enumeration of Escherichia coli By Membrane Filtration**			
	Escherichia coli	<100	cfu/100 ml	100
NW010	**Nitrate-N**			
	Nitrate-N	<0.01	(± 0.00) mg/l	0.01
NW195	**pH (Tested beyond 15 minute APHA holding time)**			
	pH	6.7	(± 0.2)	0.1
NW011	**Sulphate**			
	Sulphate	11.6	(± 1.16) mg/l	0.02
NW206	**Suspended Solids**			
	Suspended Solids	11	mg/l	3
NW228	**SVOC (GC-MSMS)**			
	Acenaphthene	<0.0001	mg/l	0.0001
	Acenaphthylene	<0.001	mg/l	0.001
	Adipatic acid, bis-2-ethylhexyl ester (DEHA)	<0.0001	mg/l	0.0001
	Alachlor	<0.0001	mg/l	0.0001
	Aldicarb	<0.1	mg/l	0.1
	Aldrin	<0.001	mg/l	0.001
	Anthracene	<0.001	mg/l	0.001
	Atrazine	<0.0001	mg/l	0.0001

		RESULTS (UNCERTAINTY)		LOQ
NW228	**SVOC (GC-MSMS)**			
	Benz(a)anthracene	<0.0001	mg/l	0.0001
	Benzo(a)pyrene	<0.0001	mg/l	0.0001
	Benzo(g,h,i)perylene	<0.001	mg/l	0.001
	Bromacil	<0.005	mg/l	0.005
	Carbofuran	<0.001	mg/l	0.001
	Chlordane	<0.0001	mg/l	0.0001
	Chlordane, gamma	<0.001	mg/l	0.001
	Chlorpyrifos (-ethyl)	<0.0001	mg/l	0.0001
	Chrysene	<0.0001	mg/l	0.0001
	Cyanazine	<0.005	mg/l	0.005
	d-BHC	<0.0001	mg/l	0.0001
	DDD, p,p'-	<0.0001	mg/l	0.0001
	DDE, p,p-	<0.0001	mg/l	0.0001
	DDT, p,p'-	<0.001	mg/l	0.001
	Diazinon	<0.0001	mg/l	0.0001
	Dibenz(a,h)anthracene	<0.0001	mg/l	0.0001
	Dieldrin	<0.0001	mg/l	0.0001
	Dimethoate	<0.001	mg/l	0.001
	Diuron	<0.001	mg/l	0.001
	Endosulfan, alpha-	<0.001	mg/l	0.001
	Endosulfan, beta-	<0.005	mg/l	0.005
	Endosulfan-sulfate	<0.0001	mg/l	0.0001
	Endrin	<0.0001	mg/l	0.0001
	Endrin ketone	<0.0001	mg/l	0.0001
	Endrin-aldehyde	<0.001	mg/l	0.01
	Fluoranthene	<0.0001	mg/l	0.0001
	Fluorene	<0.0001	mg/l	0.0001
	HCH, alpha-	<0.0001	mg/l	0.0001
	HCH, beta-	<0.0001	mg/l	0.0001
	Heptachlor	<0.0001	mg/l	0.0001
	Heptachlor epoxide, cis-	<0.0001	mg/l	0.0001
	Hexachlorobenzene (HCB)	<0.0001	mg/l	0.0001
	Hexazinone	<0.001	mg/l	0.001
	Indeno(1,2,3-cd)pyrene	<0.0001	mg/l	0.0001
	Lindane (gamma-HCH)	<0.0001	mg/l	0.0001
	Metalaxyl and metalaxyl-M (metalaxyl including other mixtures of constituent isomers including metalaxyl-M (sum of isomers))	<0.001	mg/l	0.001
	Methoxychlor	<0.0001	mg/l	0.0001
	Metolachlor	<0.0001	mg/l	0.0001
	Metribuzin	<0.0001	mg/l	0.0001
	Molinate	<0.0001	mg/l	0.0001
	Naphthalene	<0.0001	mg/l	0.0001
	Oxadiazon	<0.0001	mg/l	0.0001
	PCB 101	<0.0001	mg/l	0.0001
	PCB 138	<0.001	mg/l	0.001
	PCB 183	<0.0001	mg/l	0.0001

		RESULTS	(UNCERTAINTY)	LOQ
NW228	**SVOC (GC-MSMS)**			
	PCB 28	<0.0001	mg/l	0.0001
	PCB 7	<0.0001	mg/l	0.0001
	Pendimethalin	<0.002	mg/l	0.002
	Permethrin (sum of isomers)	<0.0001	mg/l	0.0001
	Phenanthrene	<0.0001	mg/l	0.0001
	Pirimiphos-methyl	<0.0001	mg/l	0.0001
	Procymidone	<0.0001	mg/l	0.0001
	Propanil	<0.001	mg/l	0.001
	Propazine	<0.0001	mg/l	0.0001
	Pyrene	<0.0001	mg/l	0.0001
	Pyriproxyfen	<0.0001	mg/l	0.0001
	Simazine	<0.0001	mg/l	0.0001
	Terbuthylazine	<0.0001	mg/l	0.0001
	Total Benzo(b) and Benzo(k) fluoranthene	<0.001	mg/l	0.001
	Trifluralin	<0.0001	mg/l	0.0001
NW003	**Total Alkalinity**			
	Alkalinity total	324	(± 32) mg CaCO3/l	1
NW030	**Total Hardness**			
	Hardness	224	mg CaCO3/l	1
NW210	**Total Non-Purgeable Organic Carbon**			
	Total Organic Carbon	9.7	(± 1.0) mg/l	0.1
NW229	**VOC (GC-MS)**			
	1,1,1,2-Tetrachloroethane	<0.0005	mg/l	0.0005
	1,1,1-Trichloroethane	<0.0005	mg/l	0.0005
	1,1,2,2-tetrachloroethane	<0.0005	mg/l	0.0005
	1,1,2-Trichloroethane	<0.0005	mg/l	0.0005
	1,1-Dichloroethane	<0.0005	mg/l	0.0005
	1,1-Dichloroethene	<0.0005	mg/l	0.0005
	1,1-Dichloropropene	<0.0005	mg/l	0.0005
	1,2,3-Trichlorobenzene	<0.0005	mg/l	0.0005
	1,2,3-Trichloropropane	<0.0005	mg/l	0.0005
	1,2,4 trimethylbenzen	<0.0005	mg/l	0.0005
	1,2,4-Trichlorobenzene	<0.0005	mg/l	0.0005
	1,2-Dibromo-3-chloropropane	<0.001	mg/l	0.002
	1,2-Dibromoethane	<0.0002	mg/l	0.0002
	1,2-Dichlorobenzene (2)	<0.0005	mg/l	0.0005
	1,2-Dichloroethane	<0.0005	mg/l	0.0005
	1,2-Dichloropropane	<0.0005	mg/l	0.0005
	1,3,5-Trichlorobenzene	<0.0005	mg/l	0.0005
	1,3,5-Trimethylbenzene	<0.0005	mg/l	0.0005
	1,3-Dichlorobenzene	<0.0005	mg/l	0.0005
	1,3-Dichloropropane	<0.0005	mg/l	0.0005
	1,4-dichlorobenzene	<0.0005	mg/l	0.0005
	2,2-Dichloropropane	<0.0005	mg/l	0.0005
	2-Chlorotoluene	<0.0005	mg/l	0.0005
	3-chloropropene	<0.0005	mg/l	0.0005
	4-Chlorotoluene	<0.0005	mg/l	0.0005

		RESULTS (UNCERTAINTY)		LOQ
NW229	**VOC (GC-MS)**			
	4-methyl-2-pentanone	<0.0005	mg/l	0.0005
	Benzene	<0.0005	mg/l	0.0005
	Bromobenzene	<0.0005	mg/l	0.0005
	Bromochloromethane	<0.0012	mg/l	0.0012
	Bromodichloromethane	<0.0005	mg/l	0.0005
	Bromoform	<0.0005	mg/l	0.0005
	Bromomethane (zone 2)	<0.001	mg/l	0.001
	Carbon tetrachloride	<0.0005	mg/l	0.0005
	Carbondisulphide (CS2)	<0.0005	mg/l	0.0005
	Chlorobenzene	<0.0005	mg/l	0.0005
	Chloroethane	<0.001	mg/l	0.001
	Chloroform	<0.0005	mg/l	0.0005
	Chloromethane	<0.006	mg/l	0.006
	cis-1,2-Dichloroethene	<0.0005	mg/l	0.0005
	cis-1,3-Dichloropropene	<0.0005	mg/l	0.0005
	Dibromochloromethane	<0.0005	mg/l	0.0005
	Dibromomethane	<0.0005	mg/l	0.0005
	Dichlorodifluoromethane	NotRecovered	mg/l	0.001
	Dichloromethane	<0.005	mg/l	0.005
	Hexachlorobutadiene	<0.0002	mg/l	0.0002
	Isopropylbenzene (Cumene)	<0.0005	mg/l	0.0005
	m,p-Xylene, Ethylbenzene	<0.0015	mg/l	0.0015
	Naphthalene	<0.0005	mg/l	0.0005
	n-Butylbenzene	<0.0005	mg/l	0.0005
	n-Propylbenzene	<0.0005	mg/l	0.0005
	p-Isopropyltoluene	<0.0005	mg/l	0.0005
	sec-Butylbenzene	<0.0005	mg/l	0.0005
	Styrene	<0.0005	mg/l	0.0005
	tert-Butylbenzene	<0.0005	mg/l	0.0005
	Tetrachloroethene	<0.0005	mg/l	0.0005
	Toluene	<0.0005	mg/l	0.0005
	trans-1,2-Dichloroethene	<0.0005	mg/l	0.0005
	trans-1,3-Dichloropropene	<0.0005	mg/l	0.0005
	Trichloroethene	<0.0005	mg/l	0.0005
	Trichlorofluoromethane	<0.0005	mg/l	0.0005
	Vinyl chloride	<0.0003	mg/l	0.0003
	Xylene (ortho-)	<0.0005	mg/l	0.0005
①**NWWG6**	**Volatile Fatty Acids (VFA)**			
	Acetic acid	<5	mg/l	5
	Butyric acid	<5	mg/l	5
	Heptanoic acid	<5	mg/l	5
	Hexanoic acid	<5	mg/l	5
	Isobutyric acid	<5	mg/l	5
	Isocaproic acid	<5	mg/l	5
	Isovaleric acid	<5	mg/l	5
	Propionic acid	<5	mg/l	5
	Valeric acid	<5	mg/l	5
	Volatile fatty acids as acetic acid	<5	mg/l	5

RESULTS (UNCERTAINTY)	LOQ

LIST OF METHODS

NW003 **Total Alkalinity:** APHA Online Edition 2320 B

NW00U **Chlorophenols:** Internal Method, LC-MS/MS

NW011 **Sulphate:** APHA Online Edition 4110 B

NW023 **Conductivity:** APHA 24th Edition 2510 B

NW098 **Dissolved Aluminium:** APHA Online Edition 3125 B mod.

NW104 **Dissolved Cadmium:** APHA Online Edition 3125 B mod.

NW106 **Dissolved Chromium:** APHA Online Edition 3125 B mod.

NW109 **Dissolved Iron:** APHA Online Edition 3125 B mod.

NW112 **Dissolved Magnesium:** APHA Online Edition 3125 B mod.

NW114 **Dissolved Mercury:** APHA Online Edition 3125 B mod.

NW117 **Dissolved Potassium:** APHA Online Edition 3125 B mod.

NW125 **Dissolved Zinc:** APHA Online Edition 3125 B mod.

NW193 **Dissolved Reactive Phosphorus:** APHA Online Edition 4500-P G

NW206 **Suspended Solids:** APHA Online Edition 2540 D

NW228 **SVOC (GC-MSMS):** Internal Method, GC-MS/MS

NW341 **BOD5 - Soluble Carbonaceous:** APHA Online Edition 5210 B

NWWG6 **Volatile Fatty Acids (VFA):** APHA 24th Edition 5560 D mod.

NW007 **Chloride:** APHA Online Edition 4110 B

NW010 **Nitrate-N:** APHA Online Edition 4110 B

NW020 **Chemical Oxygen Demand:** APHA Online Edition 5220 D

NW030 **Total Hardness:** APHA Online Edition 2340 B

NW103 **Dissolved Boron:** APHA Online Edition 3125 B mod.

NW105 **Dissolved Calcium:** APHA Online Edition 3125 B mod.

NW108 **Dissolved Copper:** APHA Online Edition 3125 B mod.

NW110 **Dissolved Lead:** APHA Online Edition 3125 B mod.

NW113 **Dissolved Manganese:** APHA Online Edition 3125 B mod.

NW116 **Dissolved Nickel:** APHA Online Edition 3125 B mod.

NW120 **Dissolved Sodium:** APHA Online Edition 3125 B mod.

NW179 **Ammonia Nitrogen:** APHA Online Edition 4500-NH3 H

NW195 **pH (Tested beyond 15 minute APHA holding time):** APHA 24th Edition 4500-H B

NW210 **Total Non-Purgeable Organic Carbon:** APHA Online Edition 5310 B

NW229 **VOC (GC-MS):** Internal Method, HS-GC-MS

NW583 **Dissolved Arsenic:** APHA Online Edition 3125 B mod.

ZM2GA **Escherichia coli E (Water) [NZ] <100 >6 000 000 /100 ml (0-3) m-FC Agar-F:** SMEWW 9222I; APHA 24th Edition

Signature

Marylou Cabral Laboratory Manager Eurofins ELS Limited

Jennifer Mont Supervisor Eurofins ELS Limited

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⑨ Test is RLP accredited
⑩ Test is subcontracted within Eurofins group and is RLP accredited

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LOQ means Limit of Quantification and the unit of LOQ is the same as the result unit
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✓ (Satisfactory) means meets the specification

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END OF REPORT

Food & Water Testing

ANALYTICAL REPORT

REPORT CODE	AR-24-NW-023576-01	REPORT DATE	19/04/2024

Attention Downer NZ Ltd (EDI Levin)
Horowhenua Admin
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4741 Levin
NEW ZEALAND

Phone (06) 367 2705
Email horowhenuaadmin@downer.co.nz

Copy to: Water and Waste Team (waterandwasteteam@horowhenua.govt.nz), McMillan

Contact for your orders: Gabriela Carvalhaes
Contract: Landfill

Order code: EUNZWE-00178002
Purchase Order Number: Landfill

SAMPLE CODE	812-2024-00053650		
Sample Name	349829-0		
Product:	Ground water		
Sampling Point code:	WIL-HS1	**Sampling Point name:**	Levin HS1
Reception Date & Time:	11/04/2024 13:30		
Analysis Started on:	11/04/2024	**Analysis Ending Date:**	19/04/2024
Product Type	Ground water	**Sampled Date & Time**	11/04/2024 07:10
Sampler(s)	Client nominated external sampler	**Sampled by Eurofins**	No

		RESULTS	(UNCERTAINTY)	LOQ
NW179	**Ammonia Nitrogen**			
	Ammoniacal nitrogen (N)	0.03	(± 0.00) mg/l	0.01
NW341	**BOD5 - Soluble Carbonaceous**			
	BOD5	<1	mg/l	1
NW020	**Chemical Oxygen Demand**			
	Chemical oxygen demand (COD)	<15	(± 5) mg/l	15
NW007	**Chloride**			
	Chloride (Cl)	28.0	(± 2.80) mg/l	0.02
NW00U	**Chlorophenols**			
	2,3,4,6-Tetrachlorophenol	<0.01	mg/l	0.01
	2,4-Dichlorophenol	<0.01	mg/l	0.01
	2,6-Dichlorophenol	<0.02	mg/l	0.2
	2-Chlorophenol (o-chlorophenol)	<0.01	mg/l	0.01
	3,4,5-Trichlorophenol	<0.01	mg/l	0.01
	4-Chloro-3-cresol	<0.01	mg/l	0.01
	Pentachlorophenol	<0.005	mg/l	0.005
	Phenol	<0.01	mg/l	0.01
	Total of 2,4,5 & 2,4,6 -Trichlorophenol	<0.02	mg/l	0.02
NW023	**Conductivity**			
	Conductivity	26.0	(± 0.5) mS/m	0.1
NW098	**Dissolved Aluminium**			
	Aluminium	0.005	mg/l	0.002
NW583	**Dissolved Arsenic**			
	Arsenic (As)	0.002	mg/l	0.001
NW103	**Dissolved Boron**			
	Boron (B)	0.07	mg/l	0.03

		RESULTS (UNCERTAINTY)		LOQ
NW104	**Dissolved Cadmium**			
	Cadmium (Cd)	<0.0002	mg/l	0.0002
NW105	**Dissolved Calcium**			
	Calcium (Ca)	11.4	mg/l	0.1
NW106	**Dissolved Chromium**			
	Chromium (Cr)	<0.001	mg/l	0.001
NW108	**Dissolved Copper**			
	Copper (Cu)	0.0013	mg/l	0.0005
NW109	**Dissolved Iron**			
	Iron (Fe)	0.07	mg/l	0.01
NW110	**Dissolved Lead**			
	Lead (Pb)	<0.0005	mg/l	0.0005
NW112	**Dissolved Magnesium**			
	Magnesium (Mg)	8.29	mg/l	0.01
NW113	**Dissolved Manganese**			
	Manganese (Mn)	0.0281	mg/l	0.0005
NW114	**Dissolved Mercury**			
	Mercury (Hg)	<0.0005	mg/l	0.0005
NW116	**Dissolved Nickel**			
	Nickel (Ni)	0.0006	mg/l	0.0005
NW117	**Dissolved Potassium**			
	Potassium (K)	3.20	mg/l	0.01
NW193	**Dissolved Reactive Phosphorus**			
	Phosphorus (soluble reactive)	0.139	mg/l	0.005
NW120	**Dissolved Sodium**			
	Sodium (Na)	25.1	mg/l	0.01
NW125	**Dissolved Zinc**			
	Zinc (Zn)	0.003	mg/l	0.002
ZM2GA	**Enumeration of Escherichia coli By Membrane Filtration**			
	Escherichia coli	200	cfu/100 ml	100
NW010	**Nitrate-N**			
	Nitrate-N	0.19	(± 0.02) mg/l	0.01
NW195	**pH (Tested beyond 15 minute APHA holding time)**			
	pH	7.4	(± 0.2)	0.1
NW011	**Sulphate**			
	Sulphate	15.5	(± 1.55) mg/l	0.02
NW206	**Suspended Solids**			
	Suspended Solids	7	mg/l	3
NW003	**Total Alkalinity**			
	Alkalinity total	66	(± 7) mg CaCO3/l	1
NW030	**Total Hardness**			
	Hardness	63	mg CaCO3/l	1
NW210	**Total Non-Purgeable Organic Carbon**			
	Total Organic Carbon	6.6	(± 0.7) mg/l	0.1
①**NWWG6**	**Volatile Fatty Acids (VFA)**			
	Acetic acid	<5	mg/l	5
	Butyric acid	<5	mg/l	5

	RESULTS	(UNCERTAINTY)	LOQ
①NWWG6 **Volatile Fatty Acids (VFA)**			
Heptanoic acid	<5	mg/l	5
Hexanoic acid	<5	mg/l	5
Isobutyric acid	<5	mg/l	5
Isocaproic acid	<5	mg/l	5
Isovaleric acid	<5	mg/l	5
Propionic acid	<5	mg/l	5
Valeric acid	<5	mg/l	5
Volatile fatty acids as acetic acid	<5	mg/l	5

LIST OF METHODS

NW003 **Total Alkalinity:** APHA Online Edition 2320 B

NW00U **Chlorophenols:** Internal Method, LC-MS/MS

NW011 **Sulphate:** APHA Online Edition 4110 B

NW023 **Conductivity:** APHA 24th Edition 2510 B

NW098 **Dissolved Aluminium:** APHA Online Edition 3125 B mod.

NW104 **Dissolved Cadmium:** APHA Online Edition 3125 B mod.

NW106 **Dissolved Chromium:** APHA Online Edition 3125 B mod.

NW109 **Dissolved Iron:** APHA Online Edition 3125 B mod.

NW112 **Dissolved Magnesium:** APHA Online Edition 3125 B mod.

NW114 **Dissolved Mercury:** APHA Online Edition 3125 B mod.

NW117 **Dissolved Potassium:** APHA Online Edition 3125 B mod.

NW125 **Dissolved Zinc:** APHA Online Edition 3125 B mod.

NW193 **Dissolved Reactive Phosphorus:** APHA Online Edition 4500-P G

NW206 **Suspended Solids:** APHA Online Edition 2540 D

NW341 **BOD5 - Soluble Carbonaceous:** APHA Online Edition 5210 B

NWWG6 **Volatile Fatty Acids (VFA):** APHA 24th Edition 5560 D mod.

NW007 **Chloride:** APHA Online Edition 4110 B

NW010 **Nitrate-N:** APHA Online Edition 4110 B

NW020 **Chemical Oxygen Demand:** APHA Online Edition 5220 D

NW030 **Total Hardness:** APHA Online Edition 2340 B

NW103 **Dissolved Boron:** APHA Online Edition 3125 B mod.

NW105 **Dissolved Calcium:** APHA Online Edition 3125 B mod.

NW108 **Dissolved Copper:** APHA Online Edition 3125 B mod.

NW110 **Dissolved Lead:** APHA Online Edition 3125 B mod.

NW113 **Dissolved Manganese:** APHA Online Edition 3125 B mod.

NW116 **Dissolved Nickel:** APHA Online Edition 3125 B mod.

NW120 **Dissolved Sodium:** APHA Online Edition 3125 B mod.

NW179 **Ammonia Nitrogen:** APHA Online Edition 4500-NH3 H

NW195 **pH (Tested beyond 15 minute APHA holding time):** APHA 24th Edition 4500-H B

NW210 **Total Non-Purgeable Organic Carbon:** APHA Online Edition 5310 B

NW583 **Dissolved Arsenic:** APHA Online Edition 3125 B mod.

ZM2GA **Escherichia coli E (Water) [NZ] <100 >6 000 000 /100 ml (0-3) m-FC Agar-F:** SMEWW 9222I; APHA 24th Edition

Signature

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Divina Cunanan Lagazon Supervisor Eurofins ELS Limited

Gordon McArthur Senior Laboratory Analyst Eurofins ELS Limited

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Gabriela Carvalhaes Manager Food and Water Testing Chemistry

Cody Forbes Laboratory Analyst Laboratory Analyst

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N/A means Not Applicable
Not Detected means not detected at or above the Limit of Quantification (LOQ)
LOQ means Limit of Quantification and the unit of LOQ is the same as the result unit
✗ (Unsatisfactory) means does not meet the specification
✓ (Satisfactory) means meets the specification

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Food & Water Testing

ANALYTICAL REPORT

REPORT CODE **AR-24-NW-010952-01** REPORT DATE **24/02/2024**

Attention Downer NZ Ltd (EDI Levin)
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4741 Levin
NEW ZEALAND

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Copy to: Water and Waste Team (waterandwasteteam@horowhenua.govt.nz), McMillan

Contact for your orders: Gabriela Carvalhaes
Contract: Landfill

Order code: EUNZWE-00167675
Purchase Order Number: Landfill

SAMPLE CODE **812-2024-00022463**

Client Reference: 327333-0
Product: Ground water
Sampling Point code: WIL-HS1
Sampling Point name: Levin HS1
Reception Date & Time: 15/02/2024 10:02
Analysis Start Date & Time: 15/02/2024 10:10
Analysis Ending Date: 24/02/2024
Product Type Ground water
Sampled Date & Time 12/02/2024 22:18
Sampler(s) Client nominated external sampler
Sampled by Eurofins No

		RESULTS (UNCERTAINTY)		LOQ
NW179	**Ammonia Nitrogen**			
	Ammoniacal nitrogen (N)	0.04	(± 0.01) mg/l	0.01
NW341	**BOD5 - Soluble Carbonaceous**			
	BOD5	<1	mg/l	1
NW020	**Chemical Oxygen Demand**			
	Chemical oxygen demand (COD)	19	(± 6) mg/l	15
NW007	**Chloride**			
	Chloride (Cl)	25.9	(± 2.59) mg/l	0.02
NW00U	**Chlorophenols**			
	2,3,4,6-Tetrachlorophenol	<0.01	mg/l	0.01
	2,4-Dichlorophenol	<0.01	mg/l	0.01
	2,6-Dichlorophenol	<0.02	mg/l	0.2
	2-Chlorophenol (o-chlorophenol)	<0.01	mg/l	0.01
	3,4,5-Trichlorophenol	<0.01	mg/l	0.01
	4-Chloro-3-cresol	<0.01	mg/l	0.01
	Pentachlorophenol	<0.005	mg/l	0.005
	Phenol	<0.01	mg/l	0.01
	Total of 2,4,5 & 2,4,6 -Trichlorophenol	<0.02	mg/l	0.02
NW023	**Conductivity**			
	Conductivity	23.5	(± 0.5) mS/m	0.1
NW098	**Dissolved Aluminium**			
	Aluminium	0.019	mg/l	0.002
NW583	**Dissolved Arsenic**			
	Arsenic (As)	0.002	mg/l	0.001
NW103	**Dissolved Boron**			
	Boron (B)	0.06	mg/l	0.03

		RESULTS	(UNCERTAINTY)	LOQ
NW104	**Dissolved Cadmium**			
	Cadmium (Cd)	<0.0002	mg/l	0.0002
NW105	**Dissolved Calcium**			
	Calcium (Ca)	10.9	mg/l	0.1
NW106	**Dissolved Chromium**			
	Chromium (Cr)	<0.001	mg/l	0.001
NW108	**Dissolved Copper**			
	Copper (Cu)	0.0011	mg/l	0.0005
NW109	**Dissolved Iron**			
	Iron (Fe)	0.11	mg/l	0.01
NW110	**Dissolved Lead**			
	Lead (Pb)	<0.0005	mg/l	0.0005
NW112	**Dissolved Magnesium**			
	Magnesium (Mg)	6.67	mg/l	0.01
NW113	**Dissolved Manganese**			
	Manganese (Mn)	0.0067	mg/l	0.0005
NW114	**Dissolved Mercury**			
	Mercury (Hg)	<0.0005	mg/l	0.0005
NW116	**Dissolved Nickel**			
	Nickel (Ni)	<0.0005	mg/l	0.0005
NW117	**Dissolved Potassium**			
	Potassium (K)	1.52	mg/l	0.01
NW193	**Dissolved Reactive Phosphorus**			
	Phosphorus (soluble reactive)	0.155	(± 0.031) mg/l	0.005
NW120	**Dissolved Sodium**			
	Sodium (Na)	24.2	mg/l	0.01
NW125	**Dissolved Zinc**			
	Zinc (Zn)	<0.002	mg/l	0.002
ZM2GA	**Enumeration of Escherichia coli By Membrane Filtration**			
	Escherichia coli	<100	cfu/100 ml	100
NW010	**Nitrate-N**			
	Nitrate-N	0.19	(± 0.02) mg/l	0.01
NW195	**pH (Tested beyond 15 minute APHA holding time)**			
	pH	7.7	(± 0.2)	0.1
NW011	**Sulphate**			
	Sulphate	19.2	(± 1.92) mg/l	0.02
NW206	**Suspended Solids**			
	Suspended Solids	<5	mg/l	3
NW003	**Total Alkalinity**			
	Alkalinity total	49	(± 5) mg CaCO3/l	1
NW030	**Total Hardness**			
	Hardness	55	mg CaCO3/l	1
NW210	**Total Non-Purgeable Organic Carbon**			
	Total Organic Carbon	7.3	(± 0.7) mg/l	0.1
①**NWWG6**	**Volatile Fatty Acids (VFA)**			
	Acetic acid	<5	mg/l	5
	Butyric acid	<5	mg/l	5

	RESULTS (UNCERTAINTY)		LOQ
①NWWG6 **Volatile Fatty Acids (VFA)**			
Heptanoic acid	<5	mg/l	5
Hexanoic acid	<5	mg/l	5
Isobutyric acid	<5	mg/l	5
Isocaproic acid	<5	mg/l	5
Isovaleric acid	<5	mg/l	5
Propionic acid	<5	mg/l	5
Valeric acid	<5	mg/l	5
Volatile fatty acids as acetic acid	<5	mg/l	5

LIST OF METHODS

NW003 **Total Alkalinity:** APHA Online Edition 2320 B

NW00U **Chlorophenols:** Internal Method, LC-MS/MS

NW011 **Sulphate:** APHA Online Edition 4110 B

NW023 **Conductivity:** APHA 24th Edition 2510 B

NW098 **Dissolved Aluminium:** APHA Online Edition 3125 B mod.

NW104 **Dissolved Cadmium:** APHA Online Edition 3125 B mod.

NW106 **Dissolved Chromium:** APHA Online Edition 3125 B mod.

NW109 **Dissolved Iron:** APHA Online Edition 3125 B mod.

NW112 **Dissolved Magnesium:** APHA Online Edition 3125 B mod.

NW114 **Dissolved Mercury:** APHA Online Edition 3125 B mod.

NW117 **Dissolved Potassium:** APHA Online Edition 3125 B mod.

NW125 **Dissolved Zinc:** APHA Online Edition 3125 B mod.

NW193 **Dissolved Reactive Phosphorus:** APHA Online Edition 4500-P G

NW206 **Suspended Solids:** APHA Online Edition 2540 D

NW341 **BOD5 - Soluble Carbonaceous:** APHA Online Edition 5210 B

NWWG6 **Volatile Fatty Acids (VFA):** APHA 24th Edition 5560 D mod.

NW007 **Chloride:** APHA Online Edition 4110 B

NW010 **Nitrate-N:** APHA Online Edition 4110 B

NW020 **Chemical Oxygen Demand:** APHA Online Edition 5220 D

NW030 **Total Hardness:** APHA Online Edition 2340 B

NW103 **Dissolved Boron:** APHA Online Edition 3125 B mod.

NW105 **Dissolved Calcium:** APHA Online Edition 3125 B mod.

NW108 **Dissolved Copper:** APHA Online Edition 3125 B mod.

NW110 **Dissolved Lead:** APHA Online Edition 3125 B mod.

NW113 **Dissolved Manganese:** APHA Online Edition 3125 B mod.

NW116 **Dissolved Nickel:** APHA Online Edition 3125 B mod.

NW120 **Dissolved Sodium:** APHA Online Edition 3125 B mod.

NW179 **Ammonia Nitrogen:** APHA Online Edition 4500-NH3 H

NW195 **pH (Tested beyond 15 minute APHA holding time):** APHA 24th Edition 4500-H B

NW210 **Total Non-Purgeable Organic Carbon:** APHA Online Edition 5310 B

NW583 **Dissolved Arsenic:** APHA Online Edition 3125 B mod.

ZM2GA **Escherichia coli E (Water) [NZ] <100 >6 000 000 /100 ml (0-3) m-FC Agar-F:** SMEWW 9222I; APHA 24th Edition

Signature

Jennifer Mont Supervisor Eurofins ELS Limited

Divina Cunanan Lagazon Supervisor Eurofins ELS Limited

Gordon McArthur Senior Laboratory Analyst Eurofins ELS Limited

Ganesh Ilancko Supervisor Eurofins ELS Limited

Leo Cleave Senior Analyst Microbiology

Gabriela Carvalhaes Manager Food and Water Testing Chemistry

Food & Water Testing

ANALYTICAL REPORT

REPORT CODE	AR-24-NW-019303-01	REPORT DATE	31/03/2024

Attention Downer NZ Ltd (EDI Levin)
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NEW ZEALAND

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Copy to: Water and Waste Team (waterandwasteteam@horowhenua.govt.nz), McMillan

Contact for your orders: Gabriela Carvalhaes
Contract: Landfill

Order code: EUNZWE-00174502
Purchase Order Number: Landfill

SAMPLE CODE	812-2024-00042718		
Sample Name	342921-0		
Product:	Ground water		
Sampling Point code:	WIL-HS1	**Sampling Point name:**	Levin HS1
Reception Date & Time:	21/03/2024 12:10		
Analysis Started on:	21/03/2024	**Analysis Ending Date:**	31/03/2024
Product Type	Ground water	**Sampled Date & Time**	19/03/2024 08:45
Sampler(s)	Client nominated external sampler	**Sampled by Eurofins**	No

		RESULTS	(UNCERTAINTY)	LOQ
NW179	**Ammonia Nitrogen**			
	Ammoniacal nitrogen (N)	0.04	(± 0.01) mg/l	0.01
NW341	**BOD5 - Soluble Carbonaceous**			
	BOD5	<1	mg/l	1
NW020	**Chemical Oxygen Demand**			
	Chemical oxygen demand (COD)	<15	(± 5) mg/l	15
NW007	**Chloride**			
	Chloride (Cl)	27.6	(± 2.76) mg/l	0.02
NW00U	**Chlorophenols**			
	2,3,4,6-Tetrachlorophenol	<0.01	mg/l	0.01
	2,4-Dichlorophenol	<0.01	mg/l	0.01
	2,6-Dichlorophenol	<0.02	mg/l	0.2
	2-Chlorophenol (o-chlorophenol)	<0.01	mg/l	0.01
	3,4,5-Trichlorophenol	<0.01	mg/l	0.01
	4-Chloro-3-cresol	<0.01	mg/l	0.01
	Pentachlorophenol	<0.005	mg/l	0.005
	Phenol	<0.01	mg/l	0.01
	Total of 2,4,5 & 2,4,6 -Trichlorophenol	<0.02	mg/l	0.02
NW023	**Conductivity**			
	Conductivity	25.6	(± 0.5) mS/m	0.1
NW098	**Dissolved Aluminium**			
	Aluminium	0.018	mg/l	0.002
NW583	**Dissolved Arsenic**			
	Arsenic (As)	0.003	mg/l	0.001
NW103	**Dissolved Boron**			
	Boron (B)	0.08	mg/l	0.03

		RESULTS (UNCERTAINTY)		LOQ
NW104	**Dissolved Cadmium**			
	Cadmium (Cd)	<0.0002	mg/l	0.0002
NW105	**Dissolved Calcium**			
	Calcium (Ca)	13.8	mg/l	0.1
NW106	**Dissolved Chromium**			
	Chromium (Cr)	<0.001	mg/l	0.001
NW108	**Dissolved Copper**			
	Copper (Cu)	0.0009	mg/l	0.0005
NW109	**Dissolved Iron**			
	Iron (Fe)	0.12	mg/l	0.01
NW110	**Dissolved Lead**			
	Lead (Pb)	<0.0005	mg/l	0.0005
NW112	**Dissolved Magnesium**			
	Magnesium (Mg)	7.64	mg/l	0.01
NW113	**Dissolved Manganese**			
	Manganese (Mn)	0.0156	mg/l	0.0005
NW114	**Dissolved Mercury**			
	Mercury (Hg)	<0.0005	mg/l	0.0005
NW116	**Dissolved Nickel**			
	Nickel (Ni)	<0.0005	mg/l	0.0005
NW117	**Dissolved Potassium**			
	Potassium (K)	2.28	mg/l	0.01
NW193	**Dissolved Reactive Phosphorus**			
	Phosphorus (soluble reactive)	0.173	mg/l	0.005
NW120	**Dissolved Sodium**			
	Sodium (Na)	25.1	mg/l	0.01
NW125	**Dissolved Zinc**			
	Zinc (Zn)	<0.002	mg/l	0.002
ZM2GA	**Enumeration of Escherichia coli By Membrane Filtration**			
	Escherichia coli	500	cfu/100 ml	100
NW010	**Nitrate-N**			
	Nitrate-N	0.16	(± 0.02) mg/l	0.01
NW195	**pH (Tested beyond 15 minute APHA holding time)**			
	pH	7.5	(± 0.2)	0.1
NW011	**Sulphate**			
	Sulphate	15.3	(± 1.53) mg/l	0.02
NW206	**Suspended Solids**			
	Suspended Solids	<5	mg/l	3
NW003	**Total Alkalinity**			
	Alkalinity total	60	(± 6) mg CaCO3/l	1
NW030	**Total Hardness**			
	Hardness	66	mg CaCO3/l	1
NW210	**Total Non-Purgeable Organic Carbon**			
	Total Organic Carbon	7.0	(± 0.7) mg/l	0.1
①**NWWG6**	**Volatile Fatty Acids (VFA)**			
	Acetic acid	<5	mg/l	5
	Butyric acid	<5	mg/l	5

	RESULTS (UNCERTAINTY)		LOQ
①NWWG6 **Volatile Fatty Acids (VFA)**			
Heptanoic acid	<5	mg/l	5
Hexanoic acid	<5	mg/l	5
Isobutyric acid	<5	mg/l	5
Isocaproic acid	<5	mg/l	5
Isovaleric acid	<5	mg/l	5
Propionic acid	<5	mg/l	5
Valeric acid	<5	mg/l	5
Volatile fatty acids as acetic acid	<5	mg/l	5

LIST OF METHODS

NW003 **Total Alkalinity:** APHA Online Edition 2320 B

NW00U **Chlorophenols:** Internal Method, LC-MS/MS

NW011 **Sulphate:** APHA Online Edition 4110 B

NW023 **Conductivity:** APHA 24th Edition 2510 B

NW098 **Dissolved Aluminium:** APHA Online Edition 3125 B mod.

NW104 **Dissolved Cadmium:** APHA Online Edition 3125 B mod.

NW106 **Dissolved Chromium:** APHA Online Edition 3125 B mod.

NW109 **Dissolved Iron:** APHA Online Edition 3125 B mod.

NW112 **Dissolved Magnesium:** APHA Online Edition 3125 B mod.

NW114 **Dissolved Mercury:** APHA Online Edition 3125 B mod.

NW117 **Dissolved Potassium:** APHA Online Edition 3125 B mod.

NW125 **Dissolved Zinc:** APHA Online Edition 3125 B mod.

NW193 **Dissolved Reactive Phosphorus:** APHA Online Edition 4500-P G

NW206 **Suspended Solids:** APHA Online Edition 2540 D

NW341 **BOD5 - Soluble Carbonaceous:** APHA Online Edition 5210 B

NWWG6 **Volatile Fatty Acids (VFA):** APHA 24th Edition 5560 D mod.

NW007 **Chloride:** APHA Online Edition 4110 B

NW010 **Nitrate-N:** APHA Online Edition 4110 B

NW020 **Chemical Oxygen Demand:** APHA Online Edition 5220 D

NW030 **Total Hardness:** APHA Online Edition 2340 B

NW103 **Dissolved Boron:** APHA Online Edition 3125 B mod.

NW105 **Dissolved Calcium:** APHA Online Edition 3125 B mod.

NW108 **Dissolved Copper:** APHA Online Edition 3125 B mod.

NW110 **Dissolved Lead:** APHA Online Edition 3125 B mod.

NW113 **Dissolved Manganese:** APHA Online Edition 3125 B mod.

NW116 **Dissolved Nickel:** APHA Online Edition 3125 B mod.

NW120 **Dissolved Sodium:** APHA Online Edition 3125 B mod.

NW179 **Ammonia Nitrogen:** APHA Online Edition 4500-NH3 H

NW195 **pH (Tested beyond 15 minute APHA holding time):** APHA 24th Edition 4500-H B

NW210 **Total Non-Purgeable Organic Carbon:** APHA Online Edition 5310 B

NW583 **Dissolved Arsenic:** APHA Online Edition 3125 B mod.

ZM2GA **Escherichia coli E (Water) [NZ] <100 >6 000 000 /100 ml (0-3) m-FC Agar-F:** SMEWW 9222I; APHA 24th Edition

Signature

Marylou Cabral Laboratory Manager Eurofins ELS Limited

Jennifer Mont Supervisor Eurofins ELS Limited

Divina Cunanan Lagazon Supervisor Eurofins ELS Limited

Gordon McArthur Senior Laboratory Analyst Eurofins ELS Limited

Sunita Raju Business Unit Manager

Ganesh Ilancko Supervisor Eurofins ELS Limited

Gabriela Carvalhaes Manager Food and Water Testing Chemistry

Cody Forbes Laboratory Analyst Laboratory Analyst

EXPLANATORY NOTE

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⑧Tested at the sampling point by Eurofins and is accredited
⑨Test is RLP accredited
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N/A means Not Applicable
Not Detected means not detected at or above the Limit of Quantification (LOQ)
LOQ means Limit of Quantification and the unit of LOQ is the same as the result unit
✗ (Unsatisfactory) means does not meet the specification
✓ (Satisfactory) means meets the specification

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Cody Forbes Laboratory Analyst
Laboratory Analyst

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N/A means Not Applicable
Not Detected means not detected at or above the Limit of Quantification (LOQ)
LOQ means Limit of Quantification and the unit of LOQ is the same as the result unit
✗ (Unsatisfactory) means does not meet the specification
✓(Satisfactory) means meets the specification

END OF REPORT

Food & Water Testing

ANALYTICAL REPORT

REPORT CODE	AR-24-NW-023574-01	REPORT DATE	19/04/2024

Attention Downer NZ Ltd (EDI Levin)
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Contact for your orders: Gabriela Carvalhaes
Contract: Landfill

Order code: EUNZWE-00178002
Purchase Order Number: Landfill

SAMPLE CODE	812-2024-00053636		
Sample Name	349849-0		
Product:	Ground water		
Sampling Point code:	WIL-HS1A	**Sampling Point name:**	Levin HS1A
Reception Date & Time:	11/04/2024 13:30		
Analysis Started on:	11/04/2024	**Analysis Ending Date:**	19/04/2024
Product Type	Ground water	**Sampled Date & Time**	11/04/2024 06:40
Sampler(s)	Client nominated external sampler	**Sampled by Eurofins**	No

		RESULTS	(UNCERTAINTY)	LOQ
NW179	**Ammonia Nitrogen**			
	Ammoniacal nitrogen (N)	0.01	(± 0.00) mg/l	0.01
NW341	**BOD5 - Soluble Carbonaceous**			
	BOD5	<1	mg/l	1
NW020	**Chemical Oxygen Demand**			
	Chemical oxygen demand (COD)	30	(± 7) mg/l	15
NW007	**Chloride**			
	Chloride (Cl)	28.1	(± 2.81) mg/l	0.02
NW00U	**Chlorophenols**			
	2,3,4,6-Tetrachlorophenol	<0.01	mg/l	0.01
	2,4-Dichlorophenol	<0.01	mg/l	0.01
	2,6-Dichlorophenol	<0.02	mg/l	0.2
	2-Chlorophenol (o-chlorophenol)	<0.01	mg/l	0.01
	3,4,5-Trichlorophenol	<0.01	mg/l	0.01
	4-Chloro-3-cresol	<0.01	mg/l	0.01
	Pentachlorophenol	<0.005	mg/l	0.005
	Phenol	<0.01	mg/l	0.01
	Total of 2,4,5 & 2,4,6 -Trichlorophenol	<0.02	mg/l	0.02
NW023	**Conductivity**			
	Conductivity	25.9	(± 0.5) mS/m	0.1
NW098	**Dissolved Aluminium**			
	Aluminium	0.007	mg/l	0.002
NW583	**Dissolved Arsenic**			
	Arsenic (As)	0.002	mg/l	0.001
NW103	**Dissolved Boron**			
	Boron (B)	0.06	mg/l	0.03

		RESULTS (UNCERTAINTY)		LOQ
NW104	**Dissolved Cadmium**			
	Cadmium (Cd)	<0.0002	mg/l	0.0002
NW105	**Dissolved Calcium**			
	Calcium (Ca)	11.3	mg/l	0.1
NW106	**Dissolved Chromium**			
	Chromium (Cr)	<0.001	mg/l	0.001
NW108	**Dissolved Copper**			
	Copper (Cu)	0.0015	mg/l	0.0005
NW109	**Dissolved Iron**			
	Iron (Fe)	0.12	mg/l	0.01
NW110	**Dissolved Lead**			
	Lead (Pb)	<0.0005	mg/l	0.0005
NW112	**Dissolved Magnesium**			
	Magnesium (Mg)	8.01	mg/l	0.01
NW113	**Dissolved Manganese**			
	Manganese (Mn)	0.0243	mg/l	0.0005
NW114	**Dissolved Mercury**			
	Mercury (Hg)	<0.0005	mg/l	0.0005
NW116	**Dissolved Nickel**			
	Nickel (Ni)	0.0006	mg/l	0.0005
NW117	**Dissolved Potassium**			
	Potassium (K)	3.39	mg/l	0.01
NW193	**Dissolved Reactive Phosphorus**			
	Phosphorus (soluble reactive)	0.145	mg/l	0.005
NW120	**Dissolved Sodium**			
	Sodium (Na)	24.8	mg/l	0.01
NW125	**Dissolved Zinc**			
	Zinc (Zn)	0.003	mg/l	0.002
ZM2GA	**Enumeration of Escherichia coli By Membrane Filtration**			
	Escherichia coli	100	cfu/100 ml	100
NW010	**Nitrate-N**			
	Nitrate-N	0.20	(± 0.02) mg/l	0.01
NW195	**pH (Tested beyond 15 minute APHA holding time)**			
	pH	7.4	(± 0.2)	0.1
NW011	**Sulphate**			
	Sulphate	15.7	(± 1.57) mg/l	0.02
NW206	**Suspended Solids**			
	Suspended Solids	66	mg/l	3
NW003	**Total Alkalinity**			
	Alkalinity total	66	(± 7) mg CaCO3/l	1
NW030	**Total Hardness**			
	Hardness	61	mg CaCO3/l	1
NW210	**Total Non-Purgeable Organic Carbon**			
	Total Organic Carbon	7.0	(± 0.7) mg/l	0.1
①**NWWG6**	**Volatile Fatty Acids (VFA)**			
	Acetic acid	<5	mg/l	5
	Butyric acid	<5	mg/l	5

	RESULTS	(UNCERTAINTY)	LOQ
①NWWG6 **Volatile Fatty Acids (VFA)**			
Heptanoic acid	<5	mg/l	5
Hexanoic acid	<5	mg/l	5
Isobutyric acid	<5	mg/l	5
Isocaproic acid	<5	mg/l	5
Isovaleric acid	<5	mg/l	5
Propionic acid	<5	mg/l	5
Valeric acid	<5	mg/l	5
Volatile fatty acids as acetic acid	<5	mg/l	5

LIST OF METHODS

NW003 **Total Alkalinity:** APHA Online Edition 2320 B

NW00U **Chlorophenols:** Internal Method, LC-MS/MS

NW011 **Sulphate:** APHA Online Edition 4110 B

NW023 **Conductivity:** APHA 24th Edition 2510 B

NW098 **Dissolved Aluminium:** APHA Online Edition 3125 B mod.

NW104 **Dissolved Cadmium:** APHA Online Edition 3125 B mod.

NW106 **Dissolved Chromium:** APHA Online Edition 3125 B mod.

NW109 **Dissolved Iron:** APHA Online Edition 3125 B mod.

NW112 **Dissolved Magnesium:** APHA Online Edition 3125 B mod.

NW114 **Dissolved Mercury:** APHA Online Edition 3125 B mod.

NW117 **Dissolved Potassium:** APHA Online Edition 3125 B mod.

NW125 **Dissolved Zinc:** APHA Online Edition 3125 B mod.

NW193 **Dissolved Reactive Phosphorus:** APHA Online Edition 4500-P G

NW206 **Suspended Solids:** APHA Online Edition 2540 D

NW341 **BOD5 - Soluble Carbonaceous:** APHA Online Edition 5210 B

NWWG6 **Volatile Fatty Acids (VFA):** APHA 24th Edition 5560 D mod.

NW007 **Chloride:** APHA Online Edition 4110 B

NW010 **Nitrate-N:** APHA Online Edition 4110 B

NW020 **Chemical Oxygen Demand:** APHA Online Edition 5220 D

NW030 **Total Hardness:** APHA Online Edition 2340 B

NW103 **Dissolved Boron:** APHA Online Edition 3125 B mod.

NW105 **Dissolved Calcium:** APHA Online Edition 3125 B mod.

NW108 **Dissolved Copper:** APHA Online Edition 3125 B mod.

NW110 **Dissolved Lead:** APHA Online Edition 3125 B mod.

NW113 **Dissolved Manganese:** APHA Online Edition 3125 B mod.

NW116 **Dissolved Nickel:** APHA Online Edition 3125 B mod.

NW120 **Dissolved Sodium:** APHA Online Edition 3125 B mod.

NW179 **Ammonia Nitrogen:** APHA Online Edition 4500-NH3 H

NW195 **pH (Tested beyond 15 minute APHA holding time):** APHA 24th Edition 4500-H B

NW210 **Total Non-Purgeable Organic Carbon:** APHA Online Edition 5310 B

NW583 **Dissolved Arsenic:** APHA Online Edition 3125 B mod.

ZM2GA **Escherichia coli E (Water) [NZ] <100 >6 000 000 /100 ml (0-3) m-FC Agar-F:** SMEWW 9222I; APHA 24th Edition

Signature

Marylou Cabral Laboratory Manager Eurofins ELS Limited

Jennifer Mont Supervisor Eurofins ELS Limited

Divina Cunanan Lagazon Supervisor Eurofins ELS Limited

Gordon McArthur Senior Laboratory Analyst Eurofins ELS Limited

Maria Norris Laboratory Manager, Microbiology

Ganesh Ilancko Supervisor Eurofins ELS Limited

Food & Water Testing

Gabriela Carvalhaes	Manager Food and Water Testing Chemistry	**Cody Forbes**	Laboratory Analyst Laboratory Analyst

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Not Detected means not detected at or above the Limit of Quantification (LOQ)
LOQ means Limit of Quantification and the unit of LOQ is the same as the result unit
✗ (Unsatisfactory) means does not meet the specification
✓ (Satisfactory) means meets the specification

END OF REPORT

Food & Water Testing

ANALYTICAL REPORT

REPORT CODE **AR-24-NW-010953-01** REPORT DATE **24/02/2024**

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Contact for your orders: Gabriela Carvalhaes
Contract: Landfill

Order code: EUNZWE-00167677
Purchase Order Number: Landfill

SAMPLE CODE **812-2024-00022469**

Client Reference:	342907-0		
Product:	Ground water		
Sampling Point code:	WIL-HS1A	**Sampling Point name:**	Levin HS1A
Reception Date & Time:	15/02/2024 10:05		
Analysis Start Date & Time:	15/02/2024 10:10	**Analysis Ending Date:**	24/02/2024
Product Type	Ground water	**Sampled Date & Time**	12/02/2024 22:00
Sampler(s)	Client nominated external sampler	**Sampled by Eurofins**	No

		RESULTS (UNCERTAINTY)		LOQ
NW179	**Ammonia Nitrogen**			
	Ammoniacal nitrogen (N)	0.10	(± 0.03) mg/l	0.01
NW341	**BOD5 - Soluble Carbonaceous**			
	BOD5	2	mg/l	1
NW020	**Chemical Oxygen Demand**			
	Chemical oxygen demand (COD)	24	(± 6) mg/l	15
NW007	**Chloride**			
	Chloride (Cl)	26.1	(± 2.61) mg/l	0.02
NW00U	**Chlorophenols**			
	2,3,4,6-Tetrachlorophenol	<0.01	mg/l	0.01
	2,4-Dichlorophenol	<0.01	mg/l	0.01
	2,6-Dichlorophenol	<0.02	mg/l	0.2
	2-Chlorophenol (o-chlorophenol)	<0.01	mg/l	0.01
	3,4,5-Trichlorophenol	<0.01	mg/l	0.01
	4-Chloro-3-cresol	<0.01	mg/l	0.01
	Pentachlorophenol	<0.005	mg/l	0.005
	Phenol	<0.01	mg/l	0.01
	Total of 2,4,5 & 2,4,6 -Trichlorophenol	<0.02	mg/l	0.02
NW023	**Conductivity**			
	Conductivity	23.3	(± 0.5) mS/m	0.1
NW098	**Dissolved Aluminium**			
	Aluminium	0.022	mg/l	0.002
NW583	**Dissolved Arsenic**			
	Arsenic (As)	0.002	mg/l	0.001
NW103	**Dissolved Boron**			
	Boron (B)	0.06	mg/l	0.03

		RESULTS	(UNCERTAINTY)	LOQ
NW104	**Dissolved Cadmium**			
	Cadmium (Cd)	<0.0002	mg/l	0.0002
NW105	**Dissolved Calcium**			
	Calcium (Ca)	10.5	mg/l	0.1
NW106	**Dissolved Chromium**			
	Chromium (Cr)	<0.001	mg/l	0.001
NW108	**Dissolved Copper**			
	Copper (Cu)	0.0019	mg/l	0.0005
NW109	**Dissolved Iron**			
	Iron (Fe)	0.13	mg/l	0.01
NW110	**Dissolved Lead**			
	Lead (Pb)	<0.0005	mg/l	0.0005
NW112	**Dissolved Magnesium**			
	Magnesium (Mg)	6.57	mg/l	0.01
NW113	**Dissolved Manganese**			
	Manganese (Mn)	0.0101	mg/l	0.0005
NW114	**Dissolved Mercury**			
	Mercury (Hg)	<0.0005	mg/l	0.0005
NW116	**Dissolved Nickel**			
	Nickel (Ni)	0.0011	mg/l	0.0005
NW117	**Dissolved Potassium**			
	Potassium (K)	1.73	mg/l	0.01
NW193	**Dissolved Reactive Phosphorus**			
	Phosphorus (soluble reactive)	0.165	(± 0.033) mg/l	0.005
NW120	**Dissolved Sodium**			
	Sodium (Na)	23.4	mg/l	0.01
NW125	**Dissolved Zinc**			
	Zinc (Zn)	0.012	mg/l	0.002
ZM2GA	**Enumeration of Escherichia coli By Membrane Filtration**			
	Escherichia coli	500	cfu/100 ml	100
NW010	**Nitrate-N**			
	Nitrate-N	0.18	(± 0.02) mg/l	0.01
NW195	**pH (Tested beyond 15 minute APHA holding time)**			
	pH	7.6	(± 0.2)	0.1
NW011	**Sulphate**			
	Sulphate	19.1	(± 1.91) mg/l	0.02
NW206	**Suspended Solids**			
	Suspended Solids	7	mg/l	3
NW003	**Total Alkalinity**			
	Alkalinity total	50	(± 5) mg CaCO3/l	1
NW030	**Total Hardness**			
	Hardness	53	mg CaCO3/l	1
NW210	**Total Non-Purgeable Organic Carbon**			
	Total Organic Carbon	8.1	(± 0.8) mg/l	0.1
①**NWWG6**	**Volatile Fatty Acids (VFA)**			
	Acetic acid	<5	mg/l	5
	Butyric acid	<5	mg/l	5

	RESULTS (UNCERTAINTY)		LOQ
①NWWG6 **Volatile Fatty Acids (VFA)**			
Heptanoic acid	<5	mg/l	5
Hexanoic acid	<5	mg/l	5
Isobutyric acid	<5	mg/l	5
Isocaproic acid	<5	mg/l	5
Isovaleric acid	<5	mg/l	5
Propionic acid	<5	mg/l	5
Valeric acid	<5	mg/l	5
Volatile fatty acids as acetic acid	<5	mg/l	5

LIST OF METHODS

NW003 **Total Alkalinity:** APHA Online Edition 2320 B

NW00U **Chlorophenols:** Internal Method, LC-MS/MS

NW011 **Sulphate:** APHA Online Edition 4110 B

NW023 **Conductivity:** APHA 24th Edition 2510 B

NW098 **Dissolved Aluminium:** APHA Online Edition 3125 B mod.

NW104 **Dissolved Cadmium:** APHA Online Edition 3125 B mod.

NW106 **Dissolved Chromium:** APHA Online Edition 3125 B mod.

NW109 **Dissolved Iron:** APHA Online Edition 3125 B mod.

NW112 **Dissolved Magnesium:** APHA Online Edition 3125 B mod.

NW114 **Dissolved Mercury:** APHA Online Edition 3125 B mod.

NW117 **Dissolved Potassium:** APHA Online Edition 3125 B mod.

NW125 **Dissolved Zinc:** APHA Online Edition 3125 B mod.

NW193 **Dissolved Reactive Phosphorus:** APHA Online Edition 4500-P G

NW206 **Suspended Solids:** APHA Online Edition 2540 D

NW341 **BOD5 - Soluble Carbonaceous:** APHA Online Edition 5210 B

NWWG6 **Volatile Fatty Acids (VFA):** APHA 24th Edition 5560 D mod.

NW007 **Chloride:** APHA Online Edition 4110 B

NW010 **Nitrate-N:** APHA Online Edition 4110 B

NW020 **Chemical Oxygen Demand:** APHA Online Edition 5220 D

NW030 **Total Hardness:** APHA Online Edition 2340 B

NW103 **Dissolved Boron:** APHA Online Edition 3125 B mod.

NW105 **Dissolved Calcium:** APHA Online Edition 3125 B mod.

NW108 **Dissolved Copper:** APHA Online Edition 3125 B mod.

NW110 **Dissolved Lead:** APHA Online Edition 3125 B mod.

NW113 **Dissolved Manganese:** APHA Online Edition 3125 B mod.

NW116 **Dissolved Nickel:** APHA Online Edition 3125 B mod.

NW120 **Dissolved Sodium:** APHA Online Edition 3125 B mod.

NW179 **Ammonia Nitrogen:** APHA Online Edition 4500-NH3 H

NW195 **pH (Tested beyond 15 minute APHA holding time):** APHA 24th Edition 4500-H B

NW210 **Total Non-Purgeable Organic Carbon:** APHA Online Edition 5310 B

NW583 **Dissolved Arsenic:** APHA Online Edition 3125 B mod.

ZM2GA **Escherichia coli E (Water) [NZ] <100 >6 000 000 /100 ml (0-3) m-FC Agar-F:** SMEWW 9222I; APHA 24th Edition

Signature

Jennifer Mont Supervisor Eurofins ELS Limited

Divina Cunanan Lagazon Supervisor Eurofins ELS Limited

Gordon McArthur Senior Laboratory Analyst Eurofins ELS Limited

Ganesh Ilancko Supervisor Eurofins ELS Limited

Leo Cleave Senior Analyst Microbiology

Gabriela Carvalhaes Manager Food and Water Testing Chemistry

EXPLANATORY NOTE

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N/A means Not Applicable
Not Detected means not detected at or above the Limit of Quantification (LOQ)
LOQ means Limit of Quantification and the unit of LOQ is the same as the result unit
✗ (Unsatisfactory) means does not meet the specification
✓ (Satisfactory) means meets the specification

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Food & Water Testing

ANALYTICAL REPORT

REPORT CODE	AR-24-NW-019302-01	REPORT DATE	31/03/2024

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NEW ZEALAND

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Email horowhenuaadmin@downer.co.nz

Copy to: Water and Waste Team (waterandwasteteam@horowhenua.govt.nz), McMillan

Contact for your orders: Gabriela Carvalhaes
Contract: Landfill

Order code: EUNZWE-00174502
Purchase Order Number: Landfill

SAMPLE CODE	812-2024-00042717		
Sample Name	342908-0		
Product:	Ground water		
Sampling Point code:	WIL-HS1A	**Sampling Point name:**	Levin HS1A
Reception Date & Time:	21/03/2024 12:10		
Analysis Started on:	21/03/2024	**Analysis Ending Date:**	31/03/2024
Product Type	Ground water	**Sampled Date & Time**	19/03/2024 08:30
Sampler(s)	Client nominated external sampler	**Sampled by Eurofins**	No

		RESULTS	(UNCERTAINTY)	LOQ
NW179	**Ammonia Nitrogen**			
	Ammoniacal nitrogen (N)	0.08	(± 0.01) mg/l	0.01
NW341	**BOD5 - Soluble Carbonaceous**			
	BOD5	<1	mg/l	1
NW020	**Chemical Oxygen Demand**			
	Chemical oxygen demand (COD)	64	(± 11) mg/l	15
NW007	**Chloride**			
	Chloride (Cl)	27.5	(± 2.75) mg/l	0.02
NW00U	**Chlorophenols**			
	2,3,4,6-Tetrachlorophenol	<0.01	mg/l	0.01
	2,4-Dichlorophenol	<0.01	mg/l	0.01
	2,6-Dichlorophenol	<0.02	mg/l	0.2
	2-Chlorophenol (o-chlorophenol)	<0.01	mg/l	0.01
	3,4,5-Trichlorophenol	<0.01	mg/l	0.01
	4-Chloro-3-cresol	<0.01	mg/l	0.01
	Pentachlorophenol	<0.005	mg/l	0.005
	Phenol	<0.01	mg/l	0.01
	Total of 2,4,5 & 2,4,6 -Trichlorophenol	<0.02	mg/l	0.02
NW023	**Conductivity**			
	Conductivity	25.3	(± 0.5) mS/m	0.1
NW098	**Dissolved Aluminium**			
	Aluminium	0.027	mg/l	0.002
NW583	**Dissolved Arsenic**			
	Arsenic (As)	0.003	mg/l	0.001
NW103	**Dissolved Boron**			
	Boron (B)	0.08	mg/l	0.03

		RESULTS (UNCERTAINTY)		LOQ
NW104	**Dissolved Cadmium**			
	Cadmium (Cd)	<0.0002	mg/l	0.0002
NW105	**Dissolved Calcium**			
	Calcium (Ca)	13.8	mg/l	0.1
NW106	**Dissolved Chromium**			
	Chromium (Cr)	<0.001	mg/l	0.001
NW108	**Dissolved Copper**			
	Copper (Cu)	0.0013	mg/l	0.0005
NW109	**Dissolved Iron**			
	Iron (Fe)	0.15	mg/l	0.01
NW110	**Dissolved Lead**			
	Lead (Pb)	<0.0005	mg/l	0.0005
NW112	**Dissolved Magnesium**			
	Magnesium (Mg)	7.81	mg/l	0.01
NW113	**Dissolved Manganese**			
	Manganese (Mn)	0.0082	mg/l	0.0005
NW114	**Dissolved Mercury**			
	Mercury (Hg)	<0.0005	mg/l	0.0005
NW116	**Dissolved Nickel**			
	Nickel (Ni)	0.0005	mg/l	0.0005
NW117	**Dissolved Potassium**			
	Potassium (K)	2.57	mg/l	0.01
NW193	**Dissolved Reactive Phosphorus**			
	Phosphorus (soluble reactive)	0.203	mg/l	0.005
NW120	**Dissolved Sodium**			
	Sodium (Na)	25.5	mg/l	0.01
NW125	**Dissolved Zinc**			
	Zinc (Zn)	0.002	mg/l	0.002
ZM2GA	**Enumeration of Escherichia coli By Membrane Filtration**			
	Escherichia coli	100	cfu/100 ml	100
NW010	**Nitrate-N**			
	Nitrate-N	0.26	(± 0.03) mg/l	0.01
NW195	**pH (Tested beyond 15 minute APHA holding time)**			
	pH	7.6	(± 0.2)	0.1
NW011	**Sulphate**			
	Sulphate	15.3	(± 1.53) mg/l	0.02
NW206	**Suspended Solids**			
	Suspended Solids	21	mg/l	3
NW003	**Total Alkalinity**			
	Alkalinity total	60	(± 6) mg CaCO3/l	1
NW030	**Total Hardness**			
	Hardness	67	mg CaCO3/l	1
NW210	**Total Non-Purgeable Organic Carbon**			
	Total Organic Carbon	6.9	(± 0.7) mg/l	0.1
①**NWWG6**	**Volatile Fatty Acids (VFA)**			
	Acetic acid	<5	mg/l	5
	Butyric acid	<5	mg/l	5

	RESULTS (UNCERTAINTY)		LOQ
①NWWG6 **Volatile Fatty Acids (VFA)**			
Heptanoic acid	<5	mg/l	5
Hexanoic acid	<5	mg/l	5
Isobutyric acid	<5	mg/l	5
Isocaproic acid	<5	mg/l	5
Isovaleric acid	<5	mg/l	5
Propionic acid	<5	mg/l	5
Valeric acid	<5	mg/l	5
Volatile fatty acids as acetic acid	<5	mg/l	5

LIST OF METHODS

NW003 **Total Alkalinity:** APHA Online Edition 2320 B

NW00U **Chlorophenols:** Internal Method, LC-MS/MS

NW011 **Sulphate:** APHA Online Edition 4110 B

NW023 **Conductivity:** APHA 24th Edition 2510 B

NW098 **Dissolved Aluminium:** APHA Online Edition 3125 B mod.

NW104 **Dissolved Cadmium:** APHA Online Edition 3125 B mod.

NW106 **Dissolved Chromium:** APHA Online Edition 3125 B mod.

NW109 **Dissolved Iron:** APHA Online Edition 3125 B mod.

NW112 **Dissolved Magnesium:** APHA Online Edition 3125 B mod.

NW114 **Dissolved Mercury:** APHA Online Edition 3125 B mod.

NW117 **Dissolved Potassium:** APHA Online Edition 3125 B mod.

NW125 **Dissolved Zinc:** APHA Online Edition 3125 B mod.

NW193 **Dissolved Reactive Phosphorus:** APHA Online Edition 4500-P G

NW206 **Suspended Solids:** APHA Online Edition 2540 D

NW341 **BOD5 - Soluble Carbonaceous:** APHA Online Edition 5210 B

NWWG6 **Volatile Fatty Acids (VFA):** APHA 24th Edition 5560 D mod.

NW007 **Chloride:** APHA Online Edition 4110 B

NW010 **Nitrate-N:** APHA Online Edition 4110 B

NW020 **Chemical Oxygen Demand:** APHA Online Edition 5220 D

NW030 **Total Hardness:** APHA Online Edition 2340 B

NW103 **Dissolved Boron:** APHA Online Edition 3125 B mod.

NW105 **Dissolved Calcium:** APHA Online Edition 3125 B mod.

NW108 **Dissolved Copper:** APHA Online Edition 3125 B mod.

NW110 **Dissolved Lead:** APHA Online Edition 3125 B mod.

NW113 **Dissolved Manganese:** APHA Online Edition 3125 B mod.

NW116 **Dissolved Nickel:** APHA Online Edition 3125 B mod.

NW120 **Dissolved Sodium:** APHA Online Edition 3125 B mod.

NW179 **Ammonia Nitrogen:** APHA Online Edition 4500-NH3 H

NW195 **pH (Tested beyond 15 minute APHA holding time):** APHA 24th Edition 4500-H B

NW210 **Total Non-Purgeable Organic Carbon:** APHA Online Edition 5310 B

NW583 **Dissolved Arsenic:** APHA Online Edition 3125 B mod.

ZM2GA **Escherichia coli E (Water) [NZ] <100 >6 000 000 /100 ml (0-3) m-FC Agar-F:** SMEWW 9222I; APHA 24th Edition

Signature

Marylou Cabral Laboratory Manager Eurofins ELS Limited

Jennifer Mont Supervisor Eurofins ELS Limited

Divina Cunanan Lagazon Supervisor Eurofins ELS Limited

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Arvinder Singh Laboratory Supervisor Microbiology

Gabriela Carvalhaes Manager Food and Water Testing Chemistry

Cody Forbes Laboratory Analyst Laboratory Analyst

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N/A means Not Applicable
Not Detected means not detected at or above the Limit of Quantification (LOQ)
LOQ means Limit of Quantification and the unit of LOQ is the same as the result unit
✗ (Unsatisfactory) means does not meet the specification
✓ (Satisfactory) means meets the specification

END OF REPORT

Food & Water Testing

ANALYTICAL REPORT

REPORT CODE **AR-24-NW-023572-01** REPORT DATE **19/04/2024**

Attention Downer NZ Ltd (EDI Levin)
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Email horowhenuaadmin@downer.co.nz

Copy to: Water and Waste Team (waterandwasteteam@horowhenua.govt.nz), McMillan

Contact for your orders: Gabriela Carvalhaes
Contract: Landfill

Order code: EUNZWE-00178002
Purchase Order Number: Landfill

SAMPLE CODE **812-2024-00053631**

Sample Name	349851-0		
Product:	Ground water		
Sampling Point code:	WIL-HS2	**Sampling Point name:**	Levin HS2
Reception Date & Time:	11/04/2024 13:30		
Analysis Started on:	11/04/2024	**Analysis Ending Date:**	19/04/2024
Product Type	Ground water	**Sampled Date & Time**	11/04/2024 07:30
Sampler(s)	Client nominated external sampler	**Sampled by Eurofins**	No

		RESULTS	(UNCERTAINTY)	LOQ
NW179	**Ammonia Nitrogen**			
	Ammoniacal nitrogen (N)	0.04	(± 0.00) mg/l	0.01
NW341	**BOD5 - Soluble Carbonaceous**			
	BOD5	<1	mg/l	1
NW020	**Chemical Oxygen Demand**			
	Chemical oxygen demand (COD)	49	(± 9) mg/l	15
NW007	**Chloride**			
	Chloride (Cl)	29.0	(± 2.90) mg/l	0.02
NW00U	**Chlorophenols**			
	2,3,4,6-Tetrachlorophenol	<0.01	mg/l	0.01
	2,4-Dichlorophenol	<0.01	mg/l	0.01
	2,6-Dichlorophenol	<0.02	mg/l	0.2
	2-Chlorophenol (o-chlorophenol)	<0.01	mg/l	0.01
	3,4,5-Trichlorophenol	<0.01	mg/l	0.01
	4-Chloro-3-cresol	<0.01	mg/l	0.01
	Pentachlorophenol	<0.005	mg/l	0.005
	Phenol	<0.01	mg/l	0.01
	Total of 2,4,5 & 2,4,6 -Trichlorophenol	<0.02	mg/l	0.02
NW023	**Conductivity**			
	Conductivity	27.0	(± 0.5) mS/m	0.1
NW098	**Dissolved Aluminium**			
	Aluminium	0.008	mg/l	0.002
NW583	**Dissolved Arsenic**			
	Arsenic (As)	0.002	mg/l	0.001
NW103	**Dissolved Boron**			
	Boron (B)	0.07	mg/l	0.03

		RESULTS (UNCERTAINTY)		LOQ
NW104	**Dissolved Cadmium**			
	Cadmium (Cd)	<0.0002	mg/l	0.0002
NW105	**Dissolved Calcium**			
	Calcium (Ca)	11.0	mg/l	0.1
NW106	**Dissolved Chromium**			
	Chromium (Cr)	<0.001	mg/l	0.001
NW108	**Dissolved Copper**			
	Copper (Cu)	0.0010	mg/l	0.0005
NW109	**Dissolved Iron**			
	Iron (Fe)	0.12	mg/l	0.01
NW110	**Dissolved Lead**			
	Lead (Pb)	<0.0005	mg/l	0.0005
NW112	**Dissolved Magnesium**			
	Magnesium (Mg)	8.00	mg/l	0.01
NW113	**Dissolved Manganese**			
	Manganese (Mn)	0.0344	mg/l	0.0005
NW114	**Dissolved Mercury**			
	Mercury (Hg)	<0.0005	mg/l	0.0005
NW116	**Dissolved Nickel**			
	Nickel (Ni)	<0.0005	mg/l	0.0005
NW117	**Dissolved Potassium**			
	Potassium (K)	3.24	mg/l	0.01
NW193	**Dissolved Reactive Phosphorus**			
	Phosphorus (soluble reactive)	0.126	mg/l	0.005
NW120	**Dissolved Sodium**			
	Sodium (Na)	24.5	mg/l	0.01
NW125	**Dissolved Zinc**			
	Zinc (Zn)	<0.002	mg/l	0.002
ZM2GA	**Enumeration of Escherichia coli By Membrane Filtration**			
	Escherichia coli	100	cfu/100 ml	100
NW010	**Nitrate-N**			
	Nitrate-N	0.30	(± 0.03) mg/l	0.01
NW195	**pH (Tested beyond 15 minute APHA holding time)**			
	pH	7.4	(± 0.2)	0.1
NW011	**Sulphate**			
	Sulphate	15.4	(± 1.54) mg/l	0.02
NW206	**Suspended Solids**			
	Suspended Solids	<5	mg/l	3
NW003	**Total Alkalinity**			
	Alkalinity total	70	(± 7) mg CaCO3/l	1
NW030	**Total Hardness**			
	Hardness	61	mg CaCO3/l	1
NW210	**Total Non-Purgeable Organic Carbon**			
	Total Organic Carbon	6.4	(± 0.6) mg/l	0.1
①**NWWG6**	**Volatile Fatty Acids (VFA)**			
	Acetic acid	<5	mg/l	5
	Butyric acid	<5	mg/l	5

	RESULTS (UNCERTAINTY)		LOQ
①NWWG6 **Volatile Fatty Acids (VFA)**			
Heptanoic acid	<5	mg/l	5
Hexanoic acid	<5	mg/l	5
Isobutyric acid	<5	mg/l	5
Isocaproic acid	<5	mg/l	5
Isovaleric acid	<5	mg/l	5
Propionic acid	<5	mg/l	5
Valeric acid	<5	mg/l	5
Volatile fatty acids as acetic acid	<5	mg/l	5

LIST OF METHODS

NW003 **Total Alkalinity:** APHA Online Edition 2320 B

NW00U **Chlorophenols:** Internal Method, LC-MS/MS

NW011 **Sulphate:** APHA Online Edition 4110 B

NW023 **Conductivity:** APHA 24th Edition 2510 B

NW098 **Dissolved Aluminium:** APHA Online Edition 3125 B mod.

NW104 **Dissolved Cadmium:** APHA Online Edition 3125 B mod.

NW106 **Dissolved Chromium:** APHA Online Edition 3125 B mod.

NW109 **Dissolved Iron:** APHA Online Edition 3125 B mod.

NW112 **Dissolved Magnesium:** APHA Online Edition 3125 B mod.

NW114 **Dissolved Mercury:** APHA Online Edition 3125 B mod.

NW117 **Dissolved Potassium:** APHA Online Edition 3125 B mod.

NW125 **Dissolved Zinc:** APHA Online Edition 3125 B mod.

NW193 **Dissolved Reactive Phosphorus:** APHA Online Edition 4500-P G

NW206 **Suspended Solids:** APHA Online Edition 2540 D

NW341 **BOD5 - Soluble Carbonaceous:** APHA Online Edition 5210 B

NWWG6 **Volatile Fatty Acids (VFA):** APHA 24th Edition 5560 D mod.

NW007 **Chloride:** APHA Online Edition 4110 B

NW010 **Nitrate-N:** APHA Online Edition 4110 B

NW020 **Chemical Oxygen Demand:** APHA Online Edition 5220 D

NW030 **Total Hardness:** APHA Online Edition 2340 B

NW103 **Dissolved Boron:** APHA Online Edition 3125 B mod.

NW105 **Dissolved Calcium:** APHA Online Edition 3125 B mod.

NW108 **Dissolved Copper:** APHA Online Edition 3125 B mod.

NW110 **Dissolved Lead:** APHA Online Edition 3125 B mod.

NW113 **Dissolved Manganese:** APHA Online Edition 3125 B mod.

NW116 **Dissolved Nickel:** APHA Online Edition 3125 B mod.

NW120 **Dissolved Sodium:** APHA Online Edition 3125 B mod.

NW179 **Ammonia Nitrogen:** APHA Online Edition 4500-NH3 H

NW195 **pH (Tested beyond 15 minute APHA holding time):** APHA 24th Edition 4500-H B

NW210 **Total Non-Purgeable Organic Carbon:** APHA Online Edition 5310 B

NW583 **Dissolved Arsenic:** APHA Online Edition 3125 B mod.

ZM2GA **Escherichia coli E (Water) [NZ] <100 >6 000 000 /100 ml (0-3) m-FC Agar-F:** SMEWW 9222I; APHA 24th Edition

Signature

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Jennifer Mont Supervisor Eurofins ELS Limited

Divina Cunanan Lagazon Supervisor Eurofins ELS Limited

Gordon McArthur Senior Laboratory Analyst Eurofins ELS Limited

Maria Norris Laboratory Manager, Microbiology

Ganesh Ilancko Supervisor Eurofins ELS Limited

Gabriela Carvalhaes Manager Food and Water Testing Chemistry

Cody Forbes Laboratory Analyst Laboratory Analyst

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⑨Test is RLP accredited
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N/A means Not Applicable
Not Detected means not detected at or above the Limit of Quantification (LOQ)
LOQ means Limit of Quantification and the unit of LOQ is the same as the result unit
✗ (Unsatisfactory) means does not meet the specification
✓ (Satisfactory) means meets the specification

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END OF REPORT

Food & Water Testing

ANALYTICAL REPORT

REPORT CODE **AR-24-NW-010954-01** REPORT DATE **24/02/2024**

Attention Downer NZ Ltd (EDI Levin)
Horowhenua Admin
P O Box 642
4741 Levin
NEW ZEALAND

Phone (06) 367 2705
Email horowhenuaadmin@downer.co.nz

Copy to: Water and Waste Team (waterandwasteteam@horowhenua.govt.nz), McMillan

Contact for your orders: Gabriela Carvalhaes
Contract: Landfill

Order code: EUNZWE-00167677
Purchase Order Number: Landfill

SAMPLE CODE **812-2024-00022470**

Client Reference: 342910-0
Product: Ground water
Sampling Point code: WIL-HS2
Sampling Point name: Levin HS2
Reception Date & Time: 15/02/2024 10:06
Analysis Start Date & Time: 15/02/2024 10:10
Analysis Ending Date: 24/02/2024
Product Type Ground water
Sampled Date & Time 12/02/2024 22:34
Sampler(s) Client nominated external sampler
Sampled by Eurofins No

		RESULTS	(UNCERTAINTY)	LOQ
NW179	**Ammonia Nitrogen**			
	Ammoniacal nitrogen (N)	0.04	(± 0.01) mg/l	0.01
NW341	**BOD5 - Soluble Carbonaceous**			
	BOD5	3	mg/l	1
NW020	**Chemical Oxygen Demand**			
	Chemical oxygen demand (COD)	31	(± 7) mg/l	15
NW007	**Chloride**			
	Chloride (Cl)	28.0	(± 2.80) mg/l	0.02
NW00U	**Chlorophenols**			
	2,3,4,6-Tetrachlorophenol	<0.01	mg/l	0.01
	2,4-Dichlorophenol	<0.01	mg/l	0.01
	2,6-Dichlorophenol	<0.02	mg/l	0.2
	2-Chlorophenol (o-chlorophenol)	<0.01	mg/l	0.01
	3,4,5-Trichlorophenol	<0.01	mg/l	0.01
	4-Chloro-3-cresol	<0.01	mg/l	0.01
	Pentachlorophenol	<0.005	mg/l	0.005
	Phenol	<0.01	mg/l	0.01
	Total of 2,4,5 & 2,4,6 -Trichlorophenol	<0.02	mg/l	0.02
NW023	**Conductivity**			
	Conductivity	25.2	(± 0.5) mS/m	0.1
NW098	**Dissolved Aluminium**			
	Aluminium	0.019	mg/l	0.002
NW583	**Dissolved Arsenic**			
	Arsenic (As)	0.002	mg/l	0.001
NW103	**Dissolved Boron**			
	Boron (B)	0.06	mg/l	0.03

		RESULTS	(UNCERTAINTY)	LOQ
NW104	**Dissolved Cadmium**			
	Cadmium (Cd)	<0.0002	mg/l	0.0002
NW105	**Dissolved Calcium**			
	Calcium (Ca)	11.2	mg/l	0.1
NW106	**Dissolved Chromium**			
	Chromium (Cr)	<0.001	mg/l	0.001
NW108	**Dissolved Copper**			
	Copper (Cu)	0.0010	mg/l	0.0005
NW109	**Dissolved Iron**			
	Iron (Fe)	0.14	mg/l	0.01
NW110	**Dissolved Lead**			
	Lead (Pb)	<0.0005	mg/l	0.0005
NW112	**Dissolved Magnesium**			
	Magnesium (Mg)	6.60	mg/l	0.01
NW113	**Dissolved Manganese**			
	Manganese (Mn)	0.0110	mg/l	0.0005
NW114	**Dissolved Mercury**			
	Mercury (Hg)	<0.0005	mg/l	0.0005
NW116	**Dissolved Nickel**			
	Nickel (Ni)	<0.0005	mg/l	0.0005
NW117	**Dissolved Potassium**			
	Potassium (K)	1.80	mg/l	0.01
NW193	**Dissolved Reactive Phosphorus**			
	Phosphorus (soluble reactive)	0.139	(± 0.028) mg/l	0.005
NW120	**Dissolved Sodium**			
	Sodium (Na)	23.9	mg/l	0.01
NW125	**Dissolved Zinc**			
	Zinc (Zn)	0.003	mg/l	0.002
ZM2GA	**Enumeration of Escherichia coli By Membrane Filtration**			
	Escherichia coli	<100	cfu/100 ml	100
NW010	**Nitrate-N**			
	Nitrate-N	0.34	(± 0.03) mg/l	0.01
NW195	**pH (Tested beyond 15 minute APHA holding time)**			
	pH	7.7	(± 0.2)	0.1
NW011	**Sulphate**			
	Sulphate	18.5	(± 1.85) mg/l	0.02
NW206	**Suspended Solids**			
	Suspended Solids	6	mg/l	3
NW003	**Total Alkalinity**			
	Alkalinity total	55	(± 6) mg CaCO3/l	1
NW030	**Total Hardness**			
	Hardness	55	mg CaCO3/l	1
NW210	**Total Non-Purgeable Organic Carbon**			
	Total Organic Carbon	7.7	(± 0.8) mg/l	0.1
①**NWWG6**	**Volatile Fatty Acids (VFA)**			
	Acetic acid	<5	mg/l	5
	Butyric acid	<5	mg/l	5

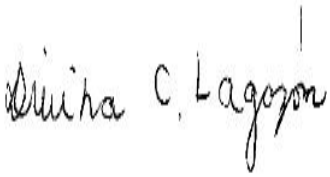
	RESULTS	(UNCERTAINTY)	LOQ
①NWWG6 **Volatile Fatty Acids (VFA)**			
Heptanoic acid	<5	mg/l	5
Hexanoic acid	<5	mg/l	5
Isobutyric acid	<5	mg/l	5
Isocaproic acid	<5	mg/l	5
Isovaleric acid	<5	mg/l	5
Propionic acid	<5	mg/l	5
Valeric acid	<5	mg/l	5
Volatile fatty acids as acetic acid	<5	mg/l	5

LIST OF METHODS

NW003	**Total Alkalinity:** APHA Online Edition 2320 B	NW007	**Chloride:** APHA Online Edition 4110 B
NW00U	**Chlorophenols:** Internal Method, LC-MS/MS	NW010	**Nitrate-N:** APHA Online Edition 4110 B
NW011	**Sulphate:** APHA Online Edition 4110 B	NW020	**Chemical Oxygen Demand:** APHA Online Edition 5220 D
NW023	**Conductivity:** APHA 24th Edition 2510 B	NW030	**Total Hardness:** APHA Online Edition 2340 B
NW098	**Dissolved Aluminium:** APHA Online Edition 3125 B mod.	NW103	**Dissolved Boron:** APHA Online Edition 3125 B mod.
NW104	**Dissolved Cadmium:** APHA Online Edition 3125 B mod.	NW105	**Dissolved Calcium:** APHA Online Edition 3125 B mod.
NW106	**Dissolved Chromium:** APHA Online Edition 3125 B mod.	NW108	**Dissolved Copper:** APHA Online Edition 3125 B mod.
NW109	**Dissolved Iron:** APHA Online Edition 3125 B mod.	NW110	**Dissolved Lead:** APHA Online Edition 3125 B mod.
NW112	**Dissolved Magnesium:** APHA Online Edition 3125 B mod.	NW113	**Dissolved Manganese:** APHA Online Edition 3125 B mod.
NW114	**Dissolved Mercury:** APHA Online Edition 3125 B mod.	NW116	**Dissolved Nickel:** APHA Online Edition 3125 B mod.
NW117	**Dissolved Potassium:** APHA Online Edition 3125 B mod.	NW120	**Dissolved Sodium:** APHA Online Edition 3125 B mod.
NW125	**Dissolved Zinc:** APHA Online Edition 3125 B mod.	NW179	**Ammonia Nitrogen:** APHA Online Edition 4500-NH3 H
NW193	**Dissolved Reactive Phosphorus:** APHA Online Edition 4500-P G	NW195	**pH (Tested beyond 15 minute APHA holding time):** APHA 24th Edition 4500-H B
NW206	**Suspended Solids:** APHA Online Edition 2540 D	NW210	**Total Non-Purgeable Organic Carbon:** APHA Online Edition 5310 B
NW341	**BOD5 - Soluble Carbonaceous:** APHA Online Edition 5210 B	NW583	**Dissolved Arsenic:** APHA Online Edition 3125 B mod.
NWWG6	**Volatile Fatty Acids (VFA):** APHA 24th Edition 5560 D mod.	ZM2GA	**Escherichia coli E (Water) [NZ] <100 >6 000 000 /100 ml (0-3) m-FC Agar-F:** SMEWW 9222I; APHA 24th Edition

Signature

Jennifer Mont Supervisor Eurofins ELS Limited



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Gabriela Carvalhaes Manager Food and Water Testing Chemistry

EXPLANATORY NOTE

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⑤ Test is subcontracted outside Eurofins group and is not accredited
⑥ Test result is provided by the customer and is not accredited
⑦ Tested at the sampling point by Eurofins and is not accredited
⑧ Tested at the sampling point by Eurofins and is accredited
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END OF REPORT

Food & Water Testing

ANALYTICAL REPORT

REPORT CODE **AR-24-NW-018689-01** REPORT DATE **28/03/2024**

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Contact for your orders: Gabriela Carvalhaes
Contract: Landfill

Order code: EUNZWE-00174502
Purchase Order Number: Landfill

SAMPLE CODE **812-2024-00042720**

Sample Name	342914-0		
Product:	Ground water		
Sampling Point code:	WIL-HS2	**Sampling Point name:**	Levin HS2
Reception Date & Time:	21/03/2024 12:11		
Analysis Started on:	21/03/2024	**Analysis Ending Date:**	28/03/2024
Product Type	Ground water	**Sampled Date & Time**	19/03/2024 09:10
Sampler(s)	Client nominated external sampler	**Sampled by Eurofins**	No

		RESULTS	(UNCERTAINTY)	LOQ
NW179	**Ammonia Nitrogen**			
	Ammoniacal nitrogen (N)	0.06	(± 0.01) mg/l	0.01
NW341	**BOD5 - Soluble Carbonaceous**			
	BOD5	<1	mg/l	1
NW020	**Chemical Oxygen Demand**			
	Chemical oxygen demand (COD)	28	(± 7) mg/l	15
NW007	**Chloride**			
	Chloride (Cl)	29.9	(± 2.99) mg/l	0.02
NW00U	**Chlorophenols**			
	2,3,4,6-Tetrachlorophenol	<0.01	mg/l	0.01
	2,4-Dichlorophenol	<0.01	mg/l	0.01
	2,6-Dichlorophenol	<0.02	mg/l	0.2
	2-Chlorophenol (o-chlorophenol)	<0.01	mg/l	0.01
	3,4,5-Trichlorophenol	<0.01	mg/l	0.01
	4-Chloro-3-cresol	<0.01	mg/l	0.01
	Pentachlorophenol	<0.005	mg/l	0.005
	Phenol	<0.01	mg/l	0.01
	Total of 2,4,5 & 2,4,6 -Trichlorophenol	<0.02	mg/l	0.02
NW023	**Conductivity**			
	Conductivity	27.2	(± 0.5) mS/m	0.1
NW098	**Dissolved Aluminium**			
	Aluminium	0.019	mg/l	0.002
NW583	**Dissolved Arsenic**			
	Arsenic (As)	0.003	mg/l	0.001
NW103	**Dissolved Boron**			
	Boron (B)	0.09	mg/l	0.03

		RESULTS (UNCERTAINTY)		LOQ
NW104	**Dissolved Cadmium**			
	Cadmium (Cd)	<0.0002	mg/l	0.0002
NW105	**Dissolved Calcium**			
	Calcium (Ca)	14.7	mg/l	0.1
NW106	**Dissolved Chromium**			
	Chromium (Cr)	<0.001	mg/l	0.001
NW108	**Dissolved Copper**			
	Copper (Cu)	0.0011	mg/l	0.0005
NW109	**Dissolved Iron**			
	Iron (Fe)	0.18	mg/l	0.01
NW110	**Dissolved Lead**			
	Lead (Pb)	<0.0005	mg/l	0.0005
NW112	**Dissolved Magnesium**			
	Magnesium (Mg)	7.87	mg/l	0.01
NW113	**Dissolved Manganese**			
	Manganese (Mn)	0.0288	mg/l	0.0005
NW114	**Dissolved Mercury**			
	Mercury (Hg)	<0.0005	mg/l	0.0005
NW116	**Dissolved Nickel**			
	Nickel (Ni)	<0.0005	mg/l	0.0005
NW117	**Dissolved Potassium**			
	Potassium (K)	2.46	mg/l	0.01
NW193	**Dissolved Reactive Phosphorus**			
	Phosphorus (soluble reactive)	0.149	mg/l	0.005
NW120	**Dissolved Sodium**			
	Sodium (Na)	25.5	mg/l	0.01
NW125	**Dissolved Zinc**			
	Zinc (Zn)	0.003	mg/l	0.002
ZM2GA	**Enumeration of Escherichia coli By Membrane Filtration**			
	Escherichia coli	700	cfu/100 ml	100
NW010	**Nitrate-N**			
	Nitrate-N	0.29	(± 0.03) mg/l	0.01
NW195	**pH (Tested beyond 15 minute APHA holding time)**			
	pH	7.5	(± 0.2)	0.1
NW011	**Sulphate**			
	Sulphate	15.6	(± 1.56) mg/l	0.02
NW206	**Suspended Solids**			
	Suspended Solids	<5	mg/l	3
NW003	**Total Alkalinity**			
	Alkalinity total	66	(± 7) mg CaCO3/l	1
NW030	**Total Hardness**			
	Hardness	69	mg CaCO3/l	1
NW210	**Total Non-Purgeable Organic Carbon**			
	Total Organic Carbon	6.9	(± 0.7) mg/l	0.1
①**NWWG6**	**Volatile Fatty Acids (VFA)**			
	Acetic acid	<5	mg/l	5
	Butyric acid	<5	mg/l	5

	RESULTS (UNCERTAINTY)		LOQ
①NWWG6 **Volatile Fatty Acids (VFA)**			
Heptanoic acid	<5	mg/l	5
Hexanoic acid	<5	mg/l	5
Isobutyric acid	<5	mg/l	5
Isocaproic acid	<5	mg/l	5
Isovaleric acid	<5	mg/l	5
Propionic acid	<5	mg/l	5
Valeric acid	<5	mg/l	5
Volatile fatty acids as acetic acid	<5	mg/l	5

LIST OF METHODS

NW003 **Total Alkalinity:** APHA Online Edition 2320 B

NW00U **Chlorophenols:** Internal Method, LC-MS/MS

NW011 **Sulphate:** APHA Online Edition 4110 B

NW023 **Conductivity:** APHA 24th Edition 2510 B

NW098 **Dissolved Aluminium:** APHA Online Edition 3125 B mod.

NW104 **Dissolved Cadmium:** APHA Online Edition 3125 B mod.

NW106 **Dissolved Chromium:** APHA Online Edition 3125 B mod.

NW109 **Dissolved Iron:** APHA Online Edition 3125 B mod.

NW112 **Dissolved Magnesium:** APHA Online Edition 3125 B mod.

NW114 **Dissolved Mercury:** APHA Online Edition 3125 B mod.

NW117 **Dissolved Potassium:** APHA Online Edition 3125 B mod.

NW125 **Dissolved Zinc:** APHA Online Edition 3125 B mod.

NW193 **Dissolved Reactive Phosphorus:** APHA Online Edition 4500-P G

NW206 **Suspended Solids:** APHA Online Edition 2540 D

NW341 **BOD5 - Soluble Carbonaceous:** APHA Online Edition 5210 B

NWWG6 **Volatile Fatty Acids (VFA):** APHA 24th Edition 5560 D mod.

NW007 **Chloride:** APHA Online Edition 4110 B

NW010 **Nitrate-N:** APHA Online Edition 4110 B

NW020 **Chemical Oxygen Demand:** APHA Online Edition 5220 D

NW030 **Total Hardness:** APHA Online Edition 2340 B

NW103 **Dissolved Boron:** APHA Online Edition 3125 B mod.

NW105 **Dissolved Calcium:** APHA Online Edition 3125 B mod.

NW108 **Dissolved Copper:** APHA Online Edition 3125 B mod.

NW110 **Dissolved Lead:** APHA Online Edition 3125 B mod.

NW113 **Dissolved Manganese:** APHA Online Edition 3125 B mod.

NW116 **Dissolved Nickel:** APHA Online Edition 3125 B mod.

NW120 **Dissolved Sodium:** APHA Online Edition 3125 B mod.

NW179 **Ammonia Nitrogen:** APHA Online Edition 4500-NH3 H

NW195 **pH (Tested beyond 15 minute APHA holding time):** APHA 24th Edition 4500-H B

NW210 **Total Non-Purgeable Organic Carbon:** APHA Online Edition 5310 B

NW583 **Dissolved Arsenic:** APHA Online Edition 3125 B mod.

ZM2GA **Escherichia coli E (Water) [NZ] <100 >6 000 000 /100 ml (0-3) m-FC Agar-F:** SMEWW 9222I; APHA 24th Edition

Signature

Marylou Cabral Laboratory Manager Eurofins ELS Limited

Jennifer Mont Supervisor Eurofins ELS Limited

Divina Cunanan Lagazon Supervisor Eurofins ELS Limited

Gordon McArthur Senior Laboratory Analyst Eurofins ELS Limited

Ganesh Ilancko Supervisor Eurofins ELS Limited

Arvinder Singh Laboratory Supervisor Microbiology

Gabriela Carvalhaes Manager Food and Water Testing Chemistry

Cody Forbes Laboratory Analyst Laboratory Analyst

EXPLANATORY NOTE

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②Test is subcontracted within Eurofins group and is accredited
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LOQ means Limit of Quantification and the unit of LOQ is the same as the result unit
✗ (Unsatisfactory) means does not meet the specification
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END OF REPORT

Food & Water Testing

ANALYTICAL REPORT

REPORT CODE	AR-24-NW-023573-01	REPORT DATE	19/04/2024

Attention Downer NZ Ltd (EDI Levin)
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P O Box 642
4741 Levin
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Phone (06) 367 2705
Email horowhenuaadmin@downer.co.nz

Copy to: Water and Waste Team (waterandwasteteam@horowhenua.govt.nz), McMillan

Contact for your orders: Gabriela Carvalhaes
Contract: Landfill

Order code: EUNZWE-00178002
Purchase Order Number: Landfill

SAMPLE CODE	812-2024-00053632		
Sample Name	349853-0		
Product:	Ground water		
Sampling Point code:	WIL-HS3	**Sampling Point name:**	Levin HS3
Reception Date & Time:	11/04/2024 13:30		
Analysis Started on:	11/04/2024	**Analysis Ending Date:**	19/04/2024
Product Type	Ground water	**Sampled Date & Time**	11/04/2024 07:45
Sampler(s)	Client nominated external sampler	**Sampled by Eurofins**	No

		RESULTS	(UNCERTAINTY)	LOQ
NW179	**Ammonia Nitrogen**			
	Ammoniacal nitrogen (N)	0.04	(± 0.00) mg/l	0.01
NW341	**BOD5 - Soluble Carbonaceous**			
	BOD5	<1	mg/l	1
NW020	**Chemical Oxygen Demand**			
	Chemical oxygen demand (COD)	<15	(± 5) mg/l	15
NW007	**Chloride**			
	Chloride (Cl)	29.6	(± 2.96) mg/l	0.02
NW00U	**Chlorophenols**			
	2,3,4,6-Tetrachlorophenol	<0.01	mg/l	0.01
	2,4-Dichlorophenol	<0.01	mg/l	0.01
	2,6-Dichlorophenol	<0.02	mg/l	0.2
	2-Chlorophenol (o-chlorophenol)	<0.01	mg/l	0.01
	3,4,5-Trichlorophenol	<0.01	mg/l	0.01
	4-Chloro-3-cresol	<0.01	mg/l	0.01
	Pentachlorophenol	<0.005	mg/l	0.005
	Phenol	<0.01	mg/l	0.01
	Total of 2,4,5 & 2,4,6 -Trichlorophenol	<0.02	mg/l	0.02
NW023	**Conductivity**			
	Conductivity	27.6	(± 0.6) mS/m	0.1
NW098	**Dissolved Aluminium**			
	Aluminium	0.005	mg/l	0.002
NW583	**Dissolved Arsenic**			
	Arsenic (As)	0.002	mg/l	0.001
NW103	**Dissolved Boron**			
	Boron (B)	0.07	mg/l	0.03

		RESULTS (UNCERTAINTY)		LOQ
NW104	**Dissolved Cadmium**			
	Cadmium (Cd)	<0.0002	mg/l	0.0002
NW105	**Dissolved Calcium**			
	Calcium (Ca)	11.4	mg/l	0.1
NW106	**Dissolved Chromium**			
	Chromium (Cr)	<0.001	mg/l	0.001
NW108	**Dissolved Copper**			
	Copper (Cu)	0.0011	mg/l	0.0005
NW109	**Dissolved Iron**			
	Iron (Fe)	0.09	mg/l	0.01
NW110	**Dissolved Lead**			
	Lead (Pb)	<0.0005	mg/l	0.0005
NW112	**Dissolved Magnesium**			
	Magnesium (Mg)	8.10	mg/l	0.01
NW113	**Dissolved Manganese**			
	Manganese (Mn)	0.0326	mg/l	0.0005
NW114	**Dissolved Mercury**			
	Mercury (Hg)	<0.0005	mg/l	0.0005
NW116	**Dissolved Nickel**			
	Nickel (Ni)	<0.0005	mg/l	0.0005
NW117	**Dissolved Potassium**			
	Potassium (K)	3.52	mg/l	0.01
NW193	**Dissolved Reactive Phosphorus**			
	Phosphorus (soluble reactive)	0.125	mg/l	0.005
NW120	**Dissolved Sodium**			
	Sodium (Na)	25.6	mg/l	0.01
NW125	**Dissolved Zinc**			
	Zinc (Zn)	0.002	mg/l	0.002
ZM2GA	**Enumeration of Escherichia coli By Membrane Filtration**			
	Escherichia coli	100	cfu/100 ml	100
NW010	**Nitrate-N**			
	Nitrate-N	0.36	(± 0.04) mg/l	0.01
NW195	**pH (Tested beyond 15 minute APHA holding time)**			
	pH	7.6	(± 0.2)	0.1
NW011	**Sulphate**			
	Sulphate	15.1	(± 1.51) mg/l	0.02
NW206	**Suspended Solids**			
	Suspended Solids	76	mg/l	3
NW003	**Total Alkalinity**			
	Alkalinity total	70	(± 7) mg CaCO3/l	1
NW030	**Total Hardness**			
	Hardness	62	mg CaCO3/l	1
NW210	**Total Non-Purgeable Organic Carbon**			
	Total Organic Carbon	6.9	(± 0.7) mg/l	0.1
①**NWWG6**	**Volatile Fatty Acids (VFA)**			
	Acetic acid	<5	mg/l	5
	Butyric acid	<5	mg/l	5

	RESULTS (UNCERTAINTY)		LOQ
①**NWWG6 Volatile Fatty Acids (VFA)**			
Heptanoic acid	<5	mg/l	5
Hexanoic acid	<5	mg/l	5
Isobutyric acid	<5	mg/l	5
Isocaproic acid	<5	mg/l	5
Isovaleric acid	<5	mg/l	5
Propionic acid	<5	mg/l	5
Valeric acid	<5	mg/l	5
Volatile fatty acids as acetic acid	<5	mg/l	5

LIST OF METHODS

NW003	**Total Alkalinity:** APHA Online Edition 2320 B
NW00U	**Chlorophenols:** Internal Method, LC-MS/MS
NW011	**Sulphate:** APHA Online Edition 4110 B
NW023	**Conductivity:** APHA 24th Edition 2510 B
NW098	**Dissolved Aluminium:** APHA Online Edition 3125 B mod.
NW104	**Dissolved Cadmium:** APHA Online Edition 3125 B mod.
NW106	**Dissolved Chromium:** APHA Online Edition 3125 B mod.
NW109	**Dissolved Iron:** APHA Online Edition 3125 B mod.
NW112	**Dissolved Magnesium:** APHA Online Edition 3125 B mod.
NW114	**Dissolved Mercury:** APHA Online Edition 3125 B mod.
NW117	**Dissolved Potassium:** APHA Online Edition 3125 B mod.
NW125	**Dissolved Zinc:** APHA Online Edition 3125 B mod.
NW193	**Dissolved Reactive Phosphorus:** APHA Online Edition 4500-P G
NW206	**Suspended Solids:** APHA Online Edition 2540 D
NW341	**BOD5 - Soluble Carbonaceous:** APHA Online Edition 5210 B
NWWG6	**Volatile Fatty Acids (VFA):** APHA 24th Edition 5560 D mod.
NW007	**Chloride:** APHA Online Edition 4110 B
NW010	**Nitrate-N:** APHA Online Edition 4110 B
NW020	**Chemical Oxygen Demand:** APHA Online Edition 5220 D
NW030	**Total Hardness:** APHA Online Edition 2340 B
NW103	**Dissolved Boron:** APHA Online Edition 3125 B mod.
NW105	**Dissolved Calcium:** APHA Online Edition 3125 B mod.
NW108	**Dissolved Copper:** APHA Online Edition 3125 B mod.
NW110	**Dissolved Lead:** APHA Online Edition 3125 B mod.
NW113	**Dissolved Manganese:** APHA Online Edition 3125 B mod.
NW116	**Dissolved Nickel:** APHA Online Edition 3125 B mod.
NW120	**Dissolved Sodium:** APHA Online Edition 3125 B mod.
NW179	**Ammonia Nitrogen:** APHA Online Edition 4500-NH3 H
NW195	**pH (Tested beyond 15 minute APHA holding time):** APHA 24th Edition 4500-H B
NW210	**Total Non-Purgeable Organic Carbon:** APHA Online Edition 5310 B
NW583	**Dissolved Arsenic:** APHA Online Edition 3125 B mod.
ZM2GA	**Escherichia coli E (Water) [NZ] <100 >6 000 000 /100 ml (0-3) m-FC Agar-F:** SMEWW 9222I; APHA 24th Edition

Signature

Marylou Cabral Laboratory Manager Eurofins ELS Limited

Jennifer Mont Supervisor Eurofins ELS Limited

Divina Cunanan Lagazon Supervisor Eurofins ELS Limited

Gordon McArthur Senior Laboratory Analyst Eurofins ELS Limited

Maria Norris Laboratory Manager, Microbiology

Ganesh Ilancko Supervisor Eurofins ELS Limited

Gabriela Carvalhaes Manager Food and Water Testing Chemistry

Cody Forbes Laboratory Analyst Laboratory Analyst

EXPLANATORY NOTE

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②Test is subcontracted within Eurofins group and is accredited
③Test is subcontracted within Eurofins group and is not accredited
④Test is subcontracted outside Eurofins group and is accredited
⑤Test is subcontracted outside Eurofins group and is not accredited
⑥Test result is provided by the customer and is not accredited
⑦Tested at the sampling point by Eurofins and is not accredited
⑧Tested at the sampling point by Eurofins and is accredited
⑨Test is RLP accredited
⑩Test is subcontracted within Eurofins group and is RLP accredited

N/A means Not Applicable
Not Detected means not detected at or above the Limit of Quantification (LOQ)
LOQ means Limit of Quantification and the unit of LOQ is the same as the result unit
✗ (Unsatisfactory) means does not meet the specification
✓ (Satisfactory) means meets the specification

END OF REPORT

Food & Water Testing

ANALYTICAL REPORT

REPORT CODE **AR-24-NW-010955-01** REPORT DATE **24/02/2024**

Attention Downer NZ Ltd (EDI Levin)
Horowhenua Admin
P O Box 642
4741 Levin
NEW ZEALAND

Phone (06) 367 2705
Email horowhenuaadmin@downer.co.nz

Copy to: Water and Waste Team (waterandwasteteam@horowhenua.govt.nz), McMillan

Contact for your orders: Gabriela Carvalhaes
Contract: Landfill

Order code: EUNZWE-00167677
Purchase Order Number: Landfill

SAMPLE CODE **812-2024-00022471**

Client Reference:	342911-0		
Product:	Ground water		
Sampling Point code:	WIL-HS3	**Sampling Point name:**	Levin HS3
Reception Date & Time:	15/02/2024 10:07		
Analysis Start Date & Time:	15/02/2024 10:10	**Analysis Ending Date:**	24/02/2024
Product Type	Ground water	**Sampled Date & Time**	12/02/2024 22:50
Sampler(s)	Client nominated external sampler	**Sampled by Eurofins**	No

		RESULTS (UNCERTAINTY)		LOQ
NW179	**Ammonia Nitrogen**			
	Ammoniacal nitrogen (N)	0.03	(± 0.009) mg/l	0.01
NW341	**BOD5 - Soluble Carbonaceous**			
	BOD5	<1	mg/l	1
NW020	**Chemical Oxygen Demand**			
	Chemical oxygen demand (COD)	<15	(± 5) mg/l	15
NW007	**Chloride**			
	Chloride (Cl)	28.7	(± 2.87) mg/l	0.02
NW00U	**Chlorophenols**			
	2,3,4,6-Tetrachlorophenol	<0.01	mg/l	0.01
	2,4-Dichlorophenol	<0.01	mg/l	0.01
	2,6-Dichlorophenol	<0.02	mg/l	0.2
	2-Chlorophenol (o-chlorophenol)	<0.01	mg/l	0.01
	3,4,5-Trichlorophenol	<0.01	mg/l	0.01
	4-Chloro-3-cresol	<0.01	mg/l	0.01
	Pentachlorophenol	<0.005	mg/l	0.005
	Phenol	<0.01	mg/l	0.01
	Total of 2,4,5 & 2,4,6 -Trichlorophenol	<0.02	mg/l	0.02
NW023	**Conductivity**			
	Conductivity	25.8	(± 0.5) mS/m	0.1
NW098	**Dissolved Aluminium**			
	Aluminium	0.018	mg/l	0.002
NW583	**Dissolved Arsenic**			
	Arsenic (As)	0.002	mg/l	0.001
NW103	**Dissolved Boron**			
	Boron (B)	0.06	mg/l	0.03

		RESULTS	(UNCERTAINTY)	LOQ
NW104	**Dissolved Cadmium**			
	Cadmium (Cd)	<0.0002	mg/l	0.0002
NW105	**Dissolved Calcium**			
	Calcium (Ca)	12.3	mg/l	0.1
NW106	**Dissolved Chromium**			
	Chromium (Cr)	<0.001	mg/l	0.001
NW108	**Dissolved Copper**			
	Copper (Cu)	0.0009	mg/l	0.0005
NW109	**Dissolved Iron**			
	Iron (Fe)	0.14	mg/l	0.01
NW110	**Dissolved Lead**			
	Lead (Pb)	<0.0005	mg/l	0.0005
NW112	**Dissolved Magnesium**			
	Magnesium (Mg)	6.91	mg/l	0.01
NW113	**Dissolved Manganese**			
	Manganese (Mn)	0.0135	mg/l	0.0005
NW114	**Dissolved Mercury**			
	Mercury (Hg)	<0.0005	mg/l	0.0005
NW116	**Dissolved Nickel**			
	Nickel (Ni)	<0.0005	mg/l	0.0005
NW117	**Dissolved Potassium**			
	Potassium (K)	2.00	mg/l	0.01
NW193	**Dissolved Reactive Phosphorus**			
	Phosphorus (soluble reactive)	0.135	(± 0.027) mg/l	0.005
NW120	**Dissolved Sodium**			
	Sodium (Na)	24.8	mg/l	0.01
NW125	**Dissolved Zinc**			
	Zinc (Zn)	0.006	mg/l	0.002
ZM2GA	**Enumeration of Escherichia coli By Membrane Filtration**			
	Escherichia coli	<100	cfu/100 ml	100
NW010	**Nitrate-N**			
	Nitrate-N	0.39	(± 0.04) mg/l	0.01
NW195	**pH (Tested beyond 15 minute APHA holding time)**			
	pH	7.5	(± 0.2)	0.1
NW011	**Sulphate**			
	Sulphate	18.2	(± 1.82) mg/l	0.02
NW206	**Suspended Solids**			
	Suspended Solids	8	mg/l	3
NW003	**Total Alkalinity**			
	Alkalinity total	57	(± 6) mg CaCO3/l	1
NW030	**Total Hardness**			
	Hardness	59	mg CaCO3/l	1
NW210	**Total Non-Purgeable Organic Carbon**			
	Total Organic Carbon	7.2	(± 0.7) mg/l	0.1
①**NWWG6**	**Volatile Fatty Acids (VFA)**			
	Acetic acid	<5	mg/l	5
	Butyric acid	<5	mg/l	5

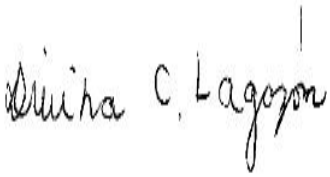
	RESULTS	(UNCERTAINTY)	LOQ
①NWWG6 **Volatile Fatty Acids (VFA)**			
Heptanoic acid	<5	mg/l	5
Hexanoic acid	<5	mg/l	5
Isobutyric acid	<5	mg/l	5
Isocaproic acid	<5	mg/l	5
Isovaleric acid	<5	mg/l	5
Propionic acid	<5	mg/l	5
Valeric acid	<5	mg/l	5
Volatile fatty acids as acetic acid	<5	mg/l	5

LIST OF METHODS

NW003	**Total Alkalinity:** APHA Online Edition 2320 B	NW007	**Chloride:** APHA Online Edition 4110 B
NW00U	**Chlorophenols:** Internal Method, LC-MS/MS	NW010	**Nitrate-N:** APHA Online Edition 4110 B
NW011	**Sulphate:** APHA Online Edition 4110 B	NW020	**Chemical Oxygen Demand:** APHA Online Edition 5220 D
NW023	**Conductivity:** APHA 24th Edition 2510 B	NW030	**Total Hardness:** APHA Online Edition 2340 B
NW098	**Dissolved Aluminium:** APHA Online Edition 3125 B mod.	NW103	**Dissolved Boron:** APHA Online Edition 3125 B mod.
NW104	**Dissolved Cadmium:** APHA Online Edition 3125 B mod.	NW105	**Dissolved Calcium:** APHA Online Edition 3125 B mod.
NW106	**Dissolved Chromium:** APHA Online Edition 3125 B mod.	NW108	**Dissolved Copper:** APHA Online Edition 3125 B mod.
NW109	**Dissolved Iron:** APHA Online Edition 3125 B mod.	NW110	**Dissolved Lead:** APHA Online Edition 3125 B mod.
NW112	**Dissolved Magnesium:** APHA Online Edition 3125 B mod.	NW113	**Dissolved Manganese:** APHA Online Edition 3125 B mod.
NW114	**Dissolved Mercury:** APHA Online Edition 3125 B mod.	NW116	**Dissolved Nickel:** APHA Online Edition 3125 B mod.
NW117	**Dissolved Potassium:** APHA Online Edition 3125 B mod.	NW120	**Dissolved Sodium:** APHA Online Edition 3125 B mod.
NW125	**Dissolved Zinc:** APHA Online Edition 3125 B mod.	NW179	**Ammonia Nitrogen:** APHA Online Edition 4500-NH3 H
NW193	**Dissolved Reactive Phosphorus:** APHA Online Edition 4500-P G	NW195	**pH (Tested beyond 15 minute APHA holding time):** APHA 24th Edition 4500-H B
NW206	**Suspended Solids:** APHA Online Edition 2540 D	NW210	**Total Non-Purgeable Organic Carbon:** APHA Online Edition 5310 B
NW341	**BOD5 - Soluble Carbonaceous:** APHA Online Edition 5210 B	NW583	**Dissolved Arsenic:** APHA Online Edition 3125 B mod.
NWWG6	**Volatile Fatty Acids (VFA):** APHA 24th Edition 5560 D mod.	ZM2GA	**Escherichia coli E (Water) [NZ] <100 >6 000 000 /100 ml (0-3) m-FC Agar-F:** SMEWW 9222I; APHA 24th Edition

Signature

Jennifer Mont Supervisor Eurofins ELS Limited



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Ganesh Ilancko Supervisor Eurofins ELS Limited

Leo Cleave Senior Analyst Microbiology

Gabriela Carvalhaes Manager Food and Water Testing Chemistry

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⑨ Test is RLP accredited
⑩ Test is subcontracted within Eurofins group and is RLP accredited

N/A means Not Applicable
Not Detected means not detected at or above the Limit of Quantification (LOQ)
LOQ means Limit of Quantification and the unit of LOQ is the same as the result unit
✗ (Unsatisfactory) means does not meet the specification
✓ (Satisfactory) means meets the specification

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END OF REPORT

Food & Water Testing

ANALYTICAL REPORT

REPORT CODE	AR-24-NW-019305-01	REPORT DATE	31/03/2024

Attention Downer NZ Ltd (EDI Levin)
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4741 Levin
NEW ZEALAND

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Email horowhenuaadmin@downer.co.nz

Copy to: Water and Waste Team (waterandwasteteam@horowhenua.govt.nz), McMillan

Contact for your orders: Gabriela Carvalhaes
Contract: Landfill

Order code: EUNZWE-00174502
Purchase Order Number: Landfill

SAMPLE CODE	812-2024-00042721		
Sample Name	342916-0		
Product:	Ground water		
Sampling Point code:	WIL-HS3	**Sampling Point name:**	Levin HS3
Reception Date & Time:	21/03/2024 12:11		
Analysis Started on:	21/03/2024	**Analysis Ending Date:**	31/03/2024
Product Type	Ground water	**Sampled Date & Time**	19/03/2024 09:40
Sampler(s)	Client nominated external sampler	**Sampled by Eurofins**	No

		RESULTS	(UNCERTAINTY)	LOQ
NW179	**Ammonia Nitrogen**			
	Ammoniacal nitrogen (N)	0.14	(± 0.01) mg/l	0.01
NW341	**BOD5 - Soluble Carbonaceous**			
	BOD5	1	mg/l	1
NW020	**Chemical Oxygen Demand**			
	Chemical oxygen demand (COD)	<15	(± 5) mg/l	15
NW007	**Chloride**			
	Chloride (Cl)	30.1	(± 3.01) mg/l	0.02
NW00U	**Chlorophenols**			
	2,3,4,6-Tetrachlorophenol	<0.01	mg/l	0.01
	2,4-Dichlorophenol	<0.01	mg/l	0.01
	2,6-Dichlorophenol	<0.02	mg/l	0.2
	2-Chlorophenol (o-chlorophenol)	<0.01	mg/l	0.01
	3,4,5-Trichlorophenol	<0.01	mg/l	0.01
	4-Chloro-3-cresol	<0.01	mg/l	0.01
	Pentachlorophenol	<0.005	mg/l	0.005
	Phenol	<0.01	mg/l	0.01
	Total of 2,4,5 & 2,4,6 -Trichlorophenol	<0.02	mg/l	0.02
NW023	**Conductivity**			
	Conductivity	27.7	(± 0.6) mS/m	0.1
NW098	**Dissolved Aluminium**			
	Aluminium	0.018	mg/l	0.002
NW583	**Dissolved Arsenic**			
	Arsenic (As)	0.003	mg/l	0.001
NW103	**Dissolved Boron**			
	Boron (B)	0.09	mg/l	0.03

		RESULTS	(UNCERTAINTY)	LOQ
NW104	**Dissolved Cadmium**			
	Cadmium (Cd)	<0.0002	mg/l	0.0002
NW105	**Dissolved Calcium**			
	Calcium (Ca)	15.5	mg/l	0.1
NW106	**Dissolved Chromium**			
	Chromium (Cr)	<0.001	mg/l	0.001
NW108	**Dissolved Copper**			
	Copper (Cu)	0.0014	mg/l	0.0005
NW109	**Dissolved Iron**			
	Iron (Fe)	0.16	mg/l	0.01
NW110	**Dissolved Lead**			
	Lead (Pb)	<0.0005	mg/l	0.0005
NW112	**Dissolved Magnesium**			
	Magnesium (Mg)	8.41	mg/l	0.01
NW113	**Dissolved Manganese**			
	Manganese (Mn)	0.0164	mg/l	0.0005
NW114	**Dissolved Mercury**			
	Mercury (Hg)	<0.0005	mg/l	0.0005
NW116	**Dissolved Nickel**			
	Nickel (Ni)	0.0008	mg/l	0.0005
NW117	**Dissolved Potassium**			
	Potassium (K)	2.88	mg/l	0.01
NW193	**Dissolved Reactive Phosphorus**			
	Phosphorus (soluble reactive)	0.149	mg/l	0.005
NW120	**Dissolved Sodium**			
	Sodium (Na)	27.3	mg/l	0.01
NW125	**Dissolved Zinc**			
	Zinc (Zn)	0.007	mg/l	0.002
ZM2GA	**Enumeration of Escherichia coli By Membrane Filtration**			
	Escherichia coli	1400	cfu/100 ml	100
NW010	**Nitrate-N**			
	Nitrate-N	0.36	(± 0.04) mg/l	0.01
NW195	**pH (Tested beyond 15 minute APHA holding time)**			
	pH	7.4	(± 0.2)	0.1
NW011	**Sulphate**			
	Sulphate	14.9	(± 1.49) mg/l	0.02
NW206	**Suspended Solids**			
	Suspended Solids	7	mg/l	3
NW003	**Total Alkalinity**			
	Alkalinity total	68	(± 7) mg CaCO3/l	1
NW030	**Total Hardness**			
	Hardness	73	mg CaCO3/l	1
NW210	**Total Non-Purgeable Organic Carbon**			
	Total Organic Carbon	7.2	(± 0.7) mg/l	0.1
①**NWWG6**	**Volatile Fatty Acids (VFA)**			
	Acetic acid	<5	mg/l	5
	Butyric acid	<5	mg/l	5

	RESULTS (UNCERTAINTY)		LOQ
①NWWG6 **Volatile Fatty Acids (VFA)**			
Heptanoic acid	<5	mg/l	5
Hexanoic acid	<5	mg/l	5
Isobutyric acid	<5	mg/l	5
Isocaproic acid	<5	mg/l	5
Isovaleric acid	<5	mg/l	5
Propionic acid	<5	mg/l	5
Valeric acid	<5	mg/l	5
Volatile fatty acids as acetic acid	<5	mg/l	5

LIST OF METHODS

NW003 **Total Alkalinity:** APHA Online Edition 2320 B

NW00U **Chlorophenols:** Internal Method, LC-MS/MS

NW011 **Sulphate:** APHA Online Edition 4110 B

NW023 **Conductivity:** APHA 24th Edition 2510 B

NW098 **Dissolved Aluminium:** APHA Online Edition 3125 B mod.

NW104 **Dissolved Cadmium:** APHA Online Edition 3125 B mod.

NW106 **Dissolved Chromium:** APHA Online Edition 3125 B mod.

NW109 **Dissolved Iron:** APHA Online Edition 3125 B mod.

NW112 **Dissolved Magnesium:** APHA Online Edition 3125 B mod.

NW114 **Dissolved Mercury:** APHA Online Edition 3125 B mod.

NW117 **Dissolved Potassium:** APHA Online Edition 3125 B mod.

NW125 **Dissolved Zinc:** APHA Online Edition 3125 B mod.

NW193 **Dissolved Reactive Phosphorus:** APHA Online Edition 4500-P G

NW206 **Suspended Solids:** APHA Online Edition 2540 D

NW341 **BOD5 - Soluble Carbonaceous:** APHA Online Edition 5210 B

NWWG6 **Volatile Fatty Acids (VFA):** APHA 24th Edition 5560 D mod.

NW007 **Chloride:** APHA Online Edition 4110 B

NW010 **Nitrate-N:** APHA Online Edition 4110 B

NW020 **Chemical Oxygen Demand:** APHA Online Edition 5220 D

NW030 **Total Hardness:** APHA Online Edition 2340 B

NW103 **Dissolved Boron:** APHA Online Edition 3125 B mod.

NW105 **Dissolved Calcium:** APHA Online Edition 3125 B mod.

NW108 **Dissolved Copper:** APHA Online Edition 3125 B mod.

NW110 **Dissolved Lead:** APHA Online Edition 3125 B mod.

NW113 **Dissolved Manganese:** APHA Online Edition 3125 B mod.

NW116 **Dissolved Nickel:** APHA Online Edition 3125 B mod.

NW120 **Dissolved Sodium:** APHA Online Edition 3125 B mod.

NW179 **Ammonia Nitrogen:** APHA Online Edition 4500-NH3 H

NW195 **pH (Tested beyond 15 minute APHA holding time):** APHA 24th Edition 4500-H B

NW210 **Total Non-Purgeable Organic Carbon:** APHA Online Edition 5310 B

NW583 **Dissolved Arsenic:** APHA Online Edition 3125 B mod.

ZM2GA **Escherichia coli E (Water) [NZ] <100 >6 000 000 /100 ml (0-3) m-FC Agar-F:** SMEWW 9222I; APHA 24th Edition

Signature

Marylou Cabral Laboratory Manager Eurofins ELS Limited

Jennifer Mont Supervisor Eurofins ELS Limited

Divina Cunanan Lagazon Supervisor Eurofins ELS Limited

Gordon McArthur Senior Laboratory Analyst Eurofins ELS Limited

Ganesh Ilancko Supervisor Eurofins ELS Limited

Arvinder Singh Laboratory Supervisor Microbiology

Gabriela Carvalhaes Manager Food and Water Testing Chemistry

Cody Forbes Laboratory Analyst Laboratory Analyst

EXPLANATORY NOTE

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②Test is subcontracted within Eurofins group and is accredited
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N/A means Not Applicable
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LOQ means Limit of Quantification and the unit of LOQ is the same as the result unit
✗ (Unsatisfactory) means does not meet the specification
✓ (Satisfactory) means meets the specification

END OF REPORT

Food & Water Testing

ANALYTICAL REPORT

REPORT CODE **AR-24-NW-011739-01** REPORT DATE **28/02/2024**

Attention Downer NZ Ltd (EDI Levin)
Horowhenua Admin
P O Box 642
4741 Levin
NEW ZEALAND

Phone (06) 367 2705
Email horowhenuaadmin@downer.co.nz

Copy to: Water and Waste Team (waterandwasteteam@horowhenua.govt.nz), McMillan

Contact for your orders: Gabriela Carvalhaes
Contract: Landfill

Order code: EUNZWE-00167983
Purchase Order Number: Landfill

SAMPLE CODE **812-2024-00023445**

Client Reference: 342912-0
Product: Ground water
Sampling Point code: WIL-LP
Sampling Point name: Levin Leachate Pond
Reception Date & Time: 16/02/2024 13:15
Analysis Start Date & Time: 16/02/2024 13:23
Analysis Ending Date: 28/02/2024
Product Type Ground water
Sampled Date & Time 12/02/2024 23:35
Sampler(s) Client nominated external sampler
Sampled by Eurofins No

		RESULTS	(UNCERTAINTY)	LOQ
NW179	**Ammonia Nitrogen**			
	Ammoniacal nitrogen (N)	1530	(± 150) mg/l	0.01
NW341	**BOD5 - Soluble Carbonaceous**			
	BOD5	94	mg/l	1
NW020	**Chemical Oxygen Demand**			
	Chemical oxygen demand (COD)	3000	(± 150) mg/l	15
NW007	**Chloride**			
	Chloride (Cl)	1280	(± 128) mg/l	0.02
NW023	**Conductivity**			
	Conductivity	1.9	(± 0.05) mS/m	0.1
NW098	**Dissolved Aluminium**			
	Aluminium	0.840	mg/l	0.002
NW583	**Dissolved Arsenic**			
	Arsenic (As)	0.264	mg/l	0.001
NW103	**Dissolved Boron**			
	Boron (B)	7.24	mg/l	0.03
NW104	**Dissolved Cadmium**			
	Cadmium (Cd)	<0.0002	mg/l	0.0002
NW105	**Dissolved Calcium**			
	Calcium (Ca)	84.6	mg/l	0.1
NW106	**Dissolved Chromium**			
	Chromium (Cr)	0.780	mg/l	0.001
NW108	**Dissolved Copper**			
	Copper (Cu)	0.0096	mg/l	0.0005
NW109	**Dissolved Iron**			
	Iron (Fe)	8.12	mg/l	0.01

		RESULTS	(UNCERTAINTY)	LOQ
NW110	**Dissolved Lead**			
	Lead (Pb)	0.0016	mg/l	0.0005
NW112	**Dissolved Magnesium**			
	Magnesium (Mg)	59.8	mg/l	0.01
NW113	**Dissolved Manganese**			
	Manganese (Mn)	1.04	mg/l	0.0005
NW114	**Dissolved Mercury**			
	Mercury (Hg)	<0.0005	mg/l	0.0005
NW116	**Dissolved Nickel**			
	Nickel (Ni)	0.119	mg/l	0.0005
NW117	**Dissolved Potassium**			
	Potassium (K)	714	mg/l	0.01
NW193	**Dissolved Reactive Phosphorus**			
	Phosphorus (soluble reactive)	15.2	(± 1.52) mg/l	0.005
NW120	**Dissolved Sodium**			
	Sodium (Na)	1120	mg/l	0.01
NW125	**Dissolved Zinc**			
	Zinc (Zn)	0.053	mg/l	0.002
ZM2GA	**Enumeration of Escherichia coli By Membrane Filtration**			
	Escherichia coli	<100	cfu/100 ml	100
NW010	**Nitrate-N**			
	Nitrate-N	<1	mg/l	0.01
NW195	**pH (Tested beyond 15 minute APHA holding time)**			
	pH	7.8	(± 0.2)	0.1
NW011	**Sulphate**			
	Sulphate	27.2	(± 2.72) mg/l	0.02
NW206	**Suspended Solids**			
	Suspended Solids	89	mg/l	3
NW003	**Total Alkalinity**			
	Alkalinity total	7000	(± 700) mg CaCO3/l	1
NW030	**Total Hardness**			
	Hardness	458	mg CaCO3/l	1
NW210	**Total Non-Purgeable Organic Carbon**			
	Total Organic Carbon	882	(± 88.2) mg/l	0.1
①**NWWG6**	**Volatile Fatty Acids (VFA)**			
	Acetic acid	<5	mg/l	5
	Butyric acid	<5	mg/l	5
	Heptanoic acid	<5	mg/l	5
	Hexanoic acid	<5	mg/l	5
	Isobutyric acid	<5	mg/l	5
	Isocaproic acid	<5	mg/l	5
	Isovaleric acid	<5	mg/l	5
	Propionic acid	<5	mg/l	5
	Valeric acid	<5	mg/l	5
	Volatile fatty acids as acetic acid	<5	mg/l	5

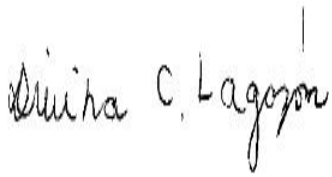
LIST OF METHODS

NW003	**Total Alkalinity:** APHA Online Edition 2320 B	NW007	**Chloride:** APHA Online Edition 4110 B
NW010	**Nitrate-N:** APHA Online Edition 4110 B	NW011	**Sulphate:** APHA Online Edition 4110 B
NW020	**Chemical Oxygen Demand:** APHA Online Edition 5220 D	NW023	**Conductivity:** APHA 24th Edition 2510 B
NW030	**Total Hardness:** APHA Online Edition 2340 B	NW098	**Dissolved Aluminium:** APHA Online Edition 3125 B mod.
NW103	**Dissolved Boron:** APHA Online Edition 3125 B mod.	NW104	**Dissolved Cadmium:** APHA Online Edition 3125 B mod.
NW105	**Dissolved Calcium:** APHA Online Edition 3125 B mod.	NW106	**Dissolved Chromium:** APHA Online Edition 3125 B mod.
NW108	**Dissolved Copper:** APHA Online Edition 3125 B mod.	NW109	**Dissolved Iron:** APHA Online Edition 3125 B mod.
NW110	**Dissolved Lead:** APHA Online Edition 3125 B mod.	NW112	**Dissolved Magnesium:** APHA Online Edition 3125 B mod.
NW113	**Dissolved Manganese:** APHA Online Edition 3125 B mod.	NW114	**Dissolved Mercury:** APHA Online Edition 3125 B mod.
NW116	**Dissolved Nickel:** APHA Online Edition 3125 B mod.	NW117	**Dissolved Potassium:** APHA Online Edition 3125 B mod.
NW120	**Dissolved Sodium:** APHA Online Edition 3125 B mod.	NW125	**Dissolved Zinc:** APHA Online Edition 3125 B mod.
NW179	**Ammonia Nitrogen:** APHA Online Edition 4500-NH3 H	NW193	**Dissolved Reactive Phosphorus:** APHA Online Edition 4500-P G
NW195	**pH (Tested beyond 15 minute APHA holding time):** APHA 24th Edition 4500-H B	NW206	**Suspended Solids:** APHA Online Edition 2540 D
NW210	**Total Non-Purgeable Organic Carbon:** APHA Online Edition 5310 B	NW341	**BOD5 - Soluble Carbonaceous:** APHA Online Edition 5210 B
NW583	**Dissolved Arsenic:** APHA Online Edition 3125 B mod.	NWWG6	**Volatile Fatty Acids (VFA):** APHA 24th Edition 5560 D mod.
ZM2GA	**Escherichia coli E (Water) [NZ] <100 >6 000 000 /100 ml (0-3) m-FC Agar-F:** SMEWW 9222I; APHA 24th Edition		

Signature

Marylou Cabral Laboratory Manager
Eurofins ELS Limited

Jennifer Mont Supervisor Eurofins ELS Limited



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Gordon McArthur Senior Laboratory Analyst
Eurofins ELS Limited

Ganesh Ilancko Supervisor Eurofins ELS Limited

Leo Cleave Senior Analyst Microbiology

Cody Forbes Laboratory Analyst
Laboratory Analyst

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Not Detected means not detected at or above the Limit of Quantification (LOQ)
LOQ means Limit of Quantification and the unit of LOQ is the same as the result unit
✗ (Unsatisfactory) means does not meet the specification
✓ (Satisfactory) means meets the specification

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END OF REPORT

Food & Water Testing

ANALYTICAL REPORT

REPORT CODE	AR-24-NW-019196-01	REPORT DATE	30/03/2024

Attention Downer NZ Ltd (EDI Levin)
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4741 Levin
NEW ZEALAND

Phone (06) 367 2705
Email horowhenuaadmin@downer.co.nz

Copy to: Water and Waste Team (waterandwasteteam@horowhenua.govt.nz), McMillan

Contact for your orders: Gabriela Carvalhaes
Contract: Landfill

Order code: EUNZWE-00174502
Purchase Order Number: Landfill

SAMPLE CODE	812-2024-00042716		
Sample Name	342920-0		
Product:	Ground water		
Sampling Point code:	WIL-LP	**Sampling Point name:**	Levin Leachate Pond
Reception Date & Time:	21/03/2024 12:09		
Analysis Started on:	21/03/2024	**Analysis Ending Date:**	28/03/2024
Product Type	Ground water	**Sampled Date & Time**	18/03/2024 22:30
Sampler(s)	Client nominated external sampler	**Sampled by Eurofins**	No

		RESULTS	(UNCERTAINTY)	LOQ
NW179	**Ammonia Nitrogen**			
	Ammoniacal nitrogen (N)	1410	(± 141) mg/l	0.01
NW341	**BOD5 - Soluble Carbonaceous**			
	BOD5	109	mg/l	1
NW020	**Chemical Oxygen Demand**			
	Chemical oxygen demand (COD)	3910	(± 200) mg/l	15
NW007	**Chloride**			
	Chloride (Cl)	1120	(± 112) mg/l	0.02
NW023	**Conductivity**			
	Conductivity	1860	(± 40.0) mS/m	0.1
NW098	**Dissolved Aluminium**			
	Aluminium	0.816	mg/l	0.002
NW583	**Dissolved Arsenic**			
	Arsenic (As)	0.283	mg/l	0.001
NW103	**Dissolved Boron**			
	Boron (B)	7.57	mg/l	0.03
NW104	**Dissolved Cadmium**			
	Cadmium (Cd)	<0.0002	mg/l	0.0002
NW105	**Dissolved Calcium**			
	Calcium (Ca)	86.2	mg/l	0.1
NW106	**Dissolved Chromium**			
	Chromium (Cr)	0.905	mg/l	0.001
NW108	**Dissolved Copper**			
	Copper (Cu)	0.0082	mg/l	0.0005
NW109	**Dissolved Iron**			
	Iron (Fe)	7.98	mg/l	0.01

		RESULTS (UNCERTAINTY)		LOQ
NW110	**Dissolved Lead**			
	Lead (Pb)	0.0022	mg/l	0.0005
NW112	**Dissolved Magnesium**			
	Magnesium (Mg)	57.2	mg/l	0.01
NW113	**Dissolved Manganese**			
	Manganese (Mn)	1.22	mg/l	0.0005
NW114	**Dissolved Mercury**			
	Mercury (Hg)	<0.0005	mg/l	0.0005
NW116	**Dissolved Nickel**			
	Nickel (Ni)	0.128	mg/l	0.0005
NW117	**Dissolved Potassium**			
	Potassium (K)	622	mg/l	0.01
NW193	**Dissolved Reactive Phosphorus**			
	Phosphorus (soluble reactive)	13.3	mg/l	0.005
NW120	**Dissolved Sodium**			
	Sodium (Na)	958	mg/l	0.01
NW125	**Dissolved Zinc**			
	Zinc (Zn)	0.079	mg/l	0.002
ZM2GA	**Enumeration of Escherichia coli By Membrane Filtration**			
	Escherichia coli	100	cfu/100 ml	100
NW010	**Nitrate-N**			
	Nitrate-N	<0.1	mg/l	0.01
NW195	**pH (Tested beyond 15 minute APHA holding time)**			
	pH	7.9	(± 0.2)	0.1
NW011	**Sulphate**			
	Sulphate	81.8	(± 8.18) mg/l	0.02
NW206	**Suspended Solids**			
	Suspended Solids	91	mg/l	3
NW003	**Total Alkalinity**			
	Alkalinity total	6830	(± 680) mg CaCO3/l	1
NW030	**Total Hardness**			
	Hardness	451	mg CaCO3/l	1
NW210	**Total Non-Purgeable Organic Carbon**			
	Total Organic Carbon	828	(± 82.8) mg/l	0.1
①**NWWG6**	**Volatile Fatty Acids (VFA)**			
	Acetic acid	<5	mg/l	5
	Butyric acid	0.0	0,1 ml/l	5
	Heptanoic acid	<5	mg/l	5
	Hexanoic acid	<5	mg/l	5
	Isobutyric acid	<5	mg/l	5
	Isocaproic acid	<5	mg/l	5
	Isovaleric acid	<5	mg/l	5
	Propionic acid	<5	mg/l	5
	Valeric acid	<5	mg/l	5
	Volatile fatty acids as acetic acid	<5	mg/l	5

LIST OF METHODS

NW003	**Total Alkalinity:** APHA Online Edition 2320 B
NW010	**Nitrate-N:** APHA Online Edition 4110 B
NW020	**Chemical Oxygen Demand:** APHA Online Edition 5220 D
NW030	**Total Hardness:** APHA Online Edition 2340 B
NW103	**Dissolved Boron:** APHA Online Edition 3125 B mod.
NW105	**Dissolved Calcium:** APHA Online Edition 3125 B mod.
NW108	**Dissolved Copper:** APHA Online Edition 3125 B mod.
NW110	**Dissolved Lead:** APHA Online Edition 3125 B mod.
NW113	**Dissolved Manganese:** APHA Online Edition 3125 B mod.
NW116	**Dissolved Nickel:** APHA Online Edition 3125 B mod.
NW120	**Dissolved Sodium:** APHA Online Edition 3125 B mod.
NW179	**Ammonia Nitrogen:** APHA Online Edition 4500-NH3 H
NW195	**pH (Tested beyond 15 minute APHA holding time):** APHA 24th Edition 4500-H B
NW210	**Total Non-Purgeable Organic Carbon:** APHA Online Edition 5310 B
NW583	**Dissolved Arsenic:** APHA Online Edition 3125 B mod.
ZM2GA	**Escherichia coli E (Water) [NZ] <100 >6 000 000 /100 ml (0-3) m-FC Agar-F:** SMEWW 9222I; APHA 24th Edition
NW007	**Chloride:** APHA Online Edition 4110 B
NW011	**Sulphate:** APHA Online Edition 4110 B
NW023	**Conductivity:** APHA 24th Edition 2510 B
NW098	**Dissolved Aluminium:** APHA Online Edition 3125 B mod.
NW104	**Dissolved Cadmium:** APHA Online Edition 3125 B mod.
NW106	**Dissolved Chromium:** APHA Online Edition 3125 B mod.
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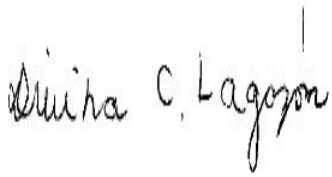
NW117	**Dissolved Potassium:** APHA Online Edition 3125 B mod.
NW125	**Dissolved Zinc:** APHA Online Edition 3125 B mod.
NW193	**Dissolved Reactive Phosphorus:** APHA Online Edition 4500-P G
NW206	**Suspended Solids:** APHA Online Edition 2540 D
NW341	**BOD5 - Soluble Carbonaceous:** APHA Online Edition 5210 B
NWWG6	**Volatile Fatty Acids (VFA):** APHA 24th Edition 5560 D mod.

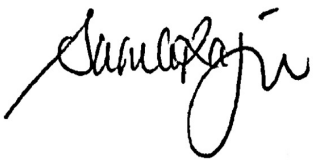
Signature

Marylou Cabral Laboratory Manager
Eurofins ELS Limited

Jennifer Mont Supervisor Eurofins ELS Limited



Divina Cunanan Lagazon Supervisor Eurofins ELS Limited



Sunita Raju Business Unit Manager

Gabriela Carvalhaes Manager Food and Water Testing Chemistry

Cody Forbes Laboratory Analyst
Laboratory Analyst

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✓ (Satisfactory) means meets the specification

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Food & Water Testing

ANALYTICAL REPORT

REPORT CODE	AR-24-NW-024895-01	REPORT DATE	24/04/2024

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4741 Levin
NEW ZEALAND

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Email horowhenuaadmin@downer.co.nz

Copy to: Water and Waste Team (waterandwasteteam@horowhenua.govt.nz), McMillan

Contact for your orders: Gabriela Carvalhaes
Contract: Landfill

Order code: EUNZWE-00178002
Purchase Order Number: Landfill

SAMPLE CODE	812-2024-00053651		
Sample Name	349881-0		
Product:	Ground water		
Sampling Point code:	WIL-LP	**Sampling Point name:**	Levin Leachate Pond
Reception Date & Time:	11/04/2024 13:30		
Analysis Started on:	11/04/2024	**Analysis Ending Date:**	20/04/2024
Product Type	Ground water	**Sampled Date & Time**	11/04/2024 08:15
Sampler(s)	Client nominated external sampler	**Sampled by Eurofins**	No

		RESULTS	(UNCERTAINTY)	LOQ
NW179	**Ammonia Nitrogen**			
	Ammoniacal nitrogen (N)	1520	(± 152) mg/l	0.01
NW341	**BOD5 - Soluble Carbonaceous**			
	BOD5	119	mg/l	1
NW020	**Chemical Oxygen Demand**			
	Chemical oxygen demand (COD)	362	(± 37) mg/l	15
NW007	**Chloride**			
	Chloride (Cl)	1180	(± 118) mg/l	0.02
NW023	**Conductivity**			
	Conductivity	1900	(± 40.0) mS/m	0.1
NW098	**Dissolved Aluminium**			
	Aluminium	1.08	mg/l	0.002
NW583	**Dissolved Arsenic**			
	Arsenic (As)	0.246	mg/l	0.001
NW103	**Dissolved Boron**			
	Boron (B)	7.74	mg/l	0.03
NW104	**Dissolved Cadmium**			
	Cadmium (Cd)	<0.0002	mg/l	0.0002
NW105	**Dissolved Calcium**			
	Calcium (Ca)	92.9	mg/l	0.1
NW106	**Dissolved Chromium**			
	Chromium (Cr)	0.799	mg/l	0.001
NW108	**Dissolved Copper**			
	Copper (Cu)	0.0078	mg/l	0.0005
NW109	**Dissolved Iron**			
	Iron (Fe)	7.52	mg/l	0.01

		RESULTS	(UNCERTAINTY)	LOQ
NW110	**Dissolved Lead**			
	Lead (Pb)	0.0024	mg/l	0.0005
NW112	**Dissolved Magnesium**			
	Magnesium (Mg)	57.9	mg/l	0.01
NW113	**Dissolved Manganese**			
	Manganese (Mn)	1.20	mg/l	0.0005
NW114	**Dissolved Mercury**			
	Mercury (Hg)	<0.0005	mg/l	0.0005
NW116	**Dissolved Nickel**			
	Nickel (Ni)	0.130	mg/l	0.0005
NW117	**Dissolved Potassium**			
	Potassium (K)	747	mg/l	0.01
NW193	**Dissolved Reactive Phosphorus**			
	Phosphorus (soluble reactive)	14.2	mg/l	0.005
NW120	**Dissolved Sodium**			
	Sodium (Na)	1090	mg/l	0.01
NW125	**Dissolved Zinc**			
	Zinc (Zn)	0.100	mg/l	0.002
ZM2GA	**Enumeration of Escherichia coli By Membrane Filtration**			
	Escherichia coli	<100	cfu/100 ml	100
NW010	**Nitrate-N**			
	Nitrate-N	<1	mg/l	0.01
NW195	**pH (Tested beyond 15 minute APHA holding time)**			
	pH	7.6	(± 0.2)	0.1
NW011	**Sulphate**			
	Sulphate	43.7	(± 4.37) mg/l	0.02
NW206	**Suspended Solids**			
	Suspended Solids	48	mg/l	3
NW228	**SVOC (GC-MSMS)**			
	Acenaphthene	<0.0001	mg/l	0.0001
	Acenaphthylene	<0.001	mg/l	0.001
	Adipatic acid, bis-2-ethylhexyl ester (DEHA)	<0.0001	mg/l	0.0001
	Alachlor	<0.0001	mg/l	0.0001
	Aldicarb	<0.1	mg/l	0.1
	Aldrin	<0.001	mg/l	0.001
	Anthracene	<0.001	mg/l	0.001
	Atrazine	<0.0001	mg/l	0.0001
	Benz(a)anthracene	<0.0001	mg/l	0.0001
	Benzo(a)pyrene	<0.0001	mg/l	0.0001
	Benzo(g,h,i)perylene	<0.001	mg/l	0.001
	Bromacil	<0.005	mg/l	0.005
	Carbofuran	0.006	mg/l	0.001
	Chlordane	<0.0001	mg/l	0.0001
	Chlordane, gamma	<0.001	mg/l	0.001
	Chlorpyrifos (-ethyl)	<0.0001	mg/l	0.0001
	Chrysene	<0.0001	mg/l	0.0001
	Cyanazine	<0.005	mg/l	0.005

		RESULTS (UNCERTAINTY)		LOQ
NW228	**SVOC (GC-MSMS)**			
	d-BHC	<0.0001	mg/l	0.0001
	DDD, p,p'-	<0.0001	mg/l	0.0001
	DDE, p,p-	<0.0001	mg/l	0.0001
	DDT, p,p'-	NotRecovered	mg/l	0.001
	Diazinon	<0.0001	mg/l	0.0001
	Dibenz(a,h)anthracene	<0.0001	mg/l	0.0001
	Dieldrin	<0.0001	mg/l	0.0001
	Dimethoate	<0.001	mg/l	0.001
	Diuron	<0.001	mg/l	0.001
	Endosulfan, alpha-	<0.001	mg/l	0.001
	Endosulfan, beta-	<0.005	mg/l	0.005
	Endosulfan-sulfate	<0.0001	mg/l	0.0001
	Endrin	<0.0001	mg/l	0.0001
	Endrin ketone	NotRecovered	mg/l	0.0001
	Endrin-aldehyde	<0.001	mg/l	0.01
	Fluoranthene	<0.0001	mg/l	0.0001
	Fluorene	<0.0001	mg/l	0.0001
	HCH, alpha-	<0.0001	mg/l	0.0001
	HCH, beta-	<0.0001	mg/l	0.0001
	Heptachlor	<0.0001	mg/l	0.0001
	Heptachlor epoxide, cis-	<0.0001	mg/l	0.0001
	Hexachlorobenzene (HCB)	<0.0001	mg/l	0.0001
	Hexazinone	<0.001	mg/l	0.001
	Indeno(1,2,3-cd)pyrene	<0.0001	mg/l	0.0001
	Lindane (gamma-HCH)	<0.0001	mg/l	0.0001
	Metalaxyl and metalaxyl-M (metalaxyl including other mixtures of constituent isomers including metalaxyl-M (sum of isomers))	<0.001	mg/l	0.001
	Methoxychlor	<0.0001	mg/l	0.0001
	Metolachlor	<0.0001	mg/l	0.0001
	Metribuzin	<0.0001	mg/l	0.0001
	Molinate	<0.0001	mg/l	0.0001
	Naphthalene	0.0052	mg/l	0.0001
	Oxadiazon	<0.0001	mg/l	0.0001
	PCB 101	<0.0001	mg/l	0.0001
	PCB 138	<0.001	mg/l	0.001
	PCB 183	<0.0001	mg/l	0.0001
	PCB 28	<0.0001	mg/l	0.0001
	PCB 7	<0.0001	mg/l	0.0001
	Pendimethalin	<0.002	mg/l	0.002
	Permethrin (sum of isomers)	<0.0001	mg/l	0.0001
	Phenanthrene	<0.0001	mg/l	0.0001
	Pirimiphos-methyl	<0.0001	mg/l	0.0001
	Procymidone	<0.0001	mg/l	0.0001
	Propanil	<0.001	mg/l	0.001
	Propazine	<0.0001	mg/l	0.0001
	Pyrene	<0.0001	mg/l	0.0001

		RESULTS	(UNCERTAINTY)	LOQ
NW228	**SVOC (GC-MSMS)**			
	Pyriproxyfen	<0.0001	mg/l	0.0001
	Simazine	<0.0001	mg/l	0.0001
	Terbuthylazine	<0.0001	mg/l	0.0001
	Total Benzo(b) and Benzo(k) fluoranthene	<0.001	mg/l	0.001
	Trifluralin	<0.0001	mg/l	0.0001
NW003	**Total Alkalinity**			
	Alkalinity total	7680	(± 770) mg CaCO3/l	1
NW030	**Total Hardness**			
	Hardness	471	mg CaCO3/l	1
NW210	**Total Non-Purgeable Organic Carbon**			
	Total Organic Carbon	823	(± 82.3) mg/l	0.1
NW229	**VOC (GC-MS)**			
	1,1,1,2-Tetrachloroethane	<0.0005	mg/l	0.0005
	1,1,1-Trichloroethane	<0.0005	mg/l	0.0005
	1,1,2,2-tetrachloroethane	<0.0005	mg/l	0.0005
	1,1,2-Trichloroethane	<0.0005	mg/l	0.0005
	1,1-Dichloroethane	<0.0005	mg/l	0.0005
	1,1-Dichloroethene	<0.0005	mg/l	0.0005
	1,1-Dichloropropene	<0.0005	mg/l	0.0005
	1,2,3-Trichlorobenzene	<0.0005	mg/l	0.0005
	1,2,3-Trichloropropane	<0.0005	mg/l	0.0005
	1,2,4 trimethylbenzen	<0.0005	mg/l	0.0005
	1,2,4-Trichlorobenzene	<0.0005	mg/l	0.0005
	1,2-Dibromo-3-chloropropane	<0.001	mg/l	0.002
	1,2-Dibromoethane	<0.0002	mg/l	0.0002
	1,2-Dichlorobenzene (2)	<0.0005	mg/l	0.0005
	1,2-Dichloroethane	<0.0005	mg/l	0.0005
	1,2-Dichloropropane	<0.0005	mg/l	0.0005
	1,3,5-Trichlorobenzene	<0.0005	mg/l	0.0005
	1,3,5-Trimethylbenzene	<0.0005	mg/l	0.0005
	1,3-Dichlorobenzene	<0.0005	mg/l	0.0005
	1,3-Dichloropropane	<0.0005	mg/l	0.0005
	1,4-dichlorobenzene	0.0014	mg/l	0.0005
	2,2-Dichloropropane	<0.0005	mg/l	0.0005
	2-Chlorotoluene	<0.0005	mg/l	0.0005
	3-chloropropene	<0.0010	mg/l	0.0005
	4-Chlorotoluene	<0.0005	mg/l	0.0005
	4-methyl-2-pentanone	<0.0005	mg/l	0.0005
	Benzene	0.0033	mg/l	0.0005
	Bromobenzene	<0.0005	mg/l	0.0005
	Bromochloromethane	<0.0012	mg/l	0.0012
	Bromodichloromethane	<0.0005	mg/l	0.0005
	Bromoform	<0.0005	mg/l	0.0005
	Bromomethane (zone 2)	<0.001	mg/l	0.001
	Carbon tetrachloride	<0.0005	mg/l	0.0005
	Carbondisulphide (CS2)	<0.0005	mg/l	0.0005
	Chlorobenzene	0.0009	mg/l	0.0005

		RESULTS (UNCERTAINTY)		LOQ
NW229	**VOC (GC-MS)**			
	Chloroethane	<0.001	mg/l	0.001
	Chloroform	<0.0005	mg/l	0.0005
	Chloromethane	<0.006	mg/l	0.006
	cis-1,2-Dichloroethene	0.0006	mg/l	0.0005
	cis-1,3-Dichloropropene	<0.0005	mg/l	0.0005
	Dibromochloromethane	<0.0005	mg/l	0.0005
	Dibromomethane	<0.0005	mg/l	0.0005
	Dichlorodifluoromethane	NotRecovered	mg/l	0.001
	Dichloromethane	0.646	mg/l	0.005
	Hexachlorobutadiene	<0.0002	mg/l	0.0002
	Isopropylbenzene (Cumene)	<0.0005	mg/l	0.0005
	m,p-Xylene, Ethylbenzene	0.03	mg/l	0.0015
	Naphthalene	NotRecovered	mg/l	0.0005
	n-Butylbenzene	<0.0005	mg/l	0.0005
	n-Propylbenzene	<0.0005	mg/l	0.0005
	p-Isopropyltoluene	<0.0005	mg/l	0.0005
	sec-Butylbenzene	<0.0005	mg/l	0.0005
	Styrene	<0.0005	mg/l	0.0005
	tert-Butylbenzene	<0.0005	mg/l	0.0005
	Tetrachloroethene	<0.0005	mg/l	0.0005
	Toluene	0.0047	mg/l	0.0005
	trans-1,2-Dichloroethene	<0.0005	mg/l	0.0005
	trans-1,3-Dichloropropene	<0.0005	mg/l	0.0005
	Trichloroethene	<0.0005	mg/l	0.0005
	Trichlorofluoromethane	<0.0005	mg/l	0.0005
	Vinyl chloride	<0.0003	mg/l	0.0003
	Xylene (ortho-)	0.0107	mg/l	0.0005
①**NWWG6**	**Volatile Fatty Acids (VFA)**			
	Acetic acid	<5	mg/l	5
	Butyric acid	<5	mg/l	5
	Heptanoic acid	<5	mg/l	5
	Hexanoic acid	<5	mg/l	5
	Isobutyric acid	<5	mg/l	5
	Isocaproic acid	<5	mg/l	5
	Isovaleric acid	<5	mg/l	5
	Propionic acid	<5	mg/l	5
	Valeric acid	<5	mg/l	5
	Volatile fatty acids as acetic acid	<5	mg/l	5

LIST OF METHODS

NW003	**Total Alkalinity:** APHA Online Edition 2320 B	NW007	**Chloride:** APHA Online Edition 4110 B
NW010	**Nitrate-N:** APHA Online Edition 4110 B	NW011	**Sulphate:** APHA Online Edition 4110 B
NW020	**Chemical Oxygen Demand:** APHA Online Edition 5220 D	NW023	**Conductivity:** APHA 24th Edition 2510 B
NW030	**Total Hardness:** APHA Online Edition 2340 B	NW098	**Dissolved Aluminium:** APHA Online Edition 3125 B mod.
NW103	**Dissolved Boron:** APHA Online Edition 3125 B mod.	NW104	**Dissolved Cadmium:** APHA Online Edition 3125 B mod.
NW105	**Dissolved Calcium:** APHA Online Edition 3125 B mod.	NW106	**Dissolved Chromium:** APHA Online Edition 3125 B mod.
NW108	**Dissolved Copper:** APHA Online Edition 3125 B mod.	NW109	**Dissolved Iron:** APHA Online Edition 3125 B mod.

NW110	**Dissolved Lead:** APHA Online Edition 3125 B mod.	NW112	**Dissolved Magnesium:** APHA Online Edition 3125 B mod.
NW113	**Dissolved Manganese:** APHA Online Edition 3125 B mod.	NW114	**Dissolved Mercury:** APHA Online Edition 3125 B mod.
NW116	**Dissolved Nickel:** APHA Online Edition 3125 B mod.	NW117	**Dissolved Potassium:** APHA Online Edition 3125 B mod.
NW120	**Dissolved Sodium:** APHA Online Edition 3125 B mod.	NW125	**Dissolved Zinc:** APHA Online Edition 3125 B mod.
NW179	**Ammonia Nitrogen:** APHA Online Edition 4500-NH3 H	NW193	**Dissolved Reactive Phosphorus:** APHA Online Edition 4500-P G
NW195	**pH (Tested beyond 15 minute APHA holding time):** APHA 24th Edition 4500-H B	NW206	**Suspended Solids:** APHA Online Edition 2540 D
NW210	**Total Non-Purgeable Organic Carbon:** APHA Online Edition 5310 B	NW228	**SVOC (GC-MSMS):** Internal Method, GC-MS/MS
NW229	**VOC (GC-MS):** Internal Method, HS-GC-MS	NW341	**BOD5 - Soluble Carbonaceous:** APHA Online Edition 5210 B
NW583	**Dissolved Arsenic:** APHA Online Edition 3125 B mod.	NWWG6	**Volatile Fatty Acids (VFA):** APHA 24th Edition 5560 D mod.
ZM2GA	**Escherichia coli E (Water) [NZ] <100 >6 000 000 /100 ml (0-3) m-FC Agar-F:** SMEWW 9222I; APHA 24th Edition		

Signature

Marylou Cabral	Laboratory Manager Eurofins ELS Limited	**Jennifer Mont**	Supervisor Eurofins ELS Limited	**Divina Cunanan Lagazon**	Supervisor Eurofins ELS Limited
Gordon McArthur	Senior Laboratory Analyst Eurofins ELS Limited	**Ganesh Ilancko**	Supervisor Eurofins ELS Limited	**Leo Cleave**	Senior Analyst Microbiology
Gabriela Carvalhaes	Manager Food and Water Testing Chemistry	**Cody Forbes**	Laboratory Analyst Laboratory Analyst		

EXPLANATORY NOTE

①Test is not accredited
②Test is subcontracted within Eurofins group and is accredited
③Test is subcontracted within Eurofins group and is not accredited
④Test is subcontracted outside Eurofins group and is accredited
⑤Test is subcontracted outside Eurofins group and is not accredited
⑥Test result is provided by the customer and is not accredited
⑦Tested at the sampling point by Eurofins and is not accredited
⑧Tested at the sampling point by Eurofins and is accredited
⑨Test is RLP accredited
⑩Test is subcontracted within Eurofins group and is RLP accredited

N/A means Not Applicable
Not Detected means not detected at or above the Limit of Quantification (LOQ)
LOQ means Limit of Quantification and the unit of LOQ is the same as the result unit
✗ (Unsatisfactory) means does not meet the specification
✓ (Satisfactory) means meets the specification

The Customer acknowledges and accepts that: (a) where Eurofins is not responsible for sampling, the test result(s) in this report apply only to the sample as received. Customer is solely responsible for the sampling process and warrants that the sample provided to Eurofins is representative of the lot / batch from which the samples were drawn; and (b) Eurofins expresses no opinion and accepts no liability in respect of the Customer's production process or homogeneity of the product.
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The tests are identified by a five-digit code, their description is available on request.
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Unless otherwise stated, all tests in this analytical report (except for subcontracted tests) are performed at 85 Port Road, Seaview, Lower Hutt, Wellington, NEW ZEALAND.
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END OF REPORT

Food & Water Testing

ANALYTICAL REPORT

REPORT CODE	AR-24-NW-023575-01	REPORT DATE	19/04/2024

Attention Downer NZ Ltd (EDI Levin)
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Contact for your orders: Gabriela Carvalhaes
Contract: Landfill

Order code: EUNZWE-00178002
Purchase Order Number: Landfill

SAMPLE CODE	812-2024-00053642		
Sample Name	349855-0		
Product:	Ground water		
Sampling Point code:	WIL-TD1	**Sampling Point name:**	Levin TD1
Reception Date & Time:	11/04/2024 13:30		
Analysis Started on:	11/04/2024	**Analysis Ending Date:**	19/04/2024
Product Type	Ground water	**Sampled Date & Time**	11/04/2024 08:00
Sampler(s)	Client nominated external sampler	**Sampled by Eurofins**	No

		RESULTS	(UNCERTAINTY)	LOQ
NW179	**Ammonia Nitrogen**			
	Ammoniacal nitrogen (N)	11.9	(± 1.19) mg/l	0.01
NW341	**BOD5 - Soluble Carbonaceous**			
	BOD5	<1	mg/l	1
NW020	**Chemical Oxygen Demand**			
	Chemical oxygen demand (COD)	37	(± 7) mg/l	15
NW007	**Chloride**			
	Chloride (Cl)	87.2	(± 8.72) mg/l	0.02
NW00U	**Chlorophenols**			
	2,3,4,6-Tetrachlorophenol	<0.01	mg/l	0.01
	2,4-Dichlorophenol	<0.01	mg/l	0.01
	2,6-Dichlorophenol	<0.02	mg/l	0.2
	2-Chlorophenol (o-chlorophenol)	<0.01	mg/l	0.01
	3,4,5-Trichlorophenol	<0.01	mg/l	0.01
	4-Chloro-3-cresol	<0.01	mg/l	0.01
	Pentachlorophenol	<0.005	mg/l	0.005
	Phenol	<0.01	mg/l	0.01
	Total of 2,4,5 & 2,4,6 -Trichlorophenol	<0.02	mg/l	0.02
NW023	**Conductivity**			
	Conductivity	82.5	(± 1.7) mS/m	0.1
NW098	**Dissolved Aluminium**			
	Aluminium	0.009	mg/l	0.002
NW583	**Dissolved Arsenic**			
	Arsenic (As)	0.001	mg/l	0.001
NW103	**Dissolved Boron**			
	Boron (B)	0.35	mg/l	0.03

		RESULTS (UNCERTAINTY)		LOQ
NW104	**Dissolved Cadmium**			
	Cadmium (Cd)	<0.0002	mg/l	0.0002
NW105	**Dissolved Calcium**			
	Calcium (Ca)	51.1	mg/l	0.1
NW106	**Dissolved Chromium**			
	Chromium (Cr)	<0.001	mg/l	0.001
NW108	**Dissolved Copper**			
	Copper (Cu)	<0.0005	mg/l	0.0005
NW109	**Dissolved Iron**			
	Iron (Fe)	0.38	mg/l	0.01
NW110	**Dissolved Lead**			
	Lead (Pb)	<0.0005	mg/l	0.0005
NW112	**Dissolved Magnesium**			
	Magnesium (Mg)	25.2	mg/l	0.01
NW113	**Dissolved Manganese**			
	Manganese (Mn)	0.411	mg/l	0.0005
NW114	**Dissolved Mercury**			
	Mercury (Hg)	<0.0005	mg/l	0.0005
NW116	**Dissolved Nickel**			
	Nickel (Ni)	0.0017	mg/l	0.0005
NW117	**Dissolved Potassium**			
	Potassium (K)	22.5	mg/l	0.01
NW193	**Dissolved Reactive Phosphorus**			
	Phosphorus (soluble reactive)	0.026	mg/l	0.005
NW120	**Dissolved Sodium**			
	Sodium (Na)	58.7	mg/l	0.01
NW125	**Dissolved Zinc**			
	Zinc (Zn)	0.005	mg/l	0.002
ZM2GA	**Enumeration of Escherichia coli By Membrane Filtration**			
	Escherichia coli	200	cfu/100 ml	100
NW010	**Nitrate-N**			
	Nitrate-N	0.31	(± 0.03) mg/l	0.01
NW195	**pH (Tested beyond 15 minute APHA holding time)**			
	pH	7.3	(± 0.2)	0.1
NW011	**Sulphate**			
	Sulphate	1.66	(± 0.17) mg/l	0.02
NW206	**Suspended Solids**			
	Suspended Solids	173	mg/l	3
NW003	**Total Alkalinity**			
	Alkalinity total	273	(± 27) mg CaCO3/l	1
NW030	**Total Hardness**			
	Hardness	231	mg CaCO3/l	1
NW210	**Total Non-Purgeable Organic Carbon**			
	Total Organic Carbon	22.8	(± 2.3) mg/l	0.1
①**NWWG6**	**Volatile Fatty Acids (VFA)**			
	Acetic acid	<5	mg/l	5
	Butyric acid	<5	mg/l	5

	RESULTS (UNCERTAINTY)		LOQ
①NWWG6 **Volatile Fatty Acids (VFA)**			
Heptanoic acid	<5	mg/l	5
Hexanoic acid	<5	mg/l	5
Isobutyric acid	<5	mg/l	5
Isocaproic acid	<5	mg/l	5
Isovaleric acid	<5	mg/l	5
Propionic acid	<5	mg/l	5
Valeric acid	<5	mg/l	5
Volatile fatty acids as acetic acid	<5	mg/l	5

LIST OF METHODS

NW003 **Total Alkalinity:** APHA Online Edition 2320 B

NW00U **Chlorophenols:** Internal Method, LC-MS/MS

NW011 **Sulphate:** APHA Online Edition 4110 B

NW023 **Conductivity:** APHA 24th Edition 2510 B

NW098 **Dissolved Aluminium:** APHA Online Edition 3125 B mod.

NW104 **Dissolved Cadmium:** APHA Online Edition 3125 B mod.

NW106 **Dissolved Chromium:** APHA Online Edition 3125 B mod.

NW109 **Dissolved Iron:** APHA Online Edition 3125 B mod.

NW112 **Dissolved Magnesium:** APHA Online Edition 3125 B mod.

NW114 **Dissolved Mercury:** APHA Online Edition 3125 B mod.

NW117 **Dissolved Potassium:** APHA Online Edition 3125 B mod.

NW125 **Dissolved Zinc:** APHA Online Edition 3125 B mod.

NW193 **Dissolved Reactive Phosphorus:** APHA Online Edition 4500-P G

NW206 **Suspended Solids:** APHA Online Edition 2540 D

NW341 **BOD5 - Soluble Carbonaceous:** APHA Online Edition 5210 B

NWWG6 **Volatile Fatty Acids (VFA):** APHA 24th Edition 5560 D mod.

NW007 **Chloride:** APHA Online Edition 4110 B

NW010 **Nitrate-N:** APHA Online Edition 4110 B

NW020 **Chemical Oxygen Demand:** APHA Online Edition 5220 D

NW030 **Total Hardness:** APHA Online Edition 2340 B

NW103 **Dissolved Boron:** APHA Online Edition 3125 B mod.

NW105 **Dissolved Calcium:** APHA Online Edition 3125 B mod.

NW108 **Dissolved Copper:** APHA Online Edition 3125 B mod.

NW110 **Dissolved Lead:** APHA Online Edition 3125 B mod.

NW113 **Dissolved Manganese:** APHA Online Edition 3125 B mod.

NW116 **Dissolved Nickel:** APHA Online Edition 3125 B mod.

NW120 **Dissolved Sodium:** APHA Online Edition 3125 B mod.

NW179 **Ammonia Nitrogen:** APHA Online Edition 4500-NH3 H

NW195 **pH (Tested beyond 15 minute APHA holding time):** APHA 24th Edition 4500-H B

NW210 **Total Non-Purgeable Organic Carbon:** APHA Online Edition 5310 B

NW583 **Dissolved Arsenic:** APHA Online Edition 3125 B mod.

ZM2GA **Escherichia coli E (Water) [NZ] <100 >6 000 000 /100 ml (0-3) m-FC Agar-F:** SMEWW 9222I; APHA 24th Edition

Signature

Marylou Cabral Laboratory Manager Eurofins ELS Limited

Jennifer Mont Supervisor Eurofins ELS Limited

Divina Cunanan Lagazon Supervisor Eurofins ELS Limited

Gordon McArthur Senior Laboratory Analyst Eurofins ELS Limited

Maria Norris Laboratory Manager, Microbiology

Ganesh Ilancko Supervisor Eurofins ELS Limited

Gabriela Carvalhaes Manager Food and Water Testing Chemistry

Cody Forbes Laboratory Analyst Laboratory Analyst

EXPLANATORY NOTE

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⑧Tested at the sampling point by Eurofins and is accredited
⑨Test is RLP accredited
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N/A means Not Applicable
Not Detected means not detected at or above the Limit of Quantification (LOQ)
LOQ means Limit of Quantification and the unit of LOQ is the same as the result unit
✗ (Unsatisfactory) means does not meet the specification
✓ (Satisfactory) means meets the specification

END OF REPORT

Food & Water Testing

ANALYTICAL REPORT

REPORT CODE **AR-24-NW-011738-01** REPORT DATE **28/02/2024**

Attention Downer NZ Ltd (EDI Levin)
Horowhenua Admin
P O Box 642
4741 Levin
NEW ZEALAND

Phone (06) 367 2705
Email horowhenuaadmin@downer.co.nz

Copy to: Water and Waste Team (waterandwasteteam@horowhenua.govt.nz), McMillan

Contact for your orders: Gabriela Carvalhaes
Contract: Landfill

Order code: EUNZWE-00167983
Purchase Order Number: Landfill

SAMPLE CODE **812-2024-00023441**

Client Reference: 342913-0
Product: Ground water
Sampling Point code: WIL-TD1
Sampling Point name: Levin TD1
Reception Date & Time: 16/02/2024 13:10
Analysis Start Date & Time: 16/02/2024 13:23
Analysis Ending Date: 28/02/2024
Product Type Ground water
Sampled Date & Time 12/02/2024 23:10
Sampler(s) Client nominated external sampler
Sampled by Eurofins No

		RESULTS (UNCERTAINTY)		LOQ
NW179	**Ammonia Nitrogen**			
	Ammoniacal nitrogen (N)	15.4	(± 1.54) mg/l	0.01
NW341	**BOD5 - Soluble Carbonaceous**			
	BOD5	2	mg/l	1
NW020	**Chemical Oxygen Demand**			
	Chemical oxygen demand (COD)	196	(± 20) mg/l	15
NW007	**Chloride**			
	Chloride (Cl)	81.5	(± 8.15) mg/l	0.02
NW00U	**Chlorophenols**			
	2,3,4,6-Tetrachlorophenol	<0.01	mg/l	0.01
	2,4-Dichlorophenol	<0.01	mg/l	0.01
	2,6-Dichlorophenol	<0.02	mg/l	0.2
	2-Chlorophenol (o-chlorophenol)	<0.01	mg/l	0.01
	3,4,5-Trichlorophenol	<0.01	mg/l	0.01
	4-Chloro-3-cresol	<0.01	mg/l	0.01
	Pentachlorophenol	<0.005	mg/l	0.005
	Phenol	<0.01	mg/l	0.01
	Total of 2,4,5 & 2,4,6 -Trichlorophenol	<0.02	mg/l	0.02
NW023	**Conductivity**			
	Conductivity	92.8	(± 1.9) mS/m	0.1
NW098	**Dissolved Aluminium**			
	Aluminium	0.004	mg/l	0.002
NW583	**Dissolved Arsenic**			
	Arsenic (As)	<0.001	mg/l	0.001
NW103	**Dissolved Boron**			
	Boron (B)	0.33	mg/l	0.03

		RESULTS	(UNCERTAINTY)	LOQ
NW104	**Dissolved Cadmium**			
	Cadmium (Cd)	<0.0002	mg/l	0.0002
NW105	**Dissolved Calcium**			
	Calcium (Ca)	39.1	mg/l	0.1
NW106	**Dissolved Chromium**			
	Chromium (Cr)	<0.001	mg/l	0.001
NW108	**Dissolved Copper**			
	Copper (Cu)	<0.0005	mg/l	0.0005
NW109	**Dissolved Iron**			
	Iron (Fe)	0.07	mg/l	0.01
NW110	**Dissolved Lead**			
	Lead (Pb)	<0.0005	mg/l	0.0005
NW112	**Dissolved Magnesium**			
	Magnesium (Mg)	20.7	mg/l	0.01
NW113	**Dissolved Manganese**			
	Manganese (Mn)	0.0126	mg/l	0.0005
NW114	**Dissolved Mercury**			
	Mercury (Hg)	<0.0005	mg/l	0.0005
NW116	**Dissolved Nickel**			
	Nickel (Ni)	0.0014	mg/l	0.0005
NW117	**Dissolved Potassium**			
	Potassium (K)	26.4	mg/l	0.01
NW193	**Dissolved Reactive Phosphorus**			
	Phosphorus (soluble reactive)	0.019	(± 0.004) mg/l	0.005
NW120	**Dissolved Sodium**			
	Sodium (Na)	48.2	mg/l	0.01
NW125	**Dissolved Zinc**			
	Zinc (Zn)	<0.002	mg/l	0.002
ZM2GA	**Enumeration of Escherichia coli By Membrane Filtration**			
	Escherichia coli	<100	cfu/100 ml	100
NW010	**Nitrate-N**			
	Nitrate-N	0.82	(± 0.08) mg/l	0.01
NW195	**pH (Tested beyond 15 minute APHA holding time)**			
	pH	7.4	(± 0.2)	0.1
NW011	**Sulphate**			
	Sulphate	1.29	(± 0.13) mg/l	0.02
NW206	**Suspended Solids**			
	Suspended Solids	594	mg/l	3
NW003	**Total Alkalinity**			
	Alkalinity total	345	(± 35) mg CaCO3/l	1
NW030	**Total Hardness**			
	Hardness	183	mg CaCO3/l	1
NW210	**Total Non-Purgeable Organic Carbon**			
	Total Organic Carbon	32.1	(± 3.2) mg/l	0.1
①**NWWG6**	**Volatile Fatty Acids (VFA)**			
	Acetic acid	<5	mg/l	5
	Butyric acid	<5	mg/l	5

	RESULTS (UNCERTAINTY)		LOQ
①NWWG6 **Volatile Fatty Acids (VFA)**			
Heptanoic acid	<5	mg/l	5
Hexanoic acid	<5	mg/l	5
Isobutyric acid	<5	mg/l	5
Isocaproic acid	<5	mg/l	5
Isovaleric acid	<5	mg/l	5
Propionic acid	<5	mg/l	5
Valeric acid	<5	mg/l	5
Volatile fatty acids as acetic acid	<5	mg/l	5

LIST OF METHODS

NW003 **Total Alkalinity:** APHA Online Edition 2320 B

NW00U **Chlorophenols:** Internal Method, LC-MS/MS

NW011 **Sulphate:** APHA Online Edition 4110 B

NW023 **Conductivity:** APHA 24th Edition 2510 B

NW098 **Dissolved Aluminium:** APHA Online Edition 3125 B mod.

NW104 **Dissolved Cadmium:** APHA Online Edition 3125 B mod.

NW106 **Dissolved Chromium:** APHA Online Edition 3125 B mod.

NW109 **Dissolved Iron:** APHA Online Edition 3125 B mod.

NW112 **Dissolved Magnesium:** APHA Online Edition 3125 B mod.

NW114 **Dissolved Mercury:** APHA Online Edition 3125 B mod.

NW117 **Dissolved Potassium:** APHA Online Edition 3125 B mod.

NW125 **Dissolved Zinc:** APHA Online Edition 3125 B mod.

NW193 **Dissolved Reactive Phosphorus:** APHA Online Edition 4500-P G

NW206 **Suspended Solids:** APHA Online Edition 2540 D

NW341 **BOD5 - Soluble Carbonaceous:** APHA Online Edition 5210 B

NWWG6 **Volatile Fatty Acids (VFA):** APHA 24th Edition 5560 D mod.

NW007 **Chloride:** APHA Online Edition 4110 B

NW010 **Nitrate-N:** APHA Online Edition 4110 B

NW020 **Chemical Oxygen Demand:** APHA Online Edition 5220 D

NW030 **Total Hardness:** APHA Online Edition 2340 B

NW103 **Dissolved Boron:** APHA Online Edition 3125 B mod.

NW105 **Dissolved Calcium:** APHA Online Edition 3125 B mod.

NW108 **Dissolved Copper:** APHA Online Edition 3125 B mod.

NW110 **Dissolved Lead:** APHA Online Edition 3125 B mod.

NW113 **Dissolved Manganese:** APHA Online Edition 3125 B mod.

NW116 **Dissolved Nickel:** APHA Online Edition 3125 B mod.

NW120 **Dissolved Sodium:** APHA Online Edition 3125 B mod.

NW179 **Ammonia Nitrogen:** APHA Online Edition 4500-NH3 H

NW195 **pH (Tested beyond 15 minute APHA holding time):** APHA 24th Edition 4500-H B

NW210 **Total Non-Purgeable Organic Carbon:** APHA Online Edition 5310 B

NW583 **Dissolved Arsenic:** APHA Online Edition 3125 B mod.

ZM2GA **Escherichia coli E (Water) [NZ] <100 >6 000 000 /100 ml (0-3) m-FC Agar-F:** SMEWW 9222I; APHA 24th Edition

Signature

Marylou Cabral Laboratory Manager Eurofins ELS Limited

Jennifer Mont Supervisor Eurofins ELS Limited

Divina Cunanan Lagazon Supervisor Eurofins ELS Limited

Gordon McArthur Senior Laboratory Analyst Eurofins ELS Limited

Ganesh Ilancko Supervisor Eurofins ELS Limited

Leo Cleave Senior Analyst Microbiology

Cody Forbes Laboratory Analyst
Laboratory Analyst

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N/A means Not Applicable
Not Detected means not detected at or above the Limit of Quantification (LOQ)
LOQ means Limit of Quantification and the unit of LOQ is the same as the result unit
✗ (Unsatisfactory) means does not meet the specification
✓(Satisfactory) means meets the specification

END OF REPORT

eurofins

Food & Water Testing

ANALYTICAL REPORT

REPORT CODE	AR-24-NW-019304-01	REPORT DATE	31/03/2024

Attention Downer NZ Ltd (EDI Levin)
Horowhenua Admin
P O Box 642
4741 Levin
NEW ZEALAND

Phone (06) 367 2705
Email horowhenuaadmin@downer.co.nz

Copy to: Water and Waste Team (waterandwasteteam@horowhenua.govt.nz), McMillan

Contact for your orders: Gabriela Carvalhaes
Contract: Landfill

Order code: EUNZWE-00174502
Purchase Order Number: Landfill

SAMPLE CODE	812-2024-00042719		
Sample Name	342918-0		
Product:	Ground water		
Sampling Point code:	WIL-TD1	**Sampling Point name:**	Levin TD1
Reception Date & Time:	21/03/2024 12:10		
Analysis Started on:	21/03/2024	**Analysis Ending Date:**	31/03/2024
Product Type	Ground water	**Sampled Date & Time**	18/03/2024 22:10
Sampler(s)	Client nominated external sampler	**Sampled by Eurofins**	No

		RESULTS	(UNCERTAINTY)	LOQ
NW179	**Ammonia Nitrogen**			
	Ammoniacal nitrogen (N)	24.9	(± 2.49) mg/l	0.01
NW341	**BOD5 - Soluble Carbonaceous**			
	BOD5	<3	mg/l	1
NW020	**Chemical Oxygen Demand**			
	Chemical oxygen demand (COD)	255	(± 26) mg/l	15
NW007	**Chloride**			
	Chloride (Cl)	96.2	(± 9.62) mg/l	0.02
NW00U	**Chlorophenols**			
	2,3,4,6-Tetrachlorophenol	<0.01	mg/l	0.01
	2,4-Dichlorophenol	<0.01	mg/l	0.01
	2,6-Dichlorophenol	<0.02	mg/l	0.2
	2-Chlorophenol (o-chlorophenol)	<0.01	mg/l	0.01
	3,4,5-Trichlorophenol	<0.01	mg/l	0.01
	4-Chloro-3-cresol	<0.01	mg/l	0.01
	Pentachlorophenol	<0.005	mg/l	0.005
	Phenol	<0.01	mg/l	0.01
	Total of 2,4,5 & 2,4,6 -Trichlorophenol	<0.02	mg/l	0.02
NW023	**Conductivity**			
	Conductivity	136	(± 2.7) mS/m	0.1
NW098	**Dissolved Aluminium**			
	Aluminium	0.008	mg/l	0.002
NW583	**Dissolved Arsenic**			
	Arsenic (As)	0.001	mg/l	0.001
NW103	**Dissolved Boron**			
	Boron (B)	0.52	mg/l	0.03

		RESULTS (UNCERTAINTY)		LOQ
NW104	**Dissolved Cadmium**			
	Cadmium (Cd)	<0.0002	mg/l	0.0002
NW105	**Dissolved Calcium**			
	Calcium (Ca)	72.8	mg/l	0.1
NW106	**Dissolved Chromium**			
	Chromium (Cr)	0.002	mg/l	0.001
NW108	**Dissolved Copper**			
	Copper (Cu)	0.0009	mg/l	0.0005
NW109	**Dissolved Iron**			
	Iron (Fe)	0.19	mg/l	0.01
NW110	**Dissolved Lead**			
	Lead (Pb)	<0.0005	mg/l	0.0005
NW112	**Dissolved Magnesium**			
	Magnesium (Mg)	31.4	mg/l	0.01
NW113	**Dissolved Manganese**			
	Manganese (Mn)	1.02	mg/l	0.0005
NW114	**Dissolved Mercury**			
	Mercury (Hg)	<0.0005	mg/l	0.0005
NW116	**Dissolved Nickel**			
	Nickel (Ni)	0.0022	mg/l	0.0005
NW117	**Dissolved Potassium**			
	Potassium (K)	26.3	mg/l	0.01
NW193	**Dissolved Reactive Phosphorus**			
	Phosphorus (soluble reactive)	0.035	mg/l	0.005
NW120	**Dissolved Sodium**			
	Sodium (Na)	74.4	mg/l	0.01
NW125	**Dissolved Zinc**			
	Zinc (Zn)	0.003	mg/l	0.002
ZM2GA	**Enumeration of Escherichia coli By Membrane Filtration**			
	Escherichia coli	300	cfu/100 ml	100
NW010	**Nitrate-N**			
	Nitrate-N	2.00	(± 0.20) mg/l	0.01
NW195	**pH (Tested beyond 15 minute APHA holding time)**			
	pH	7.8	(± 0.2)	0.1
NW011	**Sulphate**			
	Sulphate	0.20	(± 0.02) mg/l	0.02
NW206	**Suspended Solids**			
	Suspended Solids	137	mg/l	3
NW003	**Total Alkalinity**			
	Alkalinity total	528	(± 53) mg CaCO3/l	1
NW030	**Total Hardness**			
	Hardness	311	mg CaCO3/l	1
NW210	**Total Non-Purgeable Organic Carbon**			
	Total Organic Carbon	27.1	(± 2.7) mg/l	0.1
①**NWWG6**	**Volatile Fatty Acids (VFA)**			
	Acetic acid	<5	mg/l	5
	Butyric acid	<5	mg/l	5

	RESULTS (UNCERTAINTY)		LOQ
①NWWG6 **Volatile Fatty Acids (VFA)**			
Heptanoic acid	<5	mg/l	5
Hexanoic acid	<5	mg/l	5
Isobutyric acid	<5	mg/l	5
Isocaproic acid	<5	mg/l	5
Isovaleric acid	<5	mg/l	5
Propionic acid	<5	mg/l	5
Valeric acid	<5	mg/l	5
Volatile fatty acids as acetic acid	<5	mg/l	5

LIST OF METHODS

NW003 **Total Alkalinity:** APHA Online Edition 2320 B

NW00U **Chlorophenols:** Internal Method, LC-MS/MS

NW011 **Sulphate:** APHA Online Edition 4110 B

NW023 **Conductivity:** APHA 24th Edition 2510 B

NW098 **Dissolved Aluminium:** APHA Online Edition 3125 B mod.

NW104 **Dissolved Cadmium:** APHA Online Edition 3125 B mod.

NW106 **Dissolved Chromium:** APHA Online Edition 3125 B mod.

NW109 **Dissolved Iron:** APHA Online Edition 3125 B mod.

NW112 **Dissolved Magnesium:** APHA Online Edition 3125 B mod.

NW114 **Dissolved Mercury:** APHA Online Edition 3125 B mod.

NW117 **Dissolved Potassium:** APHA Online Edition 3125 B mod.

NW125 **Dissolved Zinc:** APHA Online Edition 3125 B mod.

NW193 **Dissolved Reactive Phosphorus:** APHA Online Edition 4500-P G

NW206 **Suspended Solids:** APHA Online Edition 2540 D

NW341 **BOD5 - Soluble Carbonaceous:** APHA Online Edition 5210 B

NWWG6 **Volatile Fatty Acids (VFA):** APHA 24th Edition 5560 D mod.

NW007 **Chloride:** APHA Online Edition 4110 B

NW010 **Nitrate-N:** APHA Online Edition 4110 B

NW020 **Chemical Oxygen Demand:** APHA Online Edition 5220 D

NW030 **Total Hardness:** APHA Online Edition 2340 B

NW103 **Dissolved Boron:** APHA Online Edition 3125 B mod.

NW105 **Dissolved Calcium:** APHA Online Edition 3125 B mod.

NW108 **Dissolved Copper:** APHA Online Edition 3125 B mod.

NW110 **Dissolved Lead:** APHA Online Edition 3125 B mod.

NW113 **Dissolved Manganese:** APHA Online Edition 3125 B mod.

NW116 **Dissolved Nickel:** APHA Online Edition 3125 B mod.

NW120 **Dissolved Sodium:** APHA Online Edition 3125 B mod.

NW179 **Ammonia Nitrogen:** APHA Online Edition 4500-NH3 H

NW195 **pH (Tested beyond 15 minute APHA holding time):** APHA 24th Edition 4500-H B

NW210 **Total Non-Purgeable Organic Carbon:** APHA Online Edition 5310 B

NW583 **Dissolved Arsenic:** APHA Online Edition 3125 B mod.

ZM2GA **Escherichia coli E (Water) [NZ] <100 >6 000 000 /100 ml (0-3) m-FC Agar-F:** SMEWW 9222I; APHA 24th Edition

Signature

Marylou Cabral Laboratory Manager Eurofins ELS Limited

Jennifer Mont Supervisor Eurofins ELS Limited

Divina Cunanan Lagazon Supervisor Eurofins ELS Limited

Gordon McArthur Senior Laboratory Analyst Eurofins ELS Limited

Sunita Raju Business Unit Manager

Ganesh Ilancko Supervisor Eurofins ELS Limited

Gabriela Carvalhaes Manager Food and Water Testing Chemistry

Cody Forbes Laboratory Analyst Laboratory Analyst

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LOQ means Limit of Quantification and the unit of LOQ is the same as the result unit
✗ (Unsatisfactory) means does not meet the specification
✓ (Satisfactory) means meets the specification

The Customer acknowledges and accepts that: (a) where Eurofins is not responsible for sampling, the test result(s) in this report apply only to the sample as received. Customer is solely responsible for the sampling process and warrants that the sample provided to Eurofins is representative of the lot / batch from which the samples were drawn; and (b) Eurofins expresses no opinion and accepts no liability in respect of the Customer's production process or homogeneity of the product.
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Accreditation does not apply to comments or graphical representations.
Unless otherwise stated, all tests in this analytical report (except for subcontracted tests) are performed at 85 Port Road, Seaview, Lower Hutt, Wellington, NEW ZEALAND.
The laboratory is not responsible for the information provided by the customer which can affect the validity of the results, for example: sampling information such as date/time, field data etc.
Eurofins may subcontract the performance of part or all of the Services to a third party and the Customer authorises the release of all information necessary to the third party for the provision of the Services.
All samples become the property of Eurofins to the extent necessary for the performance of the Services.
Eurofins will not be required to store samples and may destroy or otherwise dispose of the samples or return the samples to the Customer (at the Customer's cost in all respects) immediately following analysis of the samples.
If the Customer pays for storage of the samples Eurofins will take commercially reasonable steps to store the samples for the agreed period in terms of industry practice.
The Eurofins water sampling service follows methodology based on AS/NZS 5667 and / or best practice to collect and transport samples that are fit for the purpose of analytical testing. The laboratory is not responsible for sampling activities unless explicitly indicated by the statement "Sampled by Eurofins" on the report for water samples.
The Customer acknowledges that the Services are provided using the current state of technology and methods developed and generally applied by Eurofins and involve analysis, interpretations, consulting work and conclusions. Eurofins shall use commercially reasonable degree of care in providing the Services.
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Eurofins General Terms and Conditions apply.

END OF REPORT

Food & Water Testing

ANALYTICAL REPORT

REPORT CODE **AR-24-NW-024100-01** REPORT DATE **20/04/2024**

Attention Downer NZ Ltd (EDI Levin)
Horowhenua Admin
P O Box 642
4741 Levin
NEW ZEALAND

Phone (06) 367 2705
Email horowhenuaadmin@downer.co.nz

Copy to: Water and Waste Team (waterandwasteteam@horowhenua.govt.nz), McMillan

Contact for your orders: Gabriela Carvalhaes
Contract: Landfill

Order code: EUNZWE-00178002
Purchase Order Number: Landfill

SAMPLE CODE **812-2024-00053354**

Sample Name 349882-0
Product: Ground water
Sampling Point code: WIL-Xd1
Sampling Point name: Levin Xd1
Reception Date & Time: 11/04/2024 12:06
Analysis Started on: 11/04/2024
Analysis Ending Date: 20/04/2024
Product Type Ground water
Sampled Date & Time 10/04/2024 01:42
Sampler(s) Client nominated external sampler
Sampled by Eurofins No

		RESULTS	(UNCERTAINTY)	LOQ
NW179	**Ammonia Nitrogen**			
	Ammoniacal nitrogen (N)	0.38	(± 0.04) mg/l	0.01
NW341	**BOD5 - Soluble Carbonaceous**			
	BOD5	<1	mg/l	1
NW020	**Chemical Oxygen Demand**			
	Chemical oxygen demand (COD)	<15	(± 5) mg/l	15
NW007	**Chloride**			
	Chloride (Cl)	57.8	(± 5.78) mg/l	0.02
NW00U	**Chlorophenols**			
	2,3,4,6-Tetrachlorophenol	<0.01	mg/l	0.01
	2,4-Dichlorophenol	<0.01	mg/l	0.01
	2,6-Dichlorophenol	<0.02	mg/l	0.2
	2-Chlorophenol (o-chlorophenol)	<0.01	mg/l	0.01
	3,4,5-Trichlorophenol	<0.01	mg/l	0.01
	4-Chloro-3-cresol	<0.01	mg/l	0.01
	Pentachlorophenol	<0.005	mg/l	0.005
	Phenol	<0.01	mg/l	0.01
	Total of 2,4,5 & 2,4,6 -Trichlorophenol	<0.02	mg/l	0.02
NW023	**Conductivity**			
	Conductivity	53.4	(± 1.1) mS/m	0.1
NW098	**Dissolved Aluminium**			
	Aluminium	<0.002	mg/l	0.002
NW583	**Dissolved Arsenic**			
	Arsenic (As)	<0.001	mg/l	0.001
NW103	**Dissolved Boron**			
	Boron (B)	0.07	mg/l	0.03

		RESULTS (UNCERTAINTY)		LOQ
NW104	**Dissolved Cadmium**			
	Cadmium (Cd)	<0.0002	mg/l	0.0002
NW105	**Dissolved Calcium**			
	Calcium (Ca)	31.0	mg/l	0.1
NW106	**Dissolved Chromium**			
	Chromium (Cr)	<0.001	mg/l	0.001
NW108	**Dissolved Copper**			
	Copper (Cu)	<0.0005	mg/l	0.0005
NW109	**Dissolved Iron**			
	Iron (Fe)	0.03	mg/l	0.01
NW110	**Dissolved Lead**			
	Lead (Pb)	<0.0005	mg/l	0.0005
NW112	**Dissolved Magnesium**			
	Magnesium (Mg)	13.8	mg/l	0.01
NW113	**Dissolved Manganese**			
	Manganese (Mn)	0.497	mg/l	0.0005
NW114	**Dissolved Mercury**			
	Mercury (Hg)	<0.0005	mg/l	0.0005
NW116	**Dissolved Nickel**			
	Nickel (Ni)	<0.0005	mg/l	0.0005
NW117	**Dissolved Potassium**			
	Potassium (K)	5.06	mg/l	0.01
NW193	**Dissolved Reactive Phosphorus**			
	Phosphorus (soluble reactive)	0.115	mg/l	0.005
NW120	**Dissolved Sodium**			
	Sodium (Na)	44.0	mg/l	0.01
NW125	**Dissolved Zinc**			
	Zinc (Zn)	<0.002	mg/l	0.002
ZMF1E	**Enumeration of Escherichia coli By Membrane Filtration**			
	Escherichia coli	3	cfu/100 ml	1
NW010	**Nitrate-N**			
	Nitrate-N	<0.01	(± 0.00) mg/l	0.01
NW195	**pH (Tested beyond 15 minute APHA holding time)**			
	pH	7.4	(± 0.2)	0.1
NW011	**Sulphate**			
	Sulphate	<0.02	(± 0.01) mg/l	0.02
NW206	**Suspended Solids**			
	Suspended Solids	6	mg/l	3
NW228	**SVOC (GC-MSMS)**			
	Acenaphthene	<0.0001	mg/l	0.0001
	Acenaphthylene	<0.001	mg/l	0.001
	Adipatic acid, bis-2-ethylhexyl ester (DEHA)	<0.0001	mg/l	0.0001
	Alachlor	<0.0001	mg/l	0.0001
	Aldicarb	<0.1	mg/l	0.1
	Aldrin	<0.001	mg/l	0.001
	Anthracene	<0.001	mg/l	0.001
	Atrazine	<0.0001	mg/l	0.0001

		RESULTS (UNCERTAINTY)		LOQ
NW228	**SVOC (GC-MSMS)**			
	Benz(a)anthracene	<0.0001	mg/l	0.0001
	Benzo(a)pyrene	<0.0001	mg/l	0.0001
	Benzo(g,h,i)perylene	<0.001	mg/l	0.001
	Bromacil	<0.005	mg/l	0.005
	Carbofuran	<0.001	mg/l	0.001
	Chlordane	<0.0001	mg/l	0.0001
	Chlordane, gamma	<0.001	mg/l	0.001
	Chlorpyrifos (-ethyl)	<0.0001	mg/l	0.0001
	Chrysene	<0.0001	mg/l	0.0001
	Cyanazine	<0.005	mg/l	0.005
	d-BHC	<0.0001	mg/l	0.0001
	DDD, p,p'-	<0.0001	mg/l	0.0001
	DDE, p,p-	<0.0001	mg/l	0.0001
	DDT, p,p'-	NotRecovered	mg/l	0.001
	Diazinon	<0.0001	mg/l	0.0001
	Dibenz(a,h)anthracene	<0.0001	mg/l	0.0001
	Dieldrin	<0.0001	mg/l	0.0001
	Dimethoate	<0.001	mg/l	0.001
	Diuron	<0.001	mg/l	0.001
	Endosulfan, alpha-	<0.001	mg/l	0.001
	Endosulfan, beta-	<0.005	mg/l	0.005
	Endosulfan-sulfate	<0.0001	mg/l	0.0001
	Endrin	<0.0001	mg/l	0.0001
	Endrin ketone	NotRecovered	mg/l	0.0001
	Endrin-aldehyde	<0.001	mg/l	0.01
	Fluoranthene	<0.0001	mg/l	0.0001
	Fluorene	<0.0001	mg/l	0.0001
	HCH, alpha-	<0.0001	mg/l	0.0001
	HCH, beta-	<0.0001	mg/l	0.0001
	Heptachlor	<0.0001	mg/l	0.0001
	Heptachlor epoxide, cis-	<0.0001	mg/l	0.0001
	Hexachlorobenzene (HCB)	<0.0001	mg/l	0.0001
	Hexazinone	<0.001	mg/l	0.001
	Indeno(1,2,3-cd)pyrene	<0.0001	mg/l	0.0001
	Lindane (gamma-HCH)	<0.0001	mg/l	0.0001
	Metalaxyl and metalaxyl-M (metalaxyl including other mixtures of constituent isomers including metalaxyl-M (sum of isomers))	<0.001	mg/l	0.001
	Methoxychlor	<0.0001	mg/l	0.0001
	Metolachlor	<0.0001	mg/l	0.0001
	Metribuzin	<0.0001	mg/l	0.0001
	Molinate	<0.0001	mg/l	0.0001
	Naphthalene	<0.0001	mg/l	0.0001
	Oxadiazon	<0.0001	mg/l	0.0001
	PCB 101	<0.0001	mg/l	0.0001
	PCB 138	<0.001	mg/l	0.001
	PCB 183	<0.0001	mg/l	0.0001

		RESULTS	(UNCERTAINTY)	LOQ
NW228	**SVOC (GC-MSMS)**			
	PCB 28	<0.0001	mg/l	0.0001
	PCB 7	<0.0001	mg/l	0.0001
	Pendimethalin	<0.002	mg/l	0.002
	Permethrin (sum of isomers)	<0.0001	mg/l	0.0001
	Phenanthrene	<0.0001	mg/l	0.0001
	Pirimiphos-methyl	<0.0001	mg/l	0.0001
	Procymidone	<0.0001	mg/l	0.0001
	Propanil	<0.001	mg/l	0.001
	Propazine	<0.0001	mg/l	0.0001
	Pyrene	<0.0001	mg/l	0.0001
	Pyriproxyfen	<0.0001	mg/l	0.0001
	Simazine	<0.0001	mg/l	0.0001
	Terbuthylazine	<0.0001	mg/l	0.0001
	Total Benzo(b) and Benzo(k) fluoranthene	<0.001	mg/l	0.001
	Trifluralin	<0.0001	mg/l	0.0001
NW003	**Total Alkalinity**			
	Alkalinity total	184	(± 18) mg CaCO3/l	1
NW030	**Total Hardness**			
	Hardness	134	mg CaCO3/l	1
NW210	**Total Non-Purgeable Organic Carbon**			
	Total Organic Carbon	4.3	(± 0.4) mg/l	0.1
NW229	**VOC (GC-MS)**			
	1,1,1,2-Tetrachloroethane	<0.0005	mg/l	0.0005
	1,1,1-Trichloroethane	<0.0005	mg/l	0.0005
	1,1,2,2-tetrachloroethane	<0.0005	mg/l	0.0005
	1,1,2-Trichloroethane	<0.0005	mg/l	0.0005
	1,1-Dichloroethane	<0.0005	mg/l	0.0005
	1,1-Dichloroethene	<0.0005	mg/l	0.0005
	1,1-Dichloropropene	<0.0005	mg/l	0.0005
	1,2,3-Trichlorobenzene	<0.0005	mg/l	0.0005
	1,2,3-Trichloropropane	<0.0005	mg/l	0.0005
	1,2,4 trimethylbenzen	<0.0005	mg/l	0.0005
	1,2,4-Trichlorobenzene	<0.0005	mg/l	0.0005
	1,2-Dibromo-3-chloropropane	<0.001	mg/l	0.002
	1,2-Dibromoethane	<0.0002	mg/l	0.0002
	1,2-Dichlorobenzene (2)	<0.0005	mg/l	0.0005
	1,2-Dichloroethane	<0.0005	mg/l	0.0005
	1,2-Dichloropropane	<0.0005	mg/l	0.0005
	1,3,5-Trichlorobenzene	<0.0005	mg/l	0.0005
	1,3,5-Trimethylbenzene	<0.0005	mg/l	0.0005
	1,3-Dichlorobenzene	<0.0005	mg/l	0.0005
	1,3-Dichloropropane	<0.0005	mg/l	0.0005
	1,4-dichlorobenzene	<0.0005	mg/l	0.0005
	2,2-Dichloropropane	<0.0005	mg/l	0.0005
	2-Chlorotoluene	<0.0005	mg/l	0.0005
	4-Chlorotoluene	<0.0005	mg/l	0.0005
	4-methyl-2-pentanone	<0.0005	mg/l	0.0005

		RESULTS (UNCERTAINTY)		LOQ
NW229	**VOC (GC-MS)**			
	Benzene	<0.0005	mg/l	0.0005
	Bromobenzene	<0.0005	mg/l	0.0005
	Bromochloromethane	<0.0012	mg/l	0.0012
	Bromodichloromethane	<0.0005	mg/l	0.0005
	Bromoform	<0.0005	mg/l	0.0005
	Bromomethane (zone 2)	<0.001	mg/l	0.001
	Carbon tetrachloride	<0.0005	mg/l	0.0005
	Carbondisulphide (CS2)	<0.0005	mg/l	0.0005
	Chlorobenzene	<0.0005	mg/l	0.0005
	Chloroethane	<0.001	mg/l	0.001
	Chloroform	<0.0005	mg/l	0.0005
	Chloromethane	<0.006	mg/l	0.006
	cis-1,2-Dichloroethene	<0.0005	mg/l	0.0005
	cis-1,3-Dichloropropene	<0.0005	mg/l	0.0005
	Dibromochloromethane	<0.0005	mg/l	0.0005
	Dibromomethane	<0.0005	mg/l	0.0005
	Dichlorodifluoromethane	NotRecovered	mg/l	0.001
	Dichloromethane	<0.005	mg/l	0.005
	Hexachlorobutadiene	<0.0002	mg/l	0.0002
	Isopropylbenzene (Cumene)	<0.0005	mg/l	0.0005
	m,p-Xylene, Ethylbenzene	<0.0015	mg/l	0.0015
	n-Butylbenzene	<0.0005	mg/l	0.0005
	n-Propylbenzene	<0.0005	mg/l	0.0005
	p-Isopropyltoluene	<0.0005	mg/l	0.0005
	sec-Butylbenzene	<0.0005	mg/l	0.0005
	Styrene	<0.0005	mg/l	0.0005
	tert-Butylbenzene	<0.0005	mg/l	0.0005
	Tetrachloroethene	<0.0005	mg/l	0.0005
	Toluene	<0.0005	mg/l	0.0005
	trans-1,2-Dichloroethene	<0.0005	mg/l	0.0005
	trans-1,3-Dichloropropene	<0.0005	mg/l	0.0005
	Trichloroethene	<0.0005	mg/l	0.0005
	Trichlorofluoromethane	<0.0005	mg/l	0.0005
	Vinyl chloride	<0.0003	mg/l	0.0003
	Xylene (ortho-)	<0.0005	mg/l	0.0005
①**NWWG6**	**Volatile Fatty Acids (VFA)**			
	Acetic acid	<5	mg/l	5
	Butyric acid	<5	mg/l	5
	Heptanoic acid	<5	mg/l	5
	Hexanoic acid	<5	mg/l	5
	Isobutyric acid	<5	mg/l	5
	Isocaproic acid	<5	mg/l	5
	Isovaleric acid	<5	mg/l	5
	Propionic acid	<5	mg/l	5
	Valeric acid	<5	mg/l	5
	Volatile fatty acids as acetic acid	<5	mg/l	5

LIST OF METHODS

NW003	**Total Alkalinity:** APHA Online Edition 2320 B	NW007	**Chloride:** APHA Online Edition 4110 B
NW00U	**Chlorophenols:** Internal Method, LC-MS/MS	NW010	**Nitrate-N:** APHA Online Edition 4110 B
NW011	**Sulphate:** APHA Online Edition 4110 B	NW020	**Chemical Oxygen Demand:** APHA Online Edition 5220 D
NW023	**Conductivity:** APHA 24th Edition 2510 B	NW030	**Total Hardness:** APHA Online Edition 2340 B
NW098	**Dissolved Aluminium:** APHA Online Edition 3125 B mod.	NW103	**Dissolved Boron:** APHA Online Edition 3125 B mod.
NW104	**Dissolved Cadmium:** APHA Online Edition 3125 B mod.	NW105	**Dissolved Calcium:** APHA Online Edition 3125 B mod.
NW106	**Dissolved Chromium:** APHA Online Edition 3125 B mod.	NW108	**Dissolved Copper:** APHA Online Edition 3125 B mod.
NW109	**Dissolved Iron:** APHA Online Edition 3125 B mod.	NW110	**Dissolved Lead:** APHA Online Edition 3125 B mod.
NW112	**Dissolved Magnesium:** APHA Online Edition 3125 B mod.	NW113	**Dissolved Manganese:** APHA Online Edition 3125 B mod.
NW114	**Dissolved Mercury:** APHA Online Edition 3125 B mod.	NW116	**Dissolved Nickel:** APHA Online Edition 3125 B mod.
NW117	**Dissolved Potassium:** APHA Online Edition 3125 B mod.	NW120	**Dissolved Sodium:** APHA Online Edition 3125 B mod.
NW125	**Dissolved Zinc:** APHA Online Edition 3125 B mod.	NW179	**Ammonia Nitrogen:** APHA Online Edition 4500-NH3 H
NW193	**Dissolved Reactive Phosphorus:** APHA Online Edition 4500-P G	NW195	**pH (Tested beyond 15 minute APHA holding time):** APHA 24th Edition 4500-H B
NW206	**Suspended Solids:** APHA Online Edition 2540 D	NW210	**Total Non-Purgeable Organic Carbon:** APHA Online Edition 5310 B
NW228	**SVOC (GC-MSMS):** Internal Method, GC-MS/MS	NW229	**VOC (GC-MS):** Internal Method, HS-GC-MS
NW341	**BOD5 - Soluble Carbonaceous:** APHA Online Edition 5210 B	NW583	**Dissolved Arsenic:** APHA Online Edition 3125 B mod.
NWWG6	**Volatile Fatty Acids (VFA):** APHA 24th Edition 5560 D mod.	ZMF1E	**Escherichia coli E (Water) [NZ] <1 >80 /100 ml (0) Ml Agar-F:** SMEWW 9222K; APHA 24th Edition

Signature

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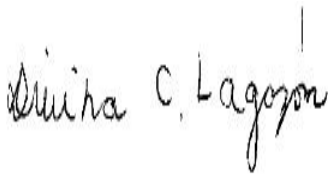
Eurofins ELS Limited

Jennifer Mont Supervisor Eurofins ELS Limited



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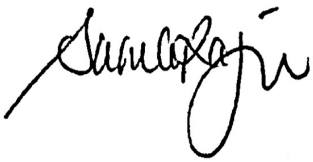

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EXPLANATORY NOTE

① Test is not accredited
② Test is subcontracted within Eurofins group and is accredited
③ Test is subcontracted within Eurofins group and is not accredited
④ Test is subcontracted outside Eurofins group and is accredited
⑤ Test is subcontracted outside Eurofins group and is not accredited
⑥ Test result is provided by the customer and is not accredited
⑦ Tested at the sampling point by Eurofins and is not accredited
⑧ Tested at the sampling point by Eurofins and is accredited
⑨ Test is RLP accredited
⑩ Test is subcontracted within Eurofins group and is RLP accredited

N/A means Not Applicable
Not Detected means not detected at or above the Limit of Quantification (LOQ)
LOQ means Limit of Quantification and the unit of LOQ is the same as the result unit
✗ (Unsatisfactory) means does not meet the specification
✓ (Satisfactory) means meets the specification

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END OF REPORT

Food & Water Testing

ANALYTICAL REPORT

REPORT CODE **AR-24-NW-024099-01** REPORT DATE **20/04/2024**

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Contact for your orders: Gabriela Carvalhaes
Contract: Landfill

Order code: EUNZWE-00178002
Purchase Order Number: Landfill

SAMPLE CODE **812-2024-00053353**

Sample Name 349883-0
Product: Ground water
Sampling Point code: WIL-Xs1
Sampling Point name: Levin Xs1
Reception Date & Time: 11/04/2024 12:05
Analysis Started on: 11/04/2024
Analysis Ending Date: 20/04/2024
Product Type Ground water
Sampled Date & Time 11/04/2024 12:24
Sampler(s) Client nominated external sampler
Sampled by Eurofins No

		RESULTS	(UNCERTAINTY)	LOQ
NW179	**Ammonia Nitrogen**			
	Ammoniacal nitrogen (N)	14.0	(± 1.40) mg/l	0.01
NW341	**BOD5 - Soluble Carbonaceous**			
	BOD5	2	mg/l	1
NW020	**Chemical Oxygen Demand**			
	Chemical oxygen demand (COD)	54	(± 9) mg/l	15
NW007	**Chloride**			
	Chloride (Cl)	130	(± 13.0) mg/l	0.02
NW00U	**Chlorophenols**			
	2,3,4,6-Tetrachlorophenol	<0.01	mg/l	0.01
	2,4-Dichlorophenol	<0.01	mg/l	0.01
	2,6-Dichlorophenol	<0.02	mg/l	0.2
	2-Chlorophenol (o-chlorophenol)	<0.01	mg/l	0.01
	3,4,5-Trichlorophenol	<0.01	mg/l	0.01
	4-Chloro-3-cresol	<0.01	mg/l	0.01
	Pentachlorophenol	<0.005	mg/l	0.005
	Phenol	<0.01	mg/l	0.01
	Total of 2,4,5 & 2,4,6 -Trichlorophenol	<0.02	mg/l	0.02
NW023	**Conductivity**			
	Conductivity	143	(± 2.9) mS/m	0.1
NW098	**Dissolved Aluminium**			
	Aluminium	0.003	mg/l	0.002
NW583	**Dissolved Arsenic**			
	Arsenic (As)	<0.001	mg/l	0.001
NW103	**Dissolved Boron**			
	Boron (B)	0.57	mg/l	0.03

		RESULTS (UNCERTAINTY)		LOQ
NW104	**Dissolved Cadmium**			
	Cadmium (Cd)	<0.0002	mg/l	0.0002
NW105	**Dissolved Calcium**			
	Calcium (Ca)	70.0	mg/l	0.1
NW106	**Dissolved Chromium**			
	Chromium (Cr)	0.001	mg/l	0.001
NW108	**Dissolved Copper**			
	Copper (Cu)	<0.0005	mg/l	0.0005
NW109	**Dissolved Iron**			
	Iron (Fe)	4.39	mg/l	0.01
NW110	**Dissolved Lead**			
	Lead (Pb)	<0.0005	mg/l	0.0005
NW112	**Dissolved Magnesium**			
	Magnesium (Mg)	49.6	mg/l	0.01
NW113	**Dissolved Manganese**			
	Manganese (Mn)	0.698	mg/l	0.0005
NW114	**Dissolved Mercury**			
	Mercury (Hg)	<0.0005	mg/l	0.0005
NW116	**Dissolved Nickel**			
	Nickel (Ni)	0.0025	mg/l	0.0005
NW117	**Dissolved Potassium**			
	Potassium (K)	29.6	mg/l	0.01
NW193	**Dissolved Reactive Phosphorus**			
	Phosphorus (soluble reactive)	0.018	mg/l	0.005
NW120	**Dissolved Sodium**			
	Sodium (Na)	92.1	mg/l	0.01
NW125	**Dissolved Zinc**			
	Zinc (Zn)	0.004	mg/l	0.002
ZM2GA	**Enumeration of Escherichia coli By Membrane Filtration**			
	Escherichia coli	<100	cfu/100 ml	100
NW010	**Nitrate-N**			
	Nitrate-N	0.02	(± 0.00) mg/l	0.01
NW195	**pH (Tested beyond 15 minute APHA holding time)**			
	pH	6.8	(± 0.2)	0.1
NW011	**Sulphate**			
	Sulphate	0.04	(± 0.01) mg/l	0.02
NW206	**Suspended Solids**			
	Suspended Solids	76	mg/l	3
NW228	**SVOC (GC-MSMS)**			
	Acenaphthene	<0.0001	mg/l	0.0001
	Acenaphthylene	<0.001	mg/l	0.001
	Adipatic acid, bis-2-ethylhexyl ester (DEHA)	<0.0001	mg/l	0.0001
	Alachlor	<0.0001	mg/l	0.0001
	Aldicarb	<0.1	mg/l	0.1
	Aldrin	<0.001	mg/l	0.001
	Anthracene	<0.001	mg/l	0.001
	Atrazine	<0.0001	mg/l	0.0001

		RESULTS (UNCERTAINTY)		LOQ
NW228	**SVOC (GC-MSMS)**			
	Benz(a)anthracene	<0.0001	mg/l	0.0001
	Benzo(a)pyrene	<0.0001	mg/l	0.0001
	Benzo(g,h,i)perylene	<0.001	mg/l	0.001
	Bromacil	<0.005	mg/l	0.005
	Carbofuran	<0.001	mg/l	0.001
	Chlordane	<0.0001	mg/l	0.0001
	Chlordane, gamma	<0.001	mg/l	0.001
	Chlorpyrifos (-ethyl)	<0.0001	mg/l	0.0001
	Chrysene	<0.0001	mg/l	0.0001
	Cyanazine	<0.005	mg/l	0.005
	d-BHC	<0.0001	mg/l	0.0001
	DDD, p,p'-	<0.0001	mg/l	0.0001
	DDE, p,p-	<0.0001	mg/l	0.0001
	DDT, p,p'-	NotRecovered	mg/l	0.001
	Diazinon	<0.0001	mg/l	0.0001
	Dibenz(a,h)anthracene	<0.0001	mg/l	0.0001
	Dieldrin	<0.0001	mg/l	0.0001
	Dimethoate	<0.001	mg/l	0.001
	Diuron	<0.001	mg/l	0.001
	Endosulfan, alpha-	<0.001	mg/l	0.001
	Endosulfan, beta-	<0.005	mg/l	0.005
	Endosulfan-sulfate	<0.0001	mg/l	0.0001
	Endrin	<0.0001	mg/l	0.0001
	Endrin ketone	NotRecovered	mg/l	0.0001
	Endrin-aldehyde	<0.001	mg/l	0.01
	Fluoranthene	<0.0001	mg/l	0.0001
	Fluorene	<0.0001	mg/l	0.0001
	HCH, alpha-	<0.0001	mg/l	0.0001
	HCH, beta-	<0.0001	mg/l	0.0001
	Heptachlor	<0.0001	mg/l	0.0001
	Heptachlor epoxide, cis-	<0.0001	mg/l	0.0001
	Hexachlorobenzene (HCB)	<0.0001	mg/l	0.0001
	Hexazinone	<0.001	mg/l	0.001
	Indeno(1,2,3-cd)pyrene	<0.0001	mg/l	0.0001
	Lindane (gamma-HCH)	<0.0001	mg/l	0.0001
	Metalaxyl and metalaxyl-M (metalaxyl including other mixtures of constituent isomers including metalaxyl-M (sum of isomers))	<0.001	mg/l	0.001
	Methoxychlor	<0.0001	mg/l	0.0001
	Metolachlor	<0.0001	mg/l	0.0001
	Metribuzin	<0.0001	mg/l	0.0001
	Molinate	<0.0001	mg/l	0.0001
	Naphthalene	<0.0001	mg/l	0.0001
	Oxadiazon	<0.0001	mg/l	0.0001
	PCB 101	<0.0001	mg/l	0.0001
	PCB 138	<0.001	mg/l	0.001
	PCB 183	<0.0001	mg/l	0.0001

		RESULTS (UNCERTAINTY)		LOQ
NW228	**SVOC (GC-MSMS)**			
	PCB 28	<0.0001	mg/l	0.0001
	PCB 7	<0.0001	mg/l	0.0001
	Pendimethalin	<0.002	mg/l	0.002
	Permethrin (sum of isomers)	<0.0001	mg/l	0.0001
	Phenanthrene	<0.0001	mg/l	0.0001
	Pirimiphos-methyl	<0.0001	mg/l	0.0001
	Procymidone	<0.0001	mg/l	0.0001
	Propanil	<0.001	mg/l	0.001
	Propazine	<0.0001	mg/l	0.0001
	Pyrene	<0.0001	mg/l	0.0001
	Pyriproxyfen	<0.0001	mg/l	0.0001
	Simazine	<0.0001	mg/l	0.0001
	Terbuthylazine	<0.0001	mg/l	0.0001
	Total Benzo(b) and Benzo(k) fluoranthene	<0.001	mg/l	0.001
	Trifluralin	<0.0001	mg/l	0.0001
NW003	**Total Alkalinity**			
	Alkalinity total	592	(± 59) mg CaCO3/l	1
NW030	**Total Hardness**			
	Hardness	379	mg CaCO3/l	1
NW210	**Total Non-Purgeable Organic Carbon**			
	Total Organic Carbon	27.0	(± 2.7) mg/l	0.1
NW229	**VOC (GC-MS)**			
	1,1,1,2-Tetrachloroethane	<0.0005	mg/l	0.0005
	1,1,1-Trichloroethane	<0.0005	mg/l	0.0005
	1,1,2,2-tetrachloroethane	<0.0005	mg/l	0.0005
	1,1,2-Trichloroethane	<0.0005	mg/l	0.0005
	1,1-Dichloroethane	<0.0005	mg/l	0.0005
	1,1-Dichloroethene	<0.0005	mg/l	0.0005
	1,1-Dichloropropene	<0.0005	mg/l	0.0005
	1,2,3-Trichlorobenzene	<0.0005	mg/l	0.0005
	1,2,3-Trichloropropane	<0.0005	mg/l	0.0005
	1,2,4 trimethylbenzen	<0.0005	mg/l	0.0005
	1,2,4-Trichlorobenzene	<0.0005	mg/l	0.0005
	1,2-Dibromo-3-chloropropane	<0.001	mg/l	0.002
	1,2-Dibromoethane	<0.0002	mg/l	0.0002
	1,2-Dichlorobenzene (2)	<0.0005	mg/l	0.0005
	1,2-Dichloroethane	<0.0005	mg/l	0.0005
	1,2-Dichloropropane	<0.0005	mg/l	0.0005
	1,3,5-Trichlorobenzene	<0.0005	mg/l	0.0005
	1,3,5-Trimethylbenzene	<0.0005	mg/l	0.0005
	1,3-Dichlorobenzene	<0.0005	mg/l	0.0005
	1,3-Dichloropropane	<0.0005	mg/l	0.0005
	1,4-dichlorobenzene	<0.0005	mg/l	0.0005
	2,2-Dichloropropane	<0.0005	mg/l	0.0005
	2-Chlorotoluene	<0.0005	mg/l	0.0005
	4-Chlorotoluene	<0.0005	mg/l	0.0005
	4-methyl-2-pentanone	<0.0005	mg/l	0.0005

		RESULTS	(UNCERTAINTY)	LOQ
NW229	**VOC (GC-MS)**			
	Benzene	0.0006	mg/l	0.0005
	Bromobenzene	<0.0005	mg/l	0.0005
	Bromochloromethane	<0.0012	mg/l	0.0012
	Bromodichloromethane	<0.0005	mg/l	0.0005
	Bromoform	<0.0005	mg/l	0.0005
	Bromomethane (zone 2)	<0.001	mg/l	0.001
	Carbon tetrachloride	<0.0005	mg/l	0.0005
	Carbondisulphide (CS2)	<0.0005	mg/l	0.0005
	Chlorobenzene	<0.0005	mg/l	0.0005
	Chloroethane	<0.001	mg/l	0.001
	Chloroform	<0.0005	mg/l	0.0005
	Chloromethane	<0.006	mg/l	0.006
	cis-1,2-Dichloroethene	<0.0005	mg/l	0.0005
	cis-1,3-Dichloropropene	<0.0005	mg/l	0.0005
	Dibromochloromethane	<0.0005	mg/l	0.0005
	Dibromomethane	<0.0005	mg/l	0.0005
	Dichlorodifluoromethane	NotRecovered	mg/l	0.001
	Dichloromethane	<0.005	mg/l	0.005
	Hexachlorobutadiene	<0.0002	mg/l	0.0002
	Isopropylbenzene (Cumene)	<0.0005	mg/l	0.0005
	m,p-Xylene, Ethylbenzene	<0.0015	mg/l	0.0015
	n-Butylbenzene	<0.0005	mg/l	0.0005
	n-Propylbenzene	<0.0005	mg/l	0.0005
	p-Isopropyltoluene	<0.0005	mg/l	0.0005
	sec-Butylbenzene	<0.0005	mg/l	0.0005
	Styrene	<0.0005	mg/l	0.0005
	tert-Butylbenzene	<0.0005	mg/l	0.0005
	Tetrachloroethene	<0.0005	mg/l	0.0005
	Toluene	<0.0005	mg/l	0.0005
	trans-1,2-Dichloroethene	<0.0005	mg/l	0.0005
	trans-1,3-Dichloropropene	<0.0005	mg/l	0.0005
	Trichloroethene	<0.0005	mg/l	0.0005
	Trichlorofluoromethane	<0.0005	mg/l	0.0005
	Vinyl chloride	<0.0003	mg/l	0.0003
	Xylene (ortho-)	<0.0005	mg/l	0.0005
① **NWWG6**	**Volatile Fatty Acids (VFA)**			
	Acetic acid	<5	mg/l	5
	Butyric acid	<5	mg/l	5
	Heptanoic acid	<5	mg/l	5
	Hexanoic acid	<5	mg/l	5
	Isobutyric acid	<5	mg/l	5
	Isocaproic acid	<5	mg/l	5
	Isovaleric acid	<5	mg/l	5
	Propionic acid	<5	mg/l	5
	Valeric acid	<5	mg/l	5
	Volatile fatty acids as acetic acid	<5	mg/l	5

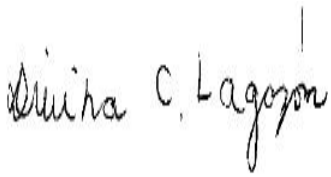
LIST OF METHODS

NW003	**Total Alkalinity:** APHA Online Edition 2320 B	NW007	**Chloride:** APHA Online Edition 4110 B
NW00U	**Chlorophenols:** Internal Method, LC-MS/MS	NW010	**Nitrate-N:** APHA Online Edition 4110 B
NW011	**Sulphate:** APHA Online Edition 4110 B	NW020	**Chemical Oxygen Demand:** APHA Online Edition 5220 D
NW023	**Conductivity:** APHA 24th Edition 2510 B	NW030	**Total Hardness:** APHA Online Edition 2340 B
NW098	**Dissolved Aluminium:** APHA Online Edition 3125 B mod.	NW103	**Dissolved Boron:** APHA Online Edition 3125 B mod.
NW104	**Dissolved Cadmium:** APHA Online Edition 3125 B mod.	NW105	**Dissolved Calcium:** APHA Online Edition 3125 B mod.
NW106	**Dissolved Chromium:** APHA Online Edition 3125 B mod.	NW108	**Dissolved Copper:** APHA Online Edition 3125 B mod.
NW109	**Dissolved Iron:** APHA Online Edition 3125 B mod.	NW110	**Dissolved Lead:** APHA Online Edition 3125 B mod.
NW112	**Dissolved Magnesium:** APHA Online Edition 3125 B mod.	NW113	**Dissolved Manganese:** APHA Online Edition 3125 B mod.
NW114	**Dissolved Mercury:** APHA Online Edition 3125 B mod.	NW116	**Dissolved Nickel:** APHA Online Edition 3125 B mod.
NW117	**Dissolved Potassium:** APHA Online Edition 3125 B mod.	NW120	**Dissolved Sodium:** APHA Online Edition 3125 B mod.
NW125	**Dissolved Zinc:** APHA Online Edition 3125 B mod.	NW179	**Ammonia Nitrogen:** APHA Online Edition 4500-NH3 H
NW193	**Dissolved Reactive Phosphorus:** APHA Online Edition 4500-P G	NW195	**pH (Tested beyond 15 minute APHA holding time):** APHA 24th Edition 4500-H B
NW206	**Suspended Solids:** APHA Online Edition 2540 D	NW210	**Total Non-Purgeable Organic Carbon:** APHA Online Edition 5310 B
NW228	**SVOC (GC-MSMS):** Internal Method, GC-MS/MS	NW229	**VOC (GC-MS):** Internal Method, HS-GC-MS
NW341	**BOD5 - Soluble Carbonaceous:** APHA Online Edition 5210 B	NW583	**Dissolved Arsenic:** APHA Online Edition 3125 B mod.
NWWG6	**Volatile Fatty Acids (VFA):** APHA 24th Edition 5560 D mod.	ZM2GA	**Escherichia coli E (Water) [NZ] <100 >6 000 000 /100 ml (0-3) m-FC Agar-F:** SMEWW 9222I; APHA 24th Edition

Signature

Marylou Cabral Laboratory Manager
Eurofins ELS Limited

Jennifer Mont Supervisor Eurofins ELS Limited



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② Test is subcontracted within Eurofins group and is accredited
③ Test is subcontracted within Eurofins group and is not accredited
④ Test is subcontracted outside Eurofins group and is accredited
⑤ Test is subcontracted outside Eurofins group and is not accredited
⑥ Test result is provided by the customer and is not accredited
⑦ Tested at the sampling point by Eurofins and is not accredited
⑧ Tested at the sampling point by Eurofins and is accredited
⑨ Test is RLP accredited
⑩ Test is subcontracted within Eurofins group and is RLP accredited

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Not Detected means not detected at or above the Limit of Quantification (LOQ)
LOQ means Limit of Quantification and the unit of LOQ is the same as the result unit
✗ (Unsatisfactory) means does not meet the specification
✓ (Satisfactory) means meets the specification

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END OF REPORT

Food & Water Testing

ANALYTICAL REPORT

REPORT CODE	AR-24-NW-024098-01	REPORT DATE	20/04/2024

Attention Downer NZ Ltd (EDI Levin)
Horowhenua Admin
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4741 Levin
NEW ZEALAND

Phone (06) 367 2705
Email horowhenuaadmin@downer.co.nz

Copy to: Water and Waste Team (waterandwasteteam@horowhenua.govt.nz), McMillan

Contact for your orders: Gabriela Carvalhaes
Contract: Landfill

Order code: EUNZWE-00178002
Purchase Order Number: Landfill

SAMPLE CODE	812-2024-00053206		
Sample Name	349884-0		
Product:	Ground water		
Sampling Point code:	WIL-Xs2	**Sampling Point name:**	Levin Xs2
Reception Date & Time:	11/04/2024 9:40		
Analysis Started on:	11/04/2024	**Analysis Ending Date:**	20/04/2024
Product Type	Ground water	**Sampled Date & Time**	10/04/2024 12:49
Sampler(s)	Client nominated external sampler	**Sampled by Eurofins**	No

		RESULTS	(UNCERTAINTY)	LOQ
NW179	**Ammonia Nitrogen**			
	Ammoniacal nitrogen (N)	0.01	(± 0.00) mg/l	0.01
NW341	**BOD5 - Soluble Carbonaceous**			
	BOD5	<1	mg/l	1
NW020	**Chemical Oxygen Demand**			
	Chemical oxygen demand (COD)	<15	(± 5) mg/l	15
NW007	**Chloride**			
	Chloride (Cl)	21.3	(± 2.13) mg/l	0.02
NW00U	**Chlorophenols**			
	2,3,4,6-Tetrachlorophenol	<0.01	mg/l	0.01
	2,4-Dichlorophenol	<0.01	mg/l	0.01
	2,6-Dichlorophenol	<0.02	mg/l	0.2
	2-Chlorophenol (o-chlorophenol)	<0.01	mg/l	0.01
	3,4,5-Trichlorophenol	<0.01	mg/l	0.01
	4-Chloro-3-cresol	<0.01	mg/l	0.01
	Pentachlorophenol	<0.005	mg/l	0.005
	Phenol	<0.01	mg/l	0.01
	Total of 2,4,5 & 2,4,6 -Trichlorophenol	<0.02	mg/l	0.02
NW023	**Conductivity**			
	Conductivity	22.4	(± 0.4) mS/m	0.1
NW098	**Dissolved Aluminium**			
	Aluminium	0.010	mg/l	0.002
NW583	**Dissolved Arsenic**			
	Arsenic (As)	<0.001	mg/l	0.001
NW103	**Dissolved Boron**			
	Boron (B)	0.04	mg/l	0.03

		RESULTS (UNCERTAINTY)		LOQ
NW104	**Dissolved Cadmium**			
	Cadmium (Cd)	<0.0002	mg/l	0.0002
NW105	**Dissolved Calcium**			
	Calcium (Ca)	11.1	mg/l	0.1
NW106	**Dissolved Chromium**			
	Chromium (Cr)	<0.001	mg/l	0.001
NW108	**Dissolved Copper**			
	Copper (Cu)	0.0011	mg/l	0.0005
NW109	**Dissolved Iron**			
	Iron (Fe)	0.06	mg/l	0.01
NW110	**Dissolved Lead**			
	Lead (Pb)	<0.0005	mg/l	0.0005
NW112	**Dissolved Magnesium**			
	Magnesium (Mg)	7.25	mg/l	0.01
NW113	**Dissolved Manganese**			
	Manganese (Mn)	0.126	mg/l	0.0005
NW114	**Dissolved Mercury**			
	Mercury (Hg)	<0.0005	mg/l	0.0005
NW116	**Dissolved Nickel**			
	Nickel (Ni)	<0.0005	mg/l	0.0005
NW117	**Dissolved Potassium**			
	Potassium (K)	5.44	mg/l	0.01
NW193	**Dissolved Reactive Phosphorus**			
	Phosphorus (soluble reactive)	0.015	mg/l	0.005
NW120	**Dissolved Sodium**			
	Sodium (Na)	18.0	mg/l	0.01
NW125	**Dissolved Zinc**			
	Zinc (Zn)	0.016	mg/l	0.002
ZM2GA	**Enumeration of Escherichia coli By Membrane Filtration**			
	Escherichia coli	<100	cfu/100 ml	100
NW010	**Nitrate-N**			
	Nitrate-N	0.73	(± 0.07) mg/l	0.01
NW195	**pH (Tested beyond 15 minute APHA holding time)**			
	pH	6.6	(± 0.2)	0.1
NW011	**Sulphate**			
	Sulphate	7.61	(± 0.76) mg/l	0.02
NW206	**Suspended Solids**			
	Suspended Solids	19	mg/l	3
NW228	**SVOC (GC-MSMS)**			
	Acenaphthene	<0.0001	mg/l	0.0001
	Acenaphthylene	<0.001	mg/l	0.001
	Adipatic acid, bis-2-ethylhexyl ester (DEHA)	<0.0001	mg/l	0.0001
	Alachlor	<0.0001	mg/l	0.0001
	Aldicarb	<0.1	mg/l	0.1
	Aldrin	<0.001	mg/l	0.001
	Anthracene	<0.001	mg/l	0.001
	Atrazine	<0.0001	mg/l	0.0001

		RESULTS (UNCERTAINTY)		LOQ
NW228	**SVOC (GC-MSMS)**			
	Benz(a)anthracene	<0.0001	mg/l	0.0001
	Benzo(a)pyrene	<0.0001	mg/l	0.0001
	Benzo(g,h,i)perylene	<0.001	mg/l	0.001
	Bromacil	<0.005	mg/l	0.005
	Carbofuran	<0.001	mg/l	0.001
	Chlordane	<0.0001	mg/l	0.0001
	Chlordane, gamma	<0.001	mg/l	0.001
	Chlorpyrifos (-ethyl)	<0.0001	mg/l	0.0001
	Chrysene	<0.0001	mg/l	0.0001
	Cyanazine	<0.005	mg/l	0.005
	d-BHC	<0.0001	mg/l	0.0001
	DDD, p,p'-	<0.0001	mg/l	0.0001
	DDE, p,p-	<0.0001	mg/l	0.0001
	DDT, p,p'-	NotRecovered	mg/l	0.001
	Diazinon	<0.0001	mg/l	0.0001
	Dibenz(a,h)anthracene	<0.0001	mg/l	0.0001
	Dieldrin	<0.0001	mg/l	0.0001
	Dimethoate	<0.001	mg/l	0.001
	Diuron	<0.001	mg/l	0.001
	Endosulfan, alpha-	<0.001	mg/l	0.001
	Endosulfan, beta-	<0.005	mg/l	0.005
	Endosulfan-sulfate	<0.0001	mg/l	0.0001
	Endrin	<0.0001	mg/l	0.0001
	Endrin ketone	NotRecovered	mg/l	0.0001
	Endrin-aldehyde	<0.001	mg/l	0.01
	Fluoranthene	<0.0001	mg/l	0.0001
	Fluorene	<0.0001	mg/l	0.0001
	HCH, alpha-	<0.0001	mg/l	0.0001
	HCH, beta-	<0.0001	mg/l	0.0001
	Heptachlor	<0.0001	mg/l	0.0001
	Heptachlor epoxide, cis-	<0.0001	mg/l	0.0001
	Hexachlorobenzene (HCB)	<0.0001	mg/l	0.0001
	Hexazinone	<0.001	mg/l	0.001
	Indeno(1,2,3-cd)pyrene	<0.0001	mg/l	0.0001
	Lindane (gamma-HCH)	<0.0001	mg/l	0.0001
	Metalaxyl and metalaxyl-M (metalaxyl including other mixtures of constituent isomers including metalaxyl-M (sum of isomers))	<0.001	mg/l	0.001
	Methoxychlor	<0.0001	mg/l	0.0001
	Metolachlor	<0.0001	mg/l	0.0001
	Metribuzin	<0.0001	mg/l	0.0001
	Molinate	<0.0001	mg/l	0.0001
	Naphthalene	<0.0001	mg/l	0.0001
	Oxadiazon	<0.0001	mg/l	0.0001
	PCB 101	<0.0001	mg/l	0.0001
	PCB 138	<0.001	mg/l	0.001
	PCB 183	<0.0001	mg/l	0.0001

		RESULTS	(UNCERTAINTY)	LOQ
NW228	**SVOC (GC-MSMS)**			
	PCB 28	<0.0001	mg/l	0.0001
	PCB 7	<0.0001	mg/l	0.0001
	Pendimethalin	<0.002	mg/l	0.002
	Permethrin (sum of isomers)	<0.0001	mg/l	0.0001
	Phenanthrene	<0.0001	mg/l	0.0001
	Pirimiphos-methyl	<0.0001	mg/l	0.0001
	Procymidone	<0.0001	mg/l	0.0001
	Propanil	<0.001	mg/l	0.001
	Propazine	<0.0001	mg/l	0.0001
	Pyrene	<0.0001	mg/l	0.0001
	Pyriproxyfen	<0.0001	mg/l	0.0001
	Simazine	<0.0001	mg/l	0.0001
	Terbuthylazine	<0.0001	mg/l	0.0001
	Total Benzo(b) and Benzo(k) fluoranthene	<0.001	mg/l	0.001
	Trifluralin	<0.0001	mg/l	0.0001
NW003	**Total Alkalinity**			
	Alkalinity total	65	(± 7) mg CaCO3/l	1
NW030	**Total Hardness**			
	Hardness	58	mg CaCO3/l	1
NW210	**Total Non-Purgeable Organic Carbon**			
	Total Organic Carbon	2.5	(± 0.3) mg/l	0.1
NW229	**VOC (GC-MS)**			
	1,1,1,2-Tetrachloroethane	<0.0005	mg/l	0.0005
	1,1,1-Trichloroethane	<0.0005	mg/l	0.0005
	1,1,2,2-tetrachloroethane	<0.0005	mg/l	0.0005
	1,1,2-Trichloroethane	<0.0005	mg/l	0.0005
	1,1-Dichloroethane	<0.0005	mg/l	0.0005
	1,1-Dichloroethene	<0.0005	mg/l	0.0005
	1,1-Dichloropropene	<0.0005	mg/l	0.0005
	1,2,3-Trichlorobenzene	<0.0005	mg/l	0.0005
	1,2,3-Trichloropropane	<0.0005	mg/l	0.0005
	1,2,4 trimethylbenzen	<0.0005	mg/l	0.0005
	1,2,4-Trichlorobenzene	<0.0005	mg/l	0.0005
	1,2-Dibromo-3-chloropropane	<0.001	mg/l	0.002
	1,2-Dibromoethane	<0.0002	mg/l	0.0002
	1,2-Dichlorobenzene (2)	<0.0005	mg/l	0.0005
	1,2-Dichloroethane	<0.0005	mg/l	0.0005
	1,2-Dichloropropane	<0.0005	mg/l	0.0005
	1,3,5-Trichlorobenzene	<0.0005	mg/l	0.0005
	1,3,5-Trimethylbenzene	<0.0005	mg/l	0.0005
	1,3-Dichlorobenzene	<0.0005	mg/l	0.0005
	1,3-Dichloropropane	<0.0005	mg/l	0.0005
	1,4-dichlorobenzene	<0.0005	mg/l	0.0005
	2,2-Dichloropropane	<0.0005	mg/l	0.0005
	2-Chlorotoluene	<0.0005	mg/l	0.0005
	4-Chlorotoluene	<0.0005	mg/l	0.0005
	4-methyl-2-pentanone	<0.0005	mg/l	0.0005

		RESULTS (UNCERTAINTY)		LOQ
NW229	**VOC (GC-MS)**			
	Benzene	<0.0005	mg/l	0.0005
	Bromobenzene	<0.0005	mg/l	0.0005
	Bromochloromethane	<0.0012	mg/l	0.0012
	Bromodichloromethane	<0.0005	mg/l	0.0005
	Bromoform	<0.0005	mg/l	0.0005
	Bromomethane (zone 2)	<0.001	mg/l	0.001
	Carbon tetrachloride	<0.0005	mg/l	0.0005
	Carbondisulphide (CS2)	<0.0005	mg/l	0.0005
	Chlorobenzene	<0.0005	mg/l	0.0005
	Chloroethane	<0.001	mg/l	0.001
	Chloroform	<0.0005	mg/l	0.0005
	Chloromethane	<0.006	mg/l	0.006
	cis-1,2-Dichloroethene	<0.0005	mg/l	0.0005
	cis-1,3-Dichloropropene	<0.0005	mg/l	0.0005
	Dibromochloromethane	<0.0005	mg/l	0.0005
	Dibromomethane	<0.0005	mg/l	0.0005
	Dichlorodifluoromethane	NotRecovered	mg/l	0.001
	Dichloromethane	<0.005	mg/l	0.005
	Hexachlorobutadiene	<0.0002	mg/l	0.0002
	Isopropylbenzene (Cumene)	<0.0005	mg/l	0.0005
	m,p-Xylene, Ethylbenzene	<0.0015	mg/l	0.0015
	n-Butylbenzene	<0.0005	mg/l	0.0005
	n-Propylbenzene	<0.0005	mg/l	0.0005
	p-Isopropyltoluene	<0.0005	mg/l	0.0005
	sec-Butylbenzene	<0.0005	mg/l	0.0005
	Styrene	<0.0005	mg/l	0.0005
	tert-Butylbenzene	<0.0005	mg/l	0.0005
	Tetrachloroethene	<0.0005	mg/l	0.0005
	Toluene	<0.0005	mg/l	0.0005
	trans-1,2-Dichloroethene	<0.0005	mg/l	0.0005
	trans-1,3-Dichloropropene	<0.0005	mg/l	0.0005
	Trichloroethene	<0.0005	mg/l	0.0005
	Trichlorofluoromethane	<0.0005	mg/l	0.0005
	Vinyl chloride	<0.0003	mg/l	0.0003
	Xylene (ortho-)	<0.0005	mg/l	0.0005
① **NWWG6**	**Volatile Fatty Acids (VFA)**			
	Acetic acid	<5	mg/l	5
	Butyric acid	<5	mg/l	5
	Heptanoic acid	<5	mg/l	5
	Hexanoic acid	<5	mg/l	5
	Isobutyric acid	<5	mg/l	5
	Isocaproic acid	<5	mg/l	5
	Isovaleric acid	<5	mg/l	5
	Propionic acid	<5	mg/l	5
	Valeric acid	<5	mg/l	5
	Volatile fatty acids as acetic acid	<5	mg/l	5

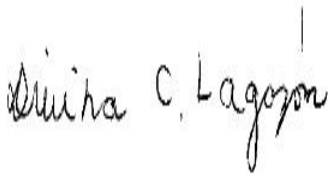
LIST OF METHODS

NW003	**Total Alkalinity:** APHA Online Edition 2320 B	NW007	**Chloride:** APHA Online Edition 4110 B
NW00U	**Chlorophenols:** Internal Method, LC-MS/MS	NW010	**Nitrate-N:** APHA Online Edition 4110 B
NW011	**Sulphate:** APHA Online Edition 4110 B	NW020	**Chemical Oxygen Demand:** APHA Online Edition 5220 D
NW023	**Conductivity:** APHA 24th Edition 2510 B	NW030	**Total Hardness:** APHA Online Edition 2340 B
NW098	**Dissolved Aluminium:** APHA Online Edition 3125 B mod.	NW103	**Dissolved Boron:** APHA Online Edition 3125 B mod.
NW104	**Dissolved Cadmium:** APHA Online Edition 3125 B mod.	NW105	**Dissolved Calcium:** APHA Online Edition 3125 B mod.
NW106	**Dissolved Chromium:** APHA Online Edition 3125 B mod.	NW108	**Dissolved Copper:** APHA Online Edition 3125 B mod.
NW109	**Dissolved Iron:** APHA Online Edition 3125 B mod.	NW110	**Dissolved Lead:** APHA Online Edition 3125 B mod.
NW112	**Dissolved Magnesium:** APHA Online Edition 3125 B mod.	NW113	**Dissolved Manganese:** APHA Online Edition 3125 B mod.
NW114	**Dissolved Mercury:** APHA Online Edition 3125 B mod.	NW116	**Dissolved Nickel:** APHA Online Edition 3125 B mod.
NW117	**Dissolved Potassium:** APHA Online Edition 3125 B mod.	NW120	**Dissolved Sodium:** APHA Online Edition 3125 B mod.
NW125	**Dissolved Zinc:** APHA Online Edition 3125 B mod.	NW179	**Ammonia Nitrogen:** APHA Online Edition 4500-NH3 H
NW193	**Dissolved Reactive Phosphorus:** APHA Online Edition 4500-P G	NW195	**pH (Tested beyond 15 minute APHA holding time):** APHA 24th Edition 4500-H B
NW206	**Suspended Solids:** APHA Online Edition 2540 D	NW210	**Total Non-Purgeable Organic Carbon:** APHA Online Edition 5310 B
NW228	**SVOC (GC-MSMS):** Internal Method, GC-MS/MS	NW229	**VOC (GC-MS):** Internal Method, HS-GC-MS
NW341	**BOD5 - Soluble Carbonaceous:** APHA Online Edition 5210 B	NW583	**Dissolved Arsenic:** APHA Online Edition 3125 B mod.
NWWG6	**Volatile Fatty Acids (VFA):** APHA 24th Edition 5560 D mod.	ZM2GA	**Escherichia coli E (Water) [NZ] <100 >6 000 000 /100 ml (0-3) m-FC Agar-F:** SMEWW 9222I; APHA 24th Edition

Signature

Marylou Cabral Laboratory Manager Eurofins ELS Limited

Jennifer Mont Supervisor Eurofins ELS Limited



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Ganesh Ilancko Supervisor Eurofins ELS Limited

Arvinder Singh Laboratory Supervisor Microbiology

Gabriela Carvalhaes Manager Food and Water Testing Chemistry

Cody Forbes Laboratory Analyst Laboratory Analyst

EXPLANATORY NOTE

① Test is not accredited
② Test is subcontracted within Eurofins group and is accredited
③ Test is subcontracted within Eurofins group and is not accredited
④ Test is subcontracted outside Eurofins group and is accredited
⑤ Test is subcontracted outside Eurofins group and is not accredited
⑥ Test result is provided by the customer and is not accredited
⑦ Tested at the sampling point by Eurofins and is not accredited
⑧ Tested at the sampling point by Eurofins and is accredited
⑨ Test is RLP accredited
⑩ Test is subcontracted within Eurofins group and is RLP accredited

N/A means Not Applicable
Not Detected means not detected at or above the Limit of Quantification (LOQ)
LOQ means Limit of Quantification and the unit of LOQ is the same as the result unit
✗ (Unsatisfactory) means does not meet the specification
✓ (Satisfactory) means meets the specification

The Customer acknowledges and accepts that: (a) where Eurofins is not responsible for sampling, the test result(s) in this report apply only to the sample as received. Customer is solely responsible for the sampling process and warrants that the sample provided to Eurofins is representative of the lot / batch from which the samples were drawn; and (b) Eurofins expresses no opinion and accepts no liability in respect of the Customer's production process or homogeneity of the product.
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Accreditation does not apply to comments or graphical representations.
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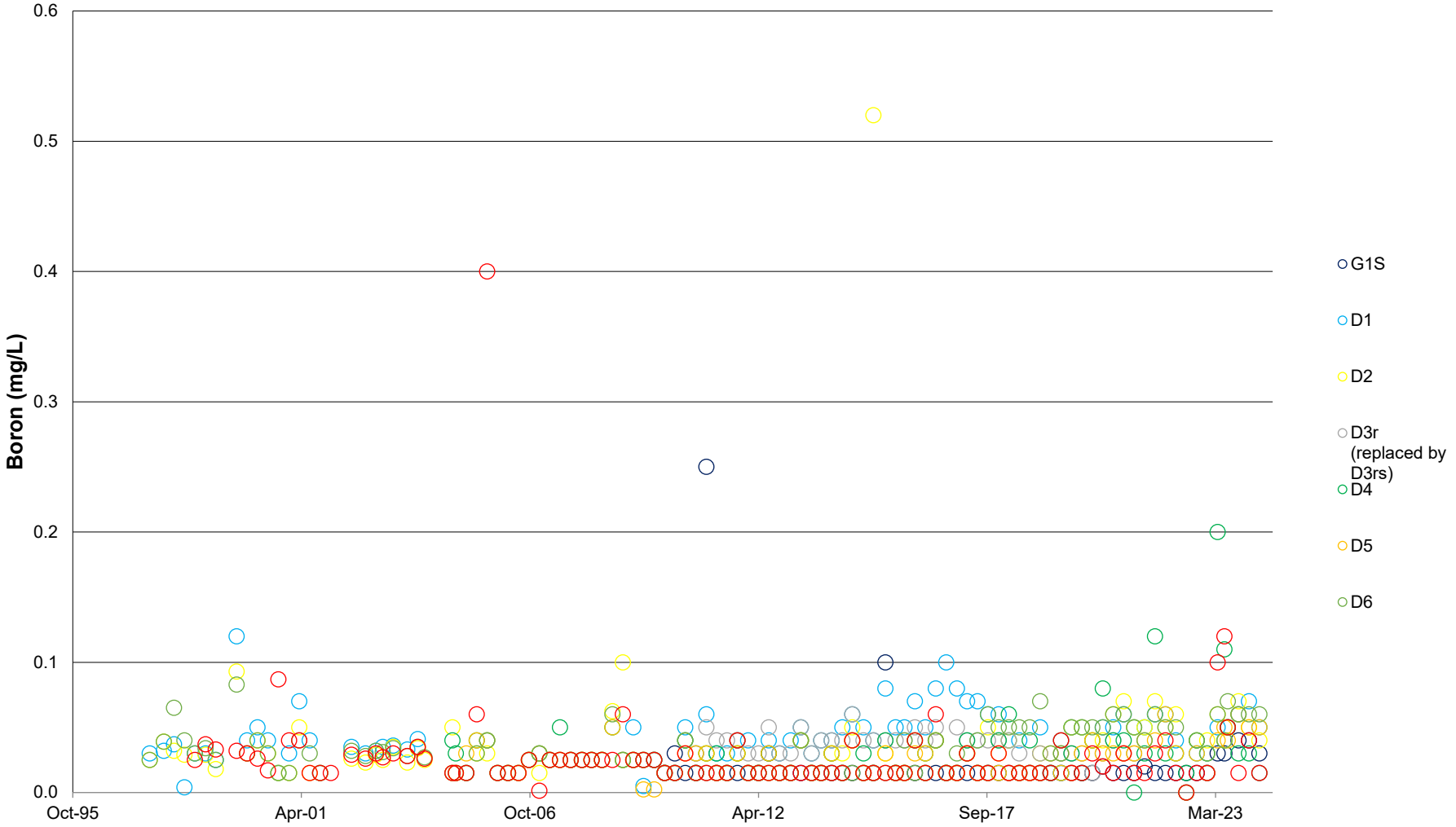
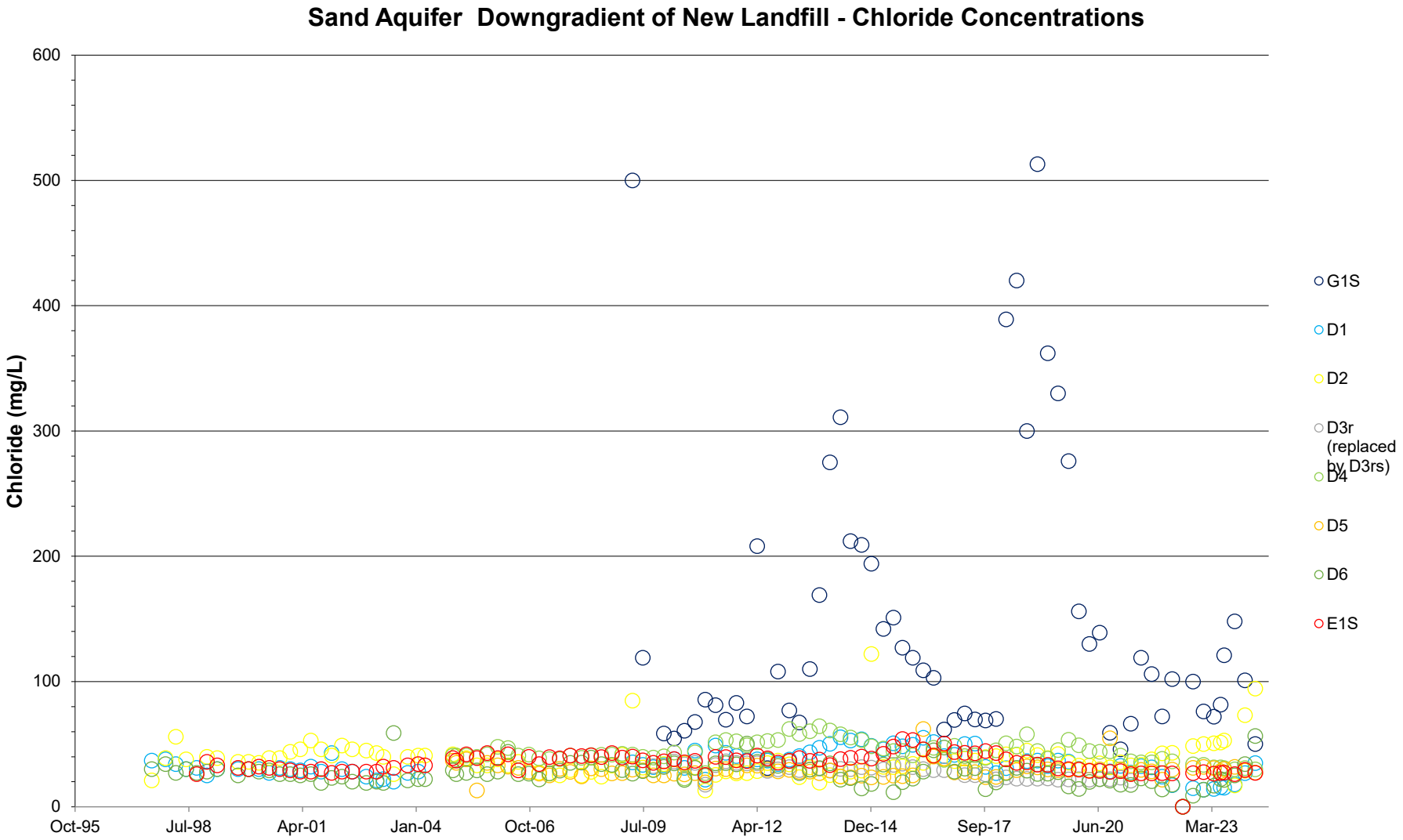
END OF REPORT

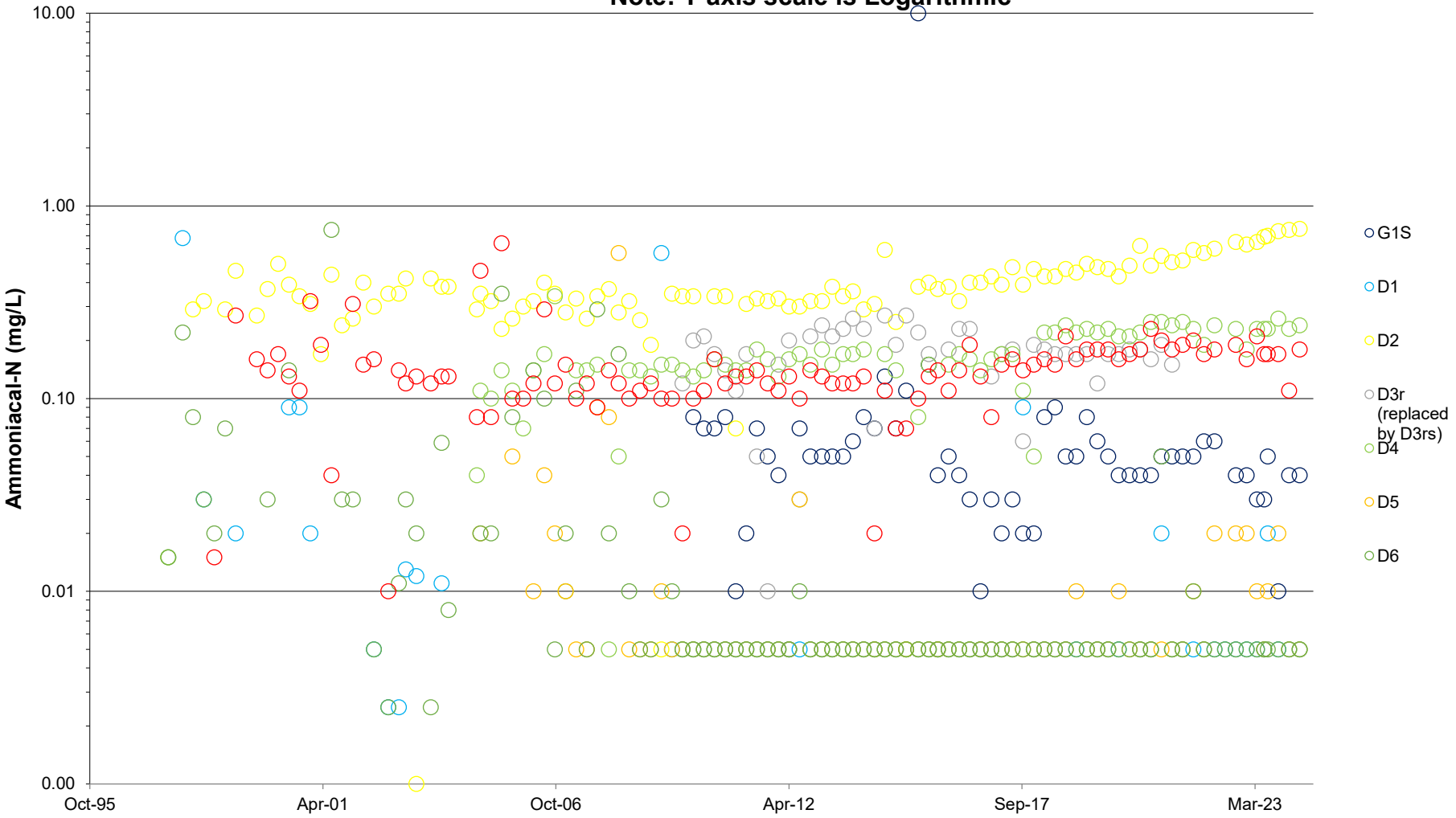
Appendix D Historical Results Graphs

Sand Aquifer Downgradient of New Landfill - Boron Concentrations

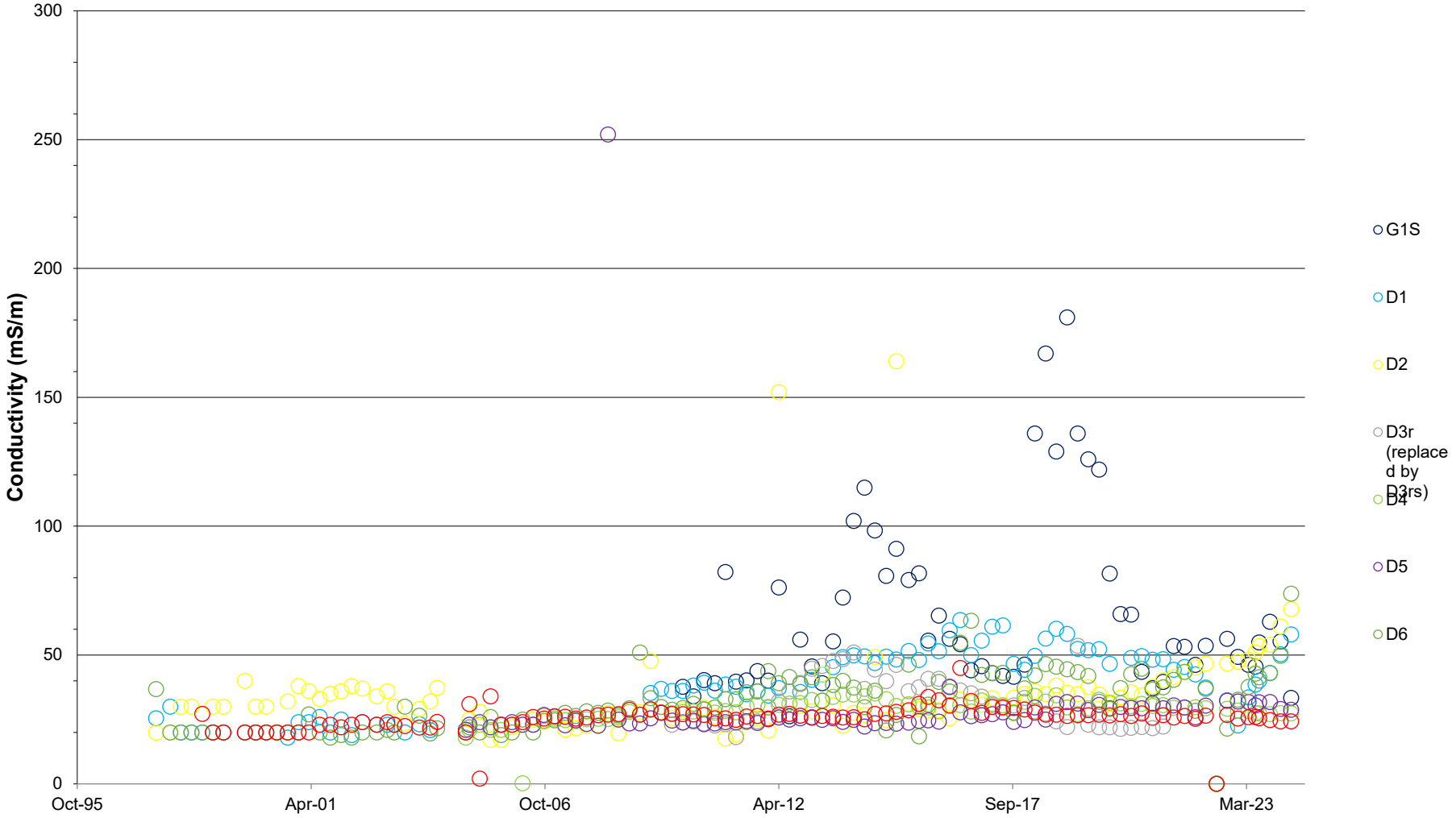



Sand Aquifer Downgradient of New Landfill - Chloride Concentrations
Chloride (mg/L)
600
500
400
300
200
100
0
Oct-95
Jul-98
Apr-01
Jan-04
Oct-06
Jul-09
Apr-12
Dec-14
Sep-17
Jun-20
Mar-23
G1S
D1
D2
D3r (replaced by D3rs)
D4
D5
D6
E1S

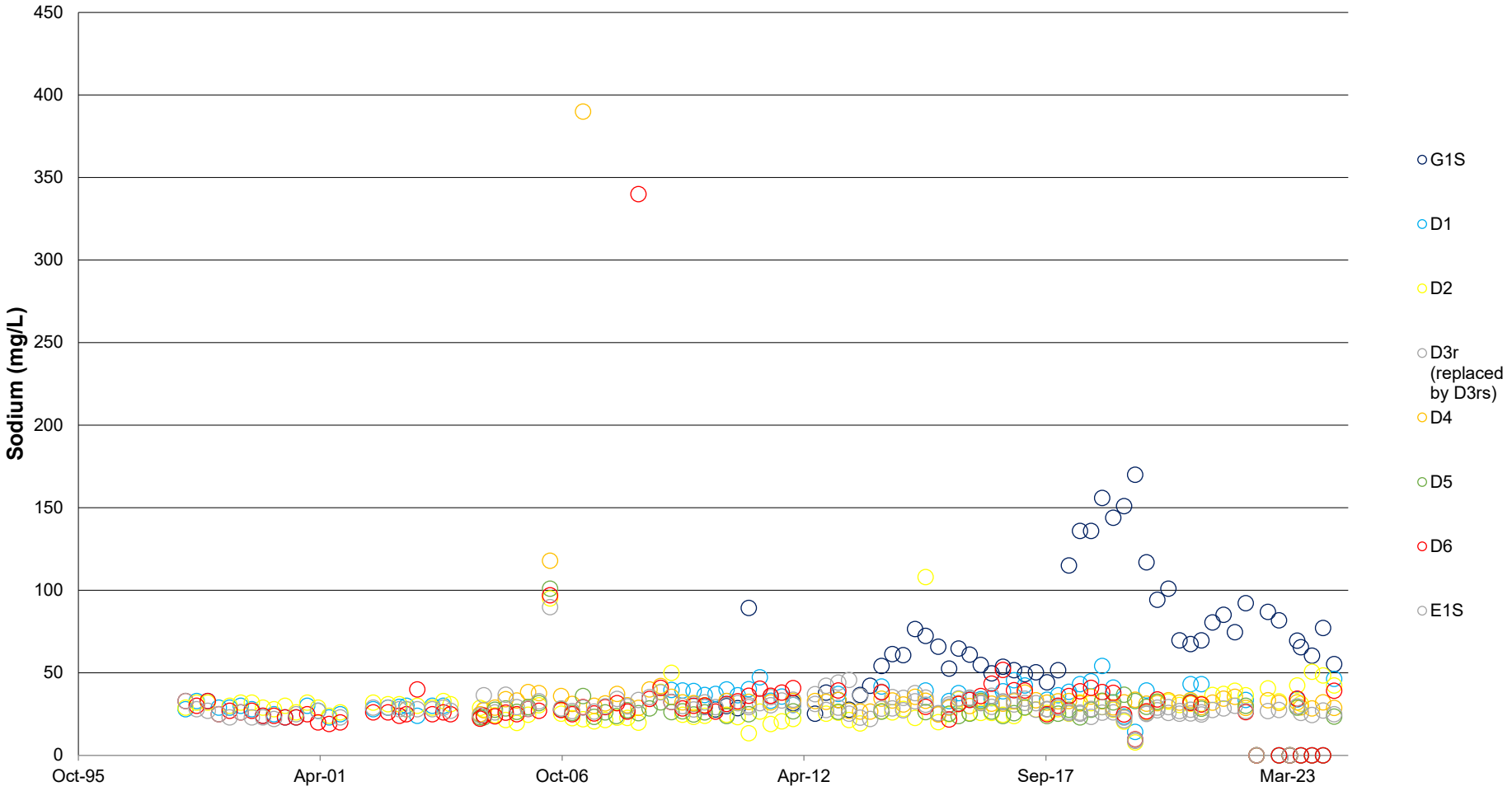
Sand Aquifer Downgradient of New Landfill - Ammoniacal-Nitrogen Concentrations
Note: Y-axis scale is Logarithmic

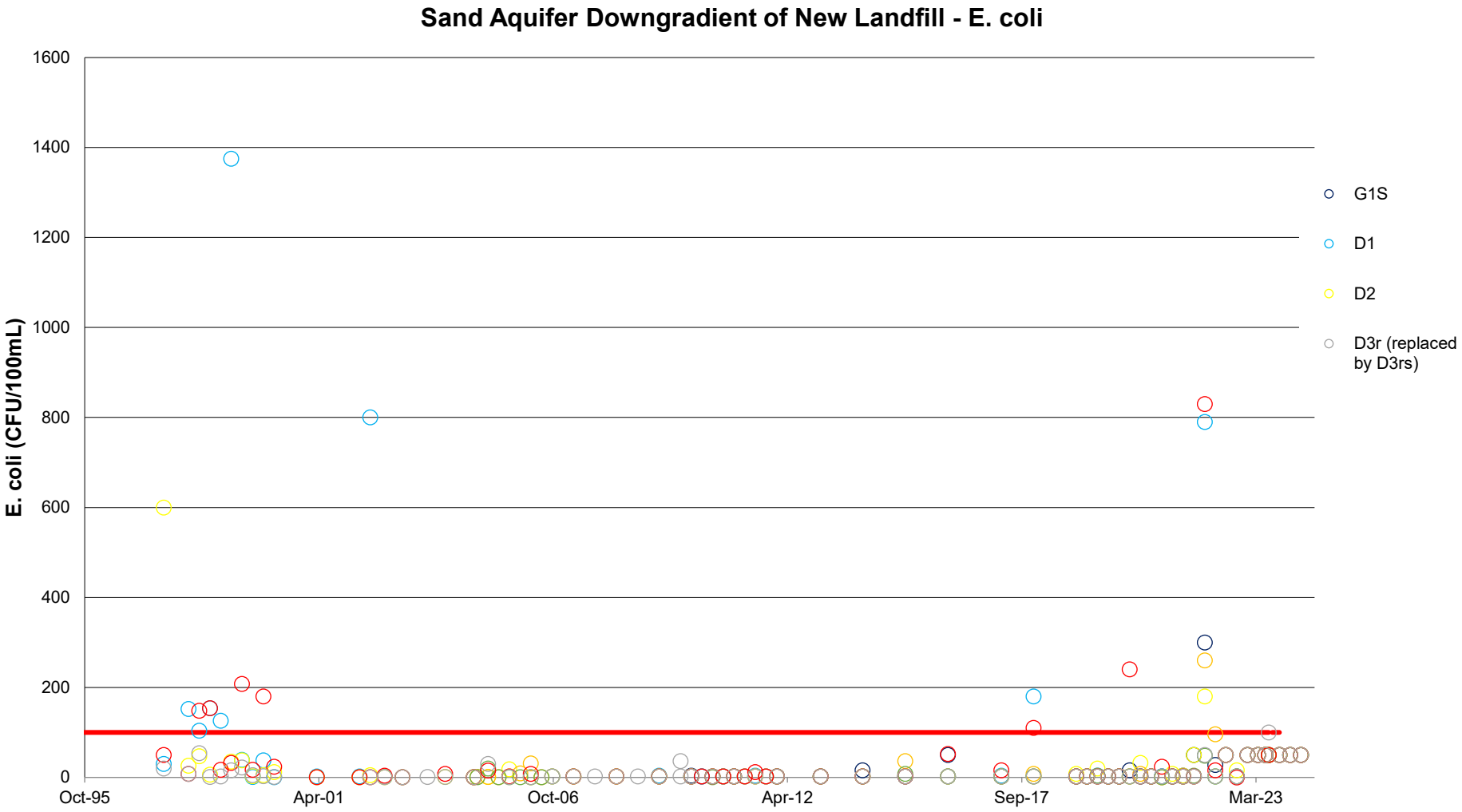


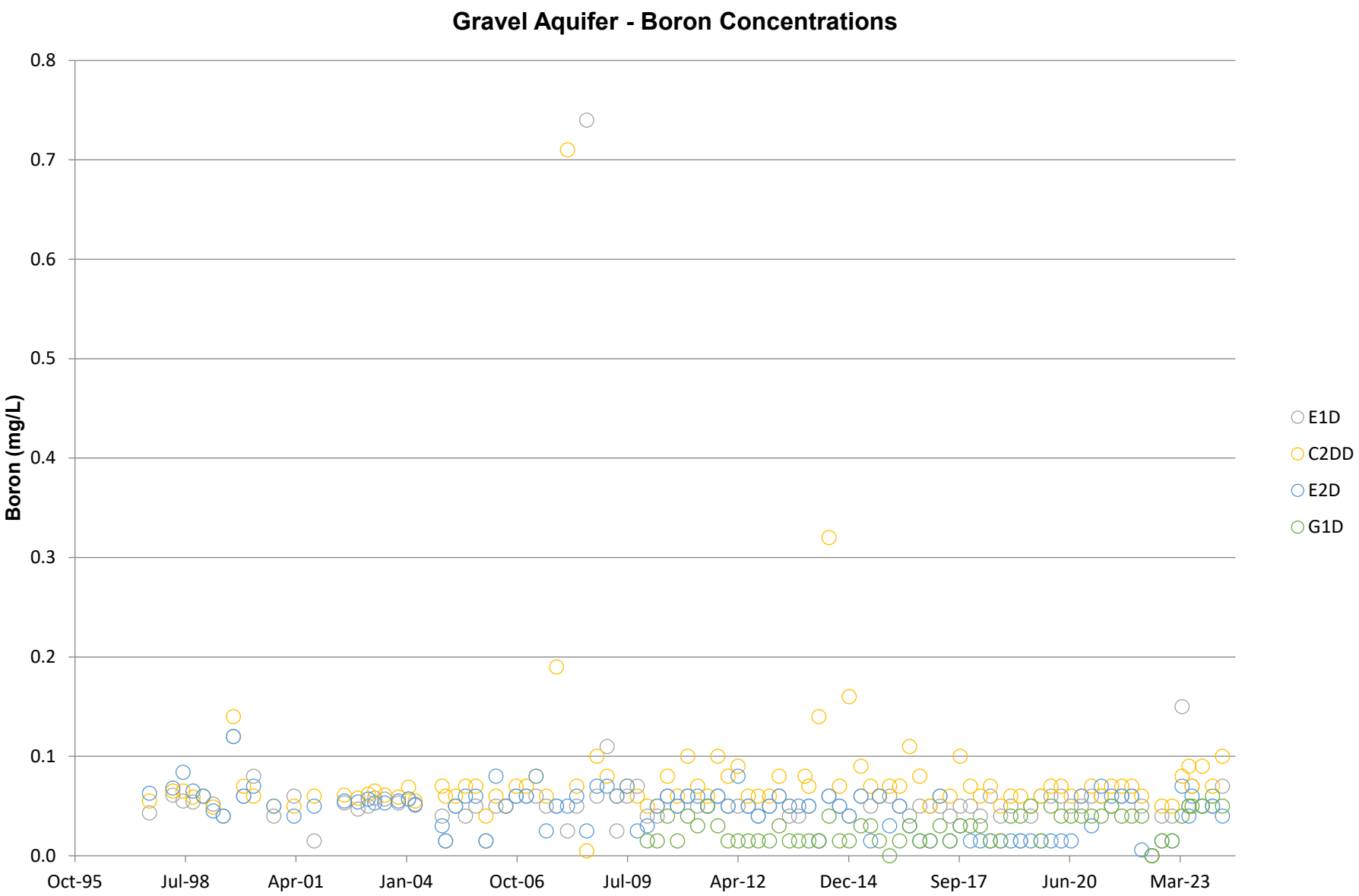
Sand Aquifer Downgradient of New Landfill - Conductivity Levels

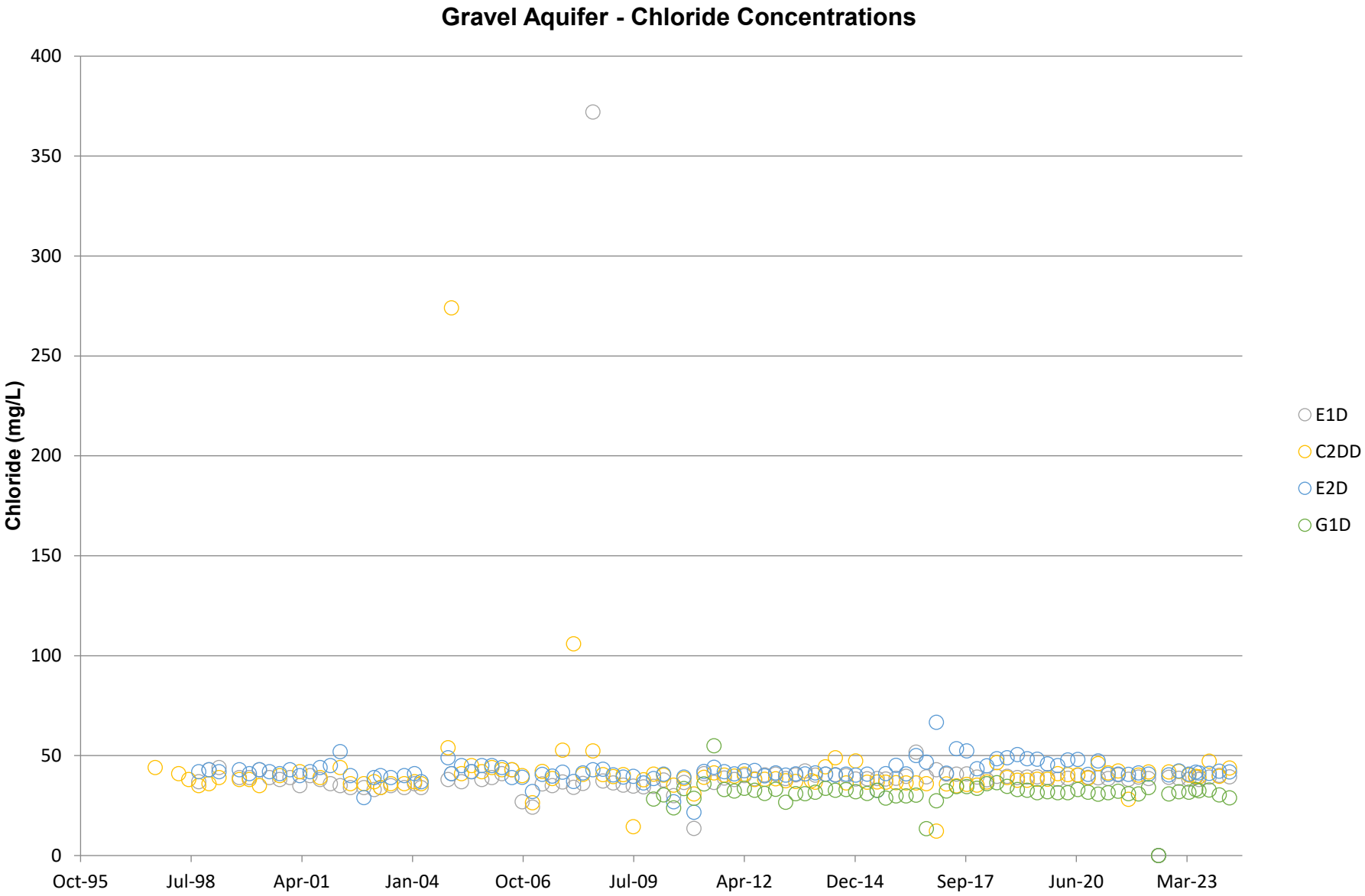


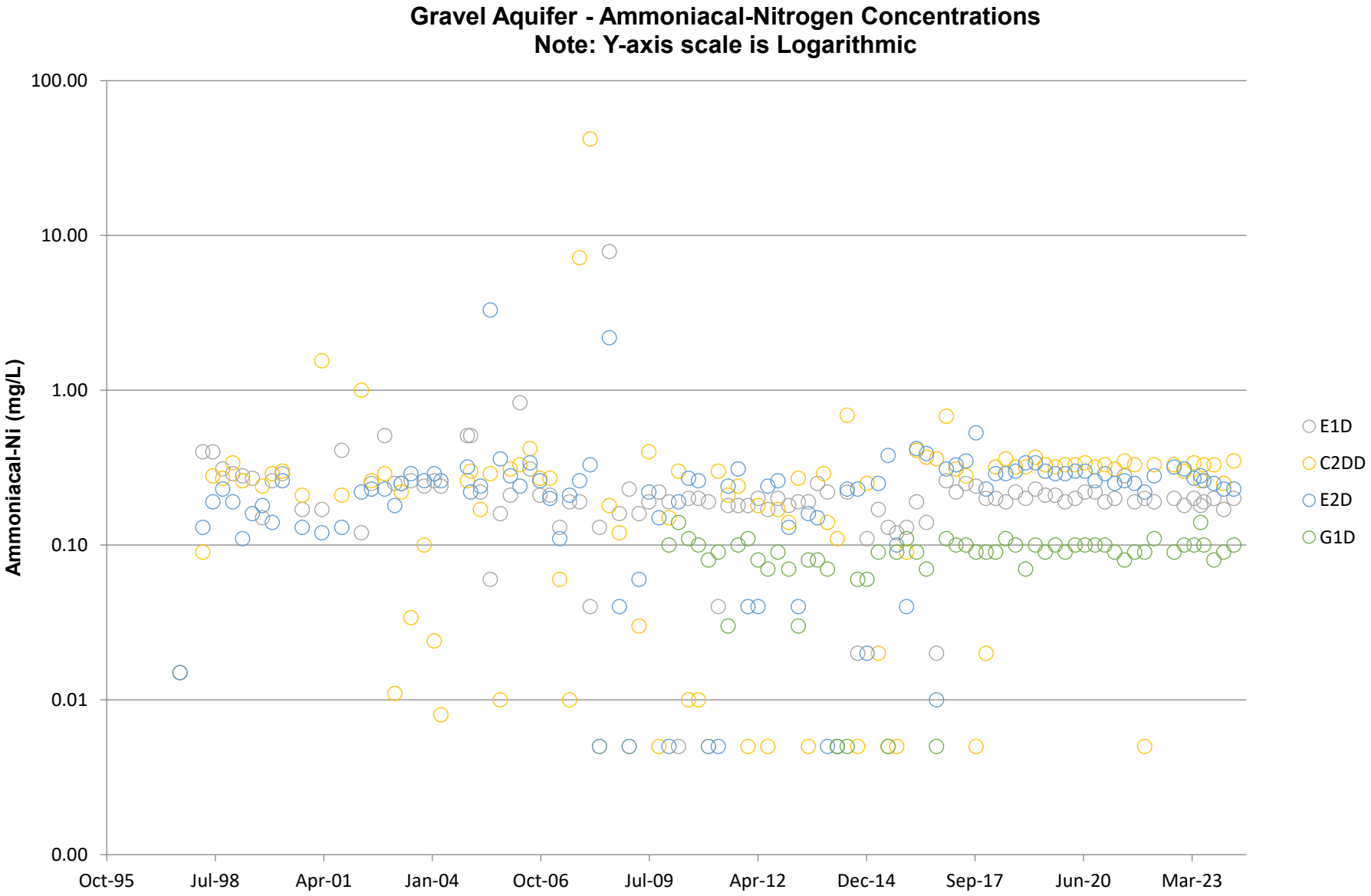
Sand Aquifer Downgradient of New Landfill - Sodium Concentrations

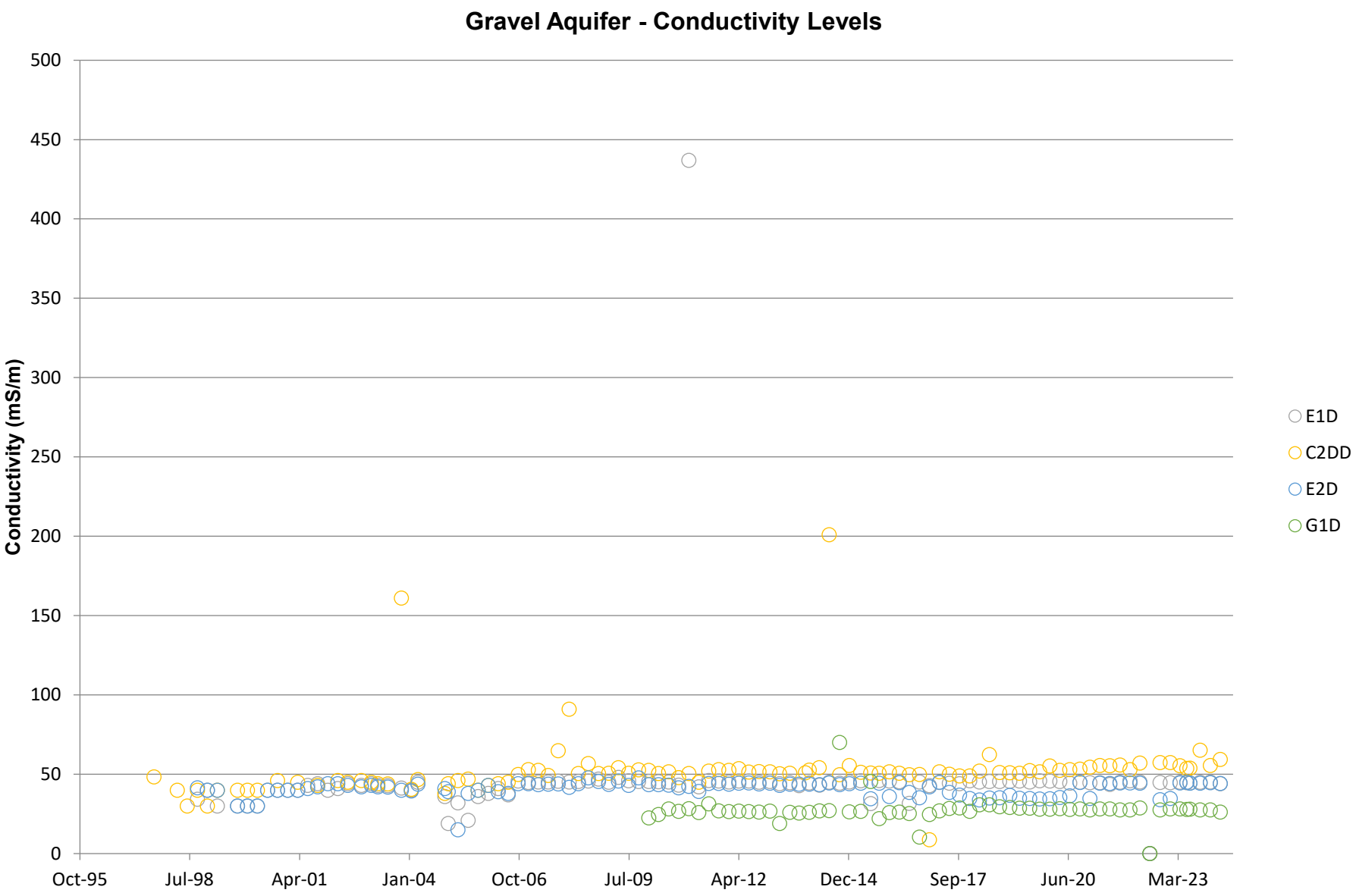


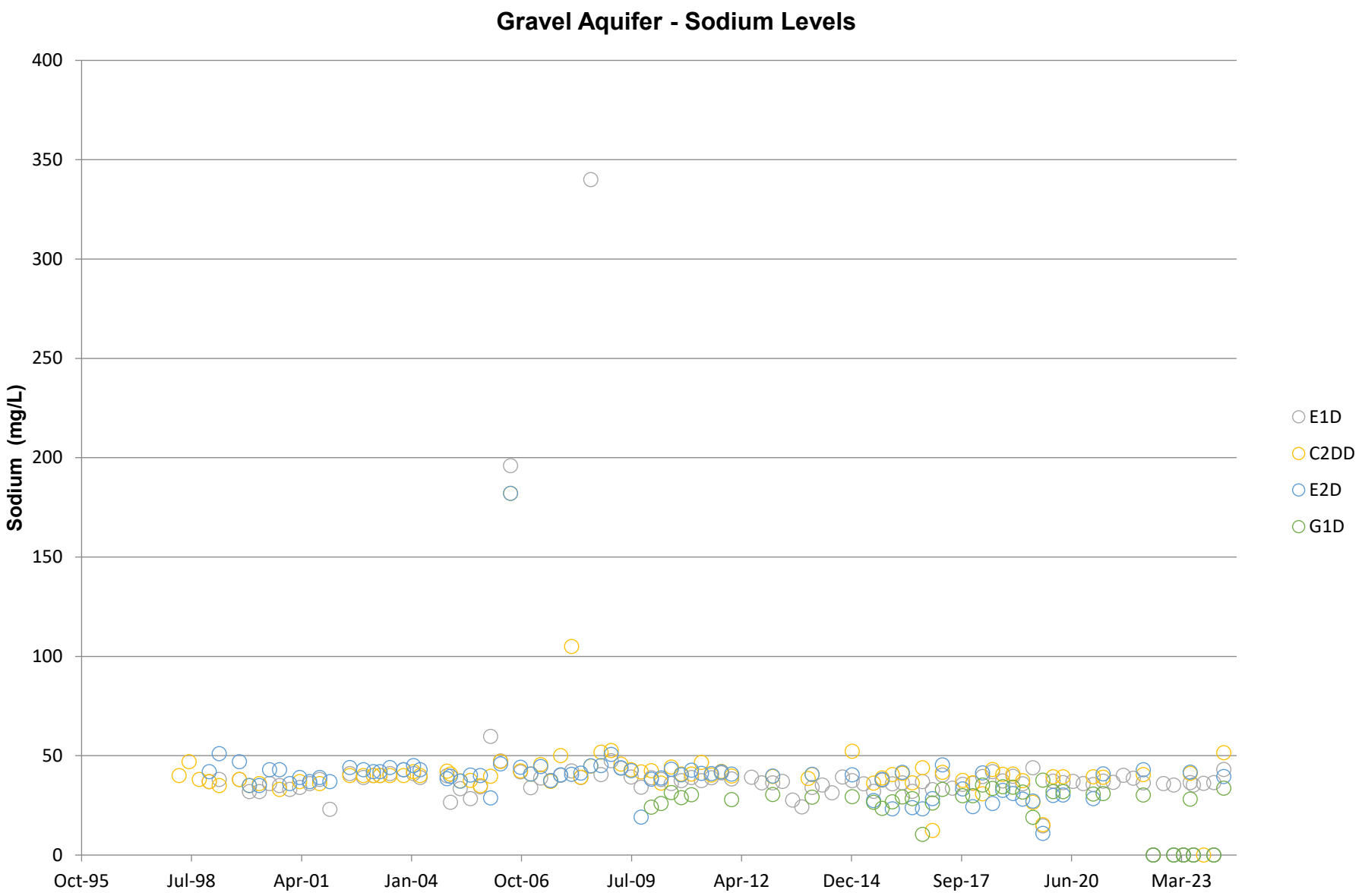

Sand Aquifer Downgradient of New Landfill - E. coli
E. coli (CFU/100mL)
1600
1400
1200
1000
800
600
400
200
0
Oct-95
Apr-01
Oct-06
Apr-12
Sep-17
Mar-23
G1S
D1
D2
D3r (replaced by D3rs)

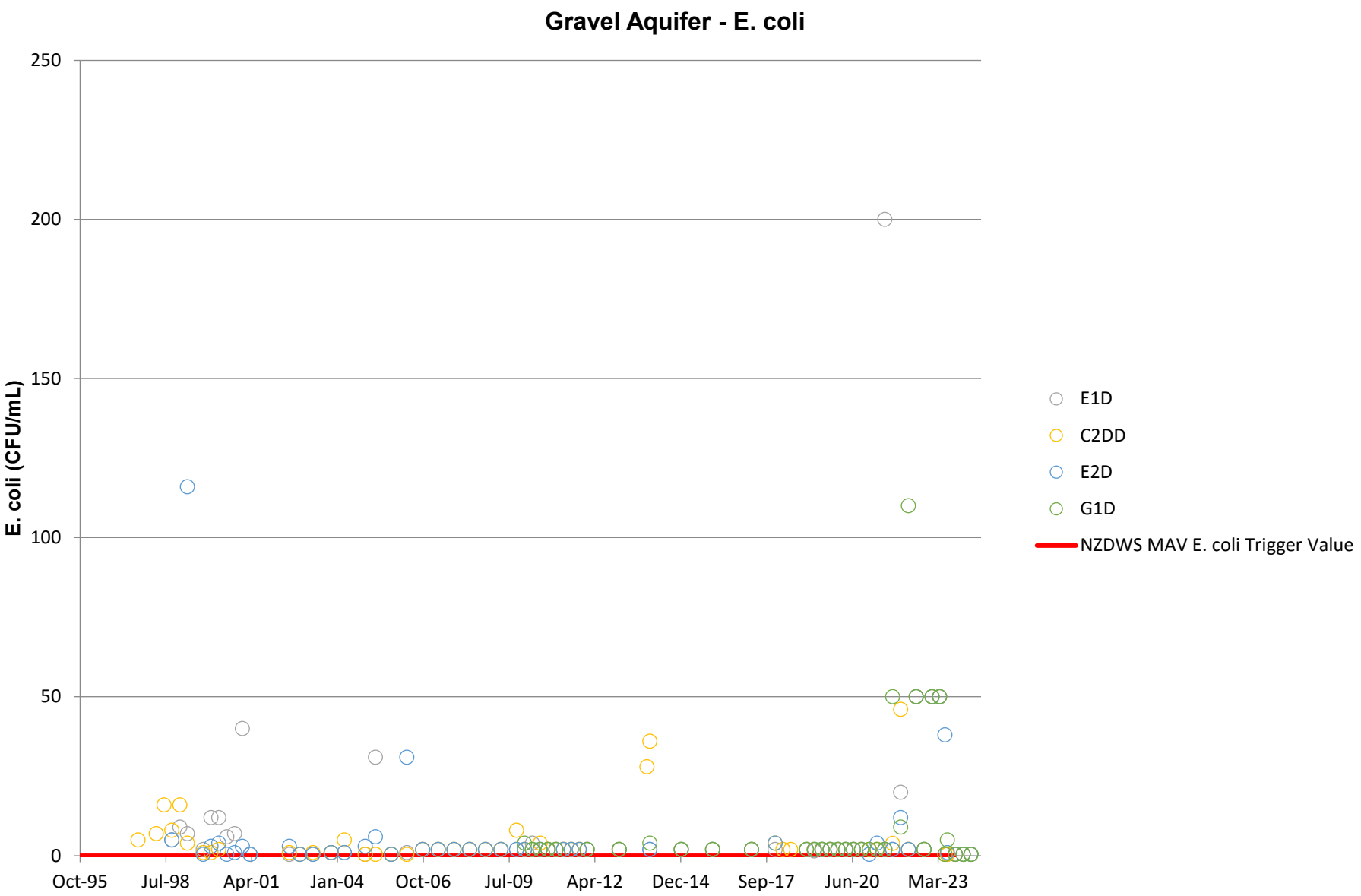

Gravel Aquifer - Boron Concentrations
Boron (mg/L)
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
Oct-95
Jul-98
Apr-01
Jan-04
Oct-06
Jul-09
Apr-12
Dec-14
Sep-17
Jun-20
Mar-23
E1D
C2DD
E2D
G1D

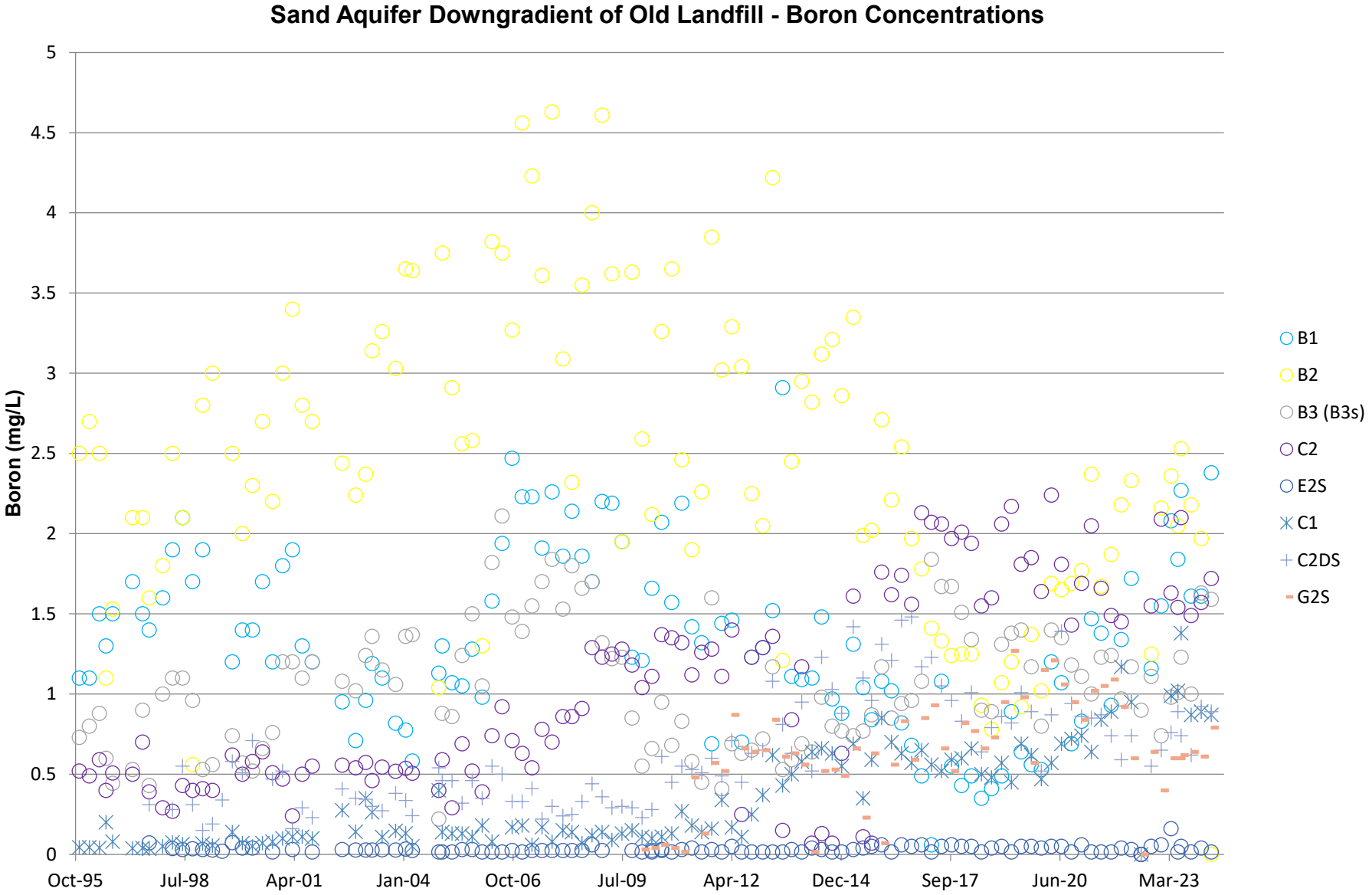

Gravel Aquifer - Chloride Concentrations
Chloride (mg/L)
400
350
300
250
200
150
100
50
0
Oct-95
Jul-98
Apr-01
Jan-04
Oct-06
Jul-09
Apr-12
Dec-14
Sep-17
Jun-20
Mar-23
E1D
C2DD
E2D
G1D

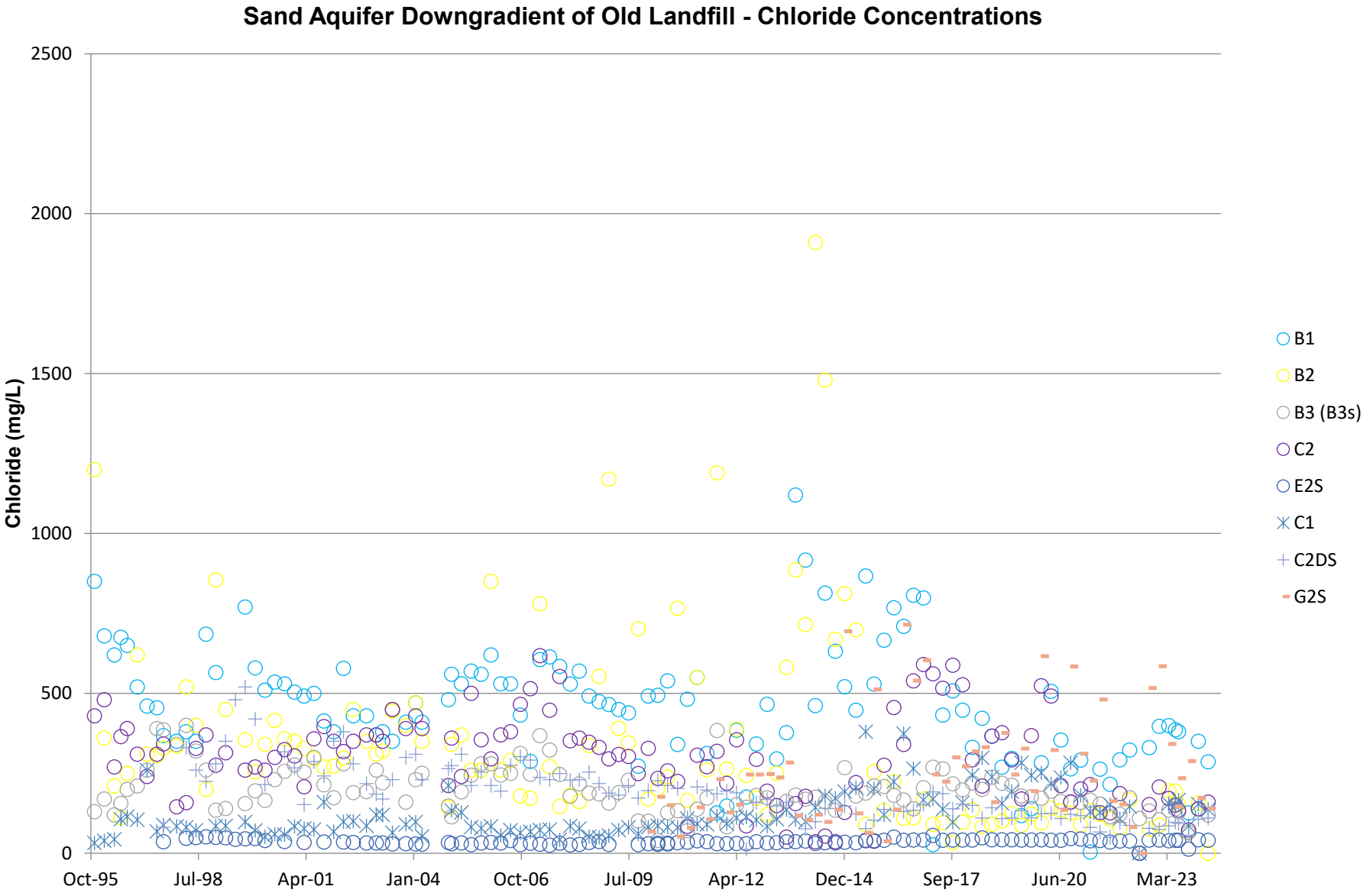

Gravel Aquifer - Ammoniacal-Nitrogen Concentrations
Note: Y-axis scale is Logarithmic
Ammoniacal-Ni (mg/L)
100.00
10.00
1.00
0.10
0.01
0.00
Oct-95
Jul-98
Apr-01
Jan-04
Oct-06
Jul-09
Apr-12
Dec-14
Sep-17
Jun-20
Mar-23
E1D
C2DD
E2D
G1D

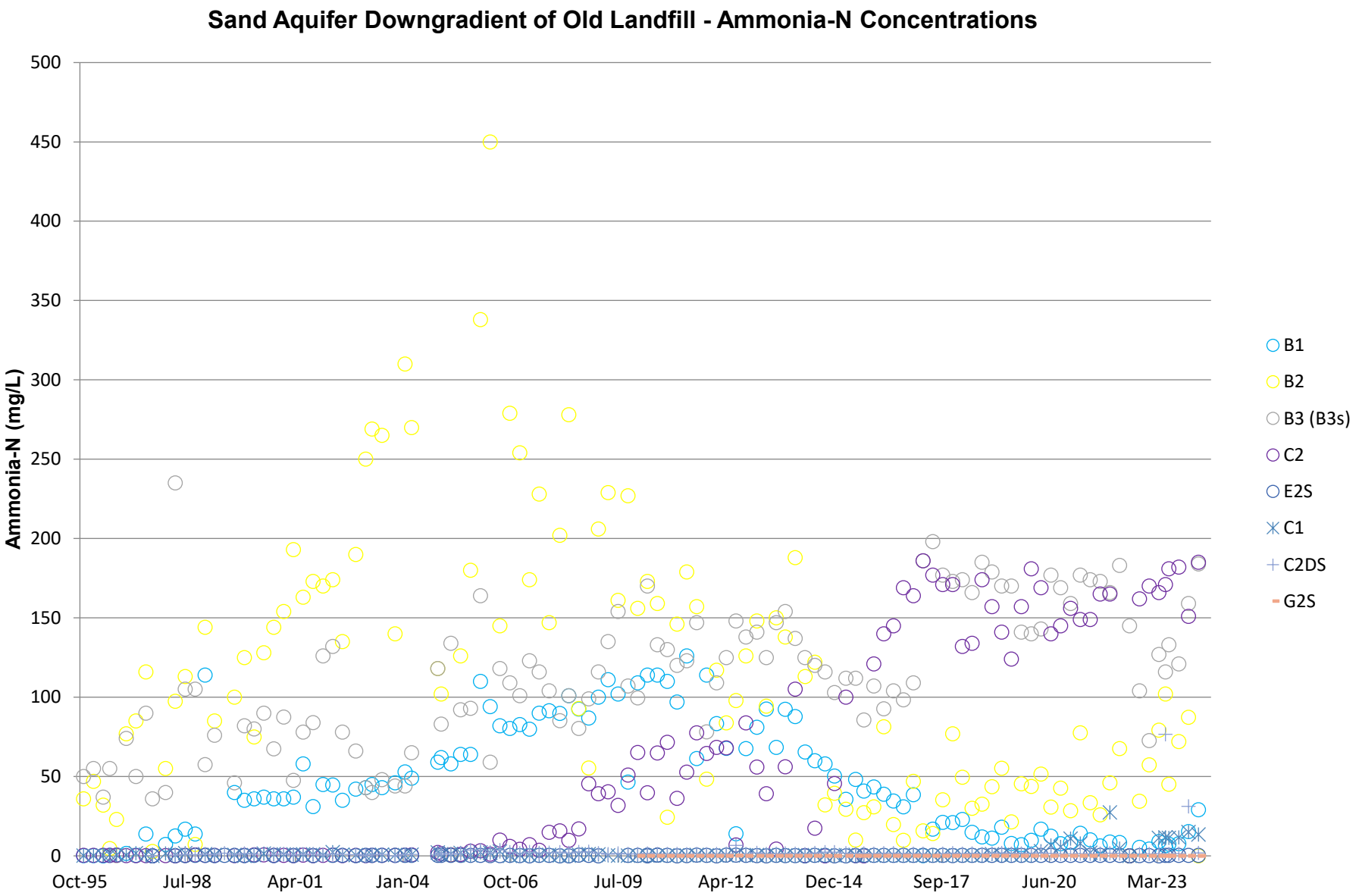

Gravel Aquifer - Conductivity Levels
Conductivity (mS/m)
500
450
400
350
300
250
200
150
100
50
0
Oct-95
Jul-98
Apr-01
Jan-04
Oct-06
Jul-09
Apr-12
Dec-14
Sep-17
Jun-20
Mar-23
E1D
C2DD
E2D
G1D

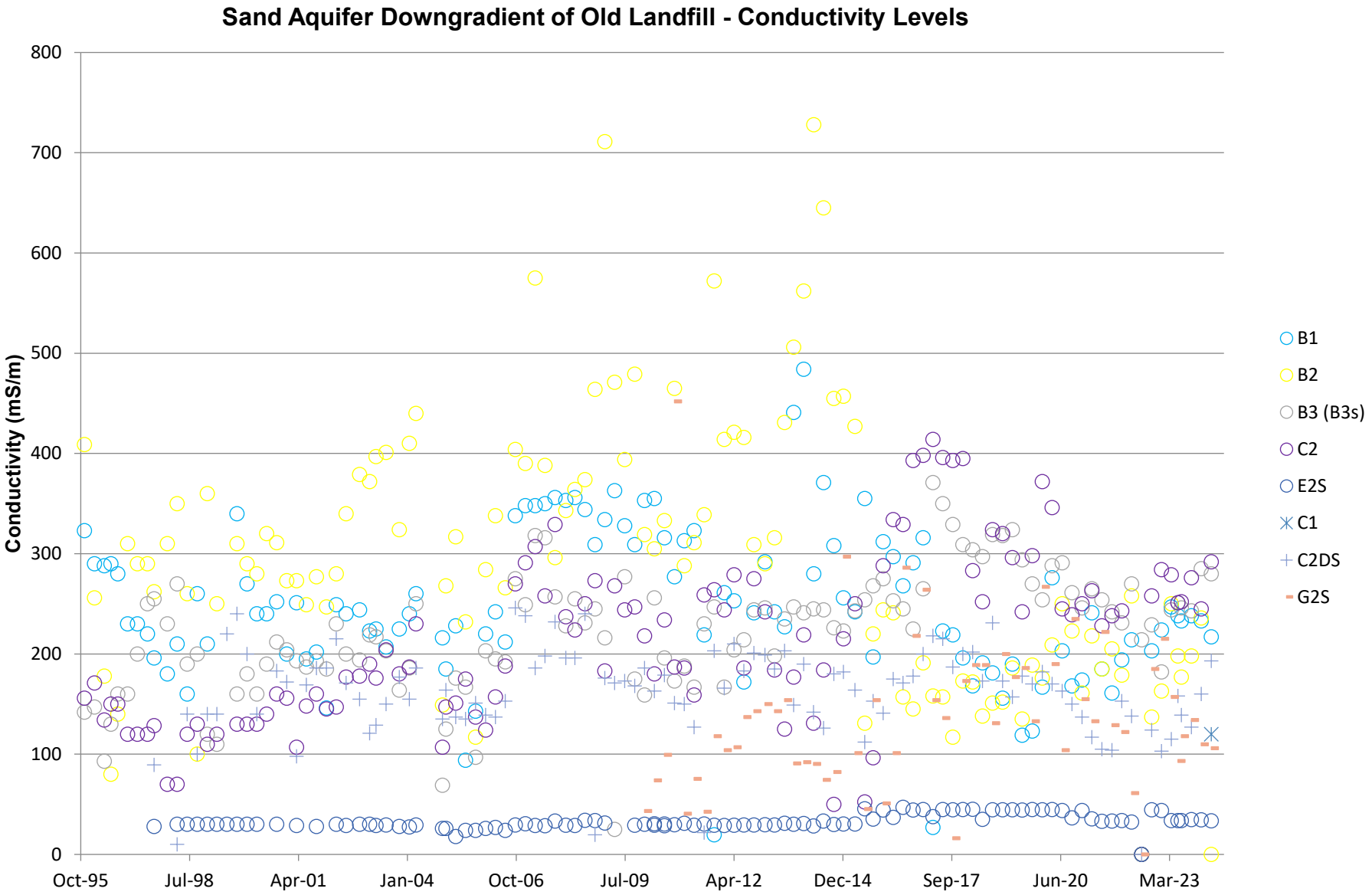

Gravel Aquifer - Sodium Levels
Sodium (mg/L)
400
350
300
250
200
150
100
50
0
Oct-95
Jul-98
Apr-01
Jan-04
Oct-06
Jul-09
Apr-12
Dec-14
Sep-17
Jun-20
Mar-23
E1D
C2DD
E2D
G1D

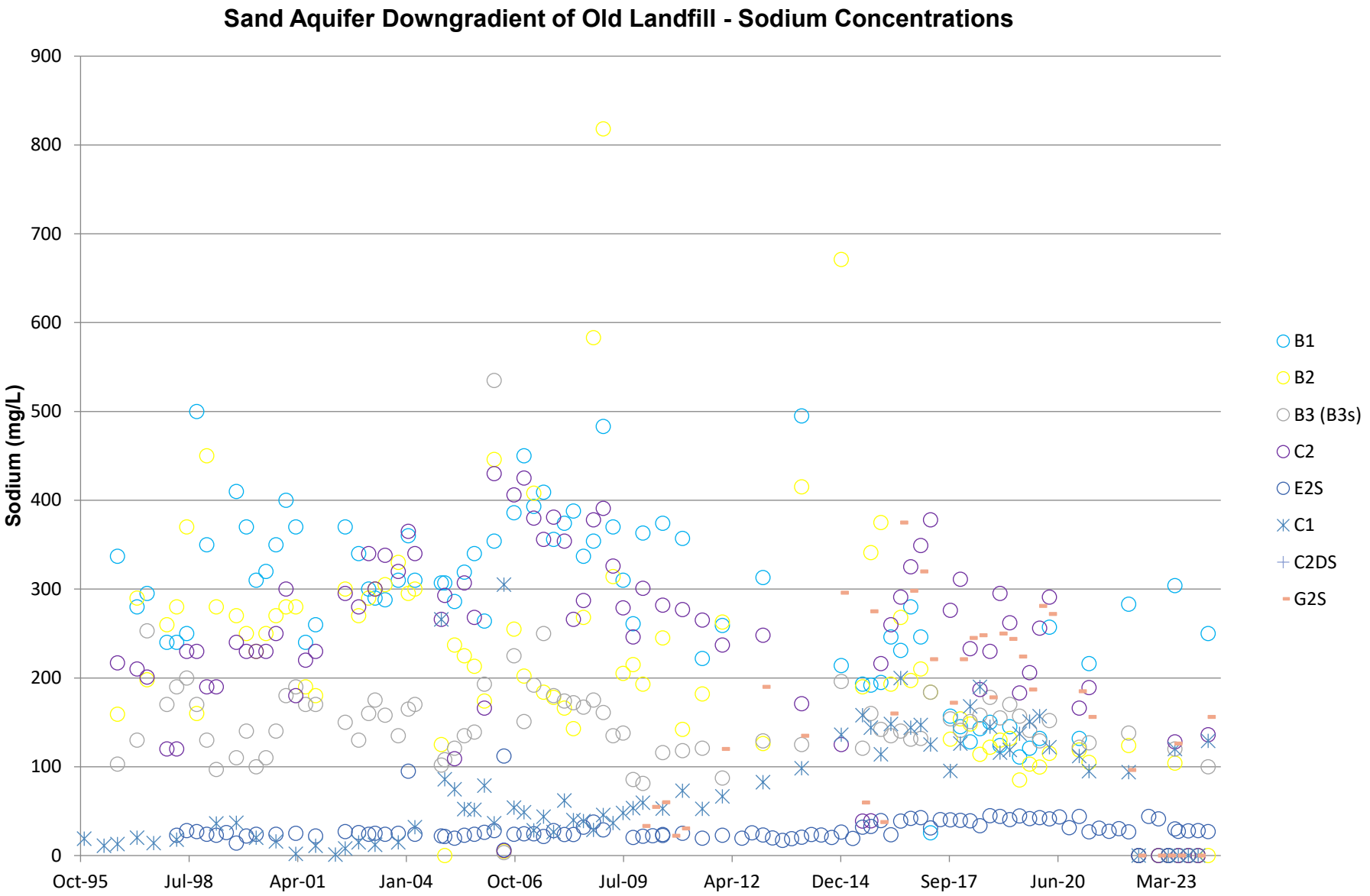

Gravel Aquifer - E. coli
E. coli (CFU/mL)
250
200
150
100
50
0
Oct-95
Jul-98
Apr-01
Jan-04
Oct-06
Jul-09
Apr-12
Dec-14
Sep-17
Jun-20
Mar-23
E1D
C2DD
E2D
G1D
NZDWS MAV E. coli Trigger Value

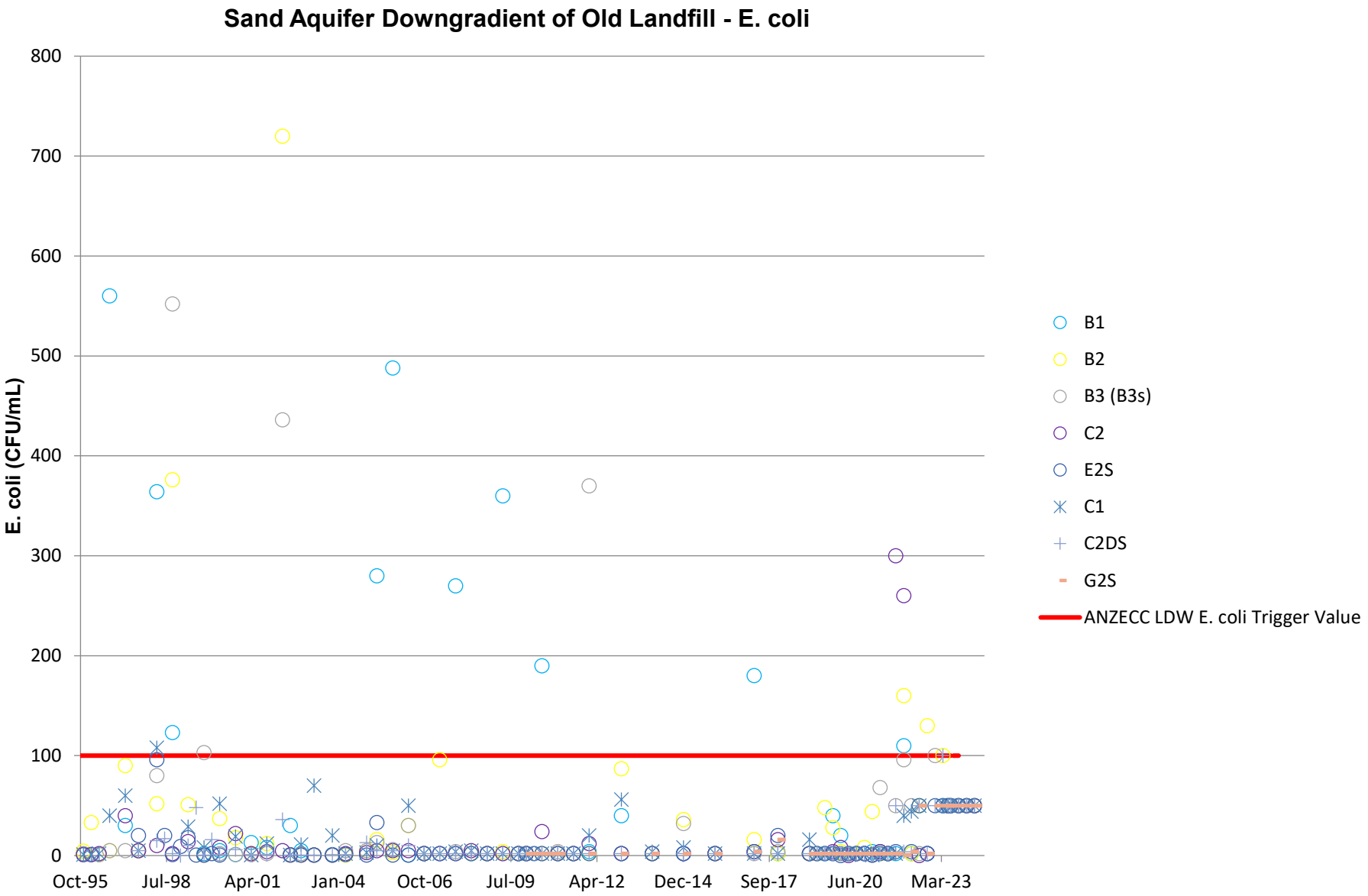

Sand Aquifer Downgradient of Old Landfill - Boron Concentrations
Boron (mg/L)
5
4.5
4
3.5
3
2.5
2
1.5
1
0.5
0
Oct-95
Jul-98
Apr-01
Jan-04
Oct-06
Jul-09
Apr-12
Dec-14
Sep-17
Jun-20
Mar-23
B1
B2
B3 (B3s)
C2
E2S
C1
C2DS
G2S

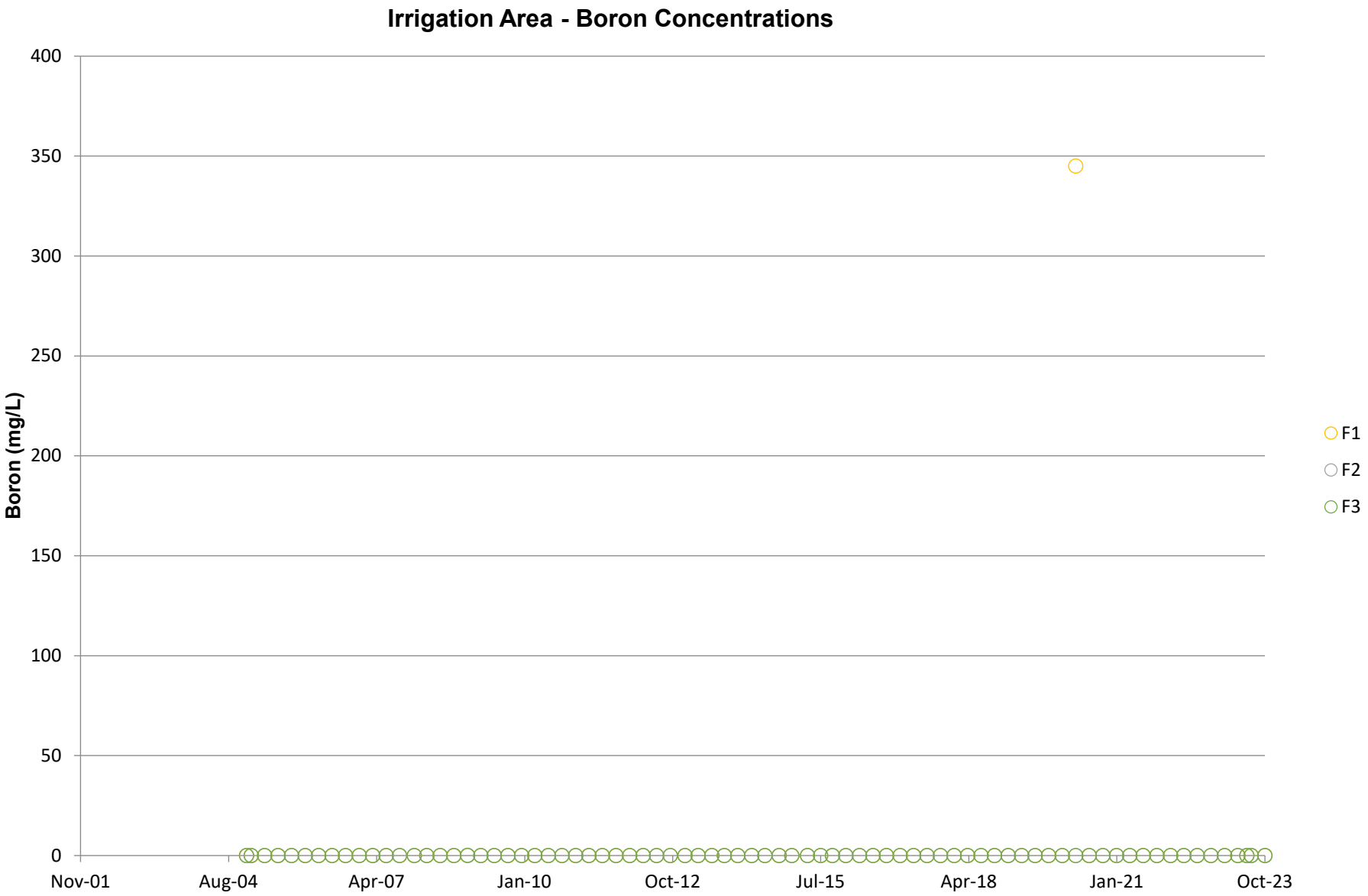

Sand Aquifer Downgradient of Old Landfill - Chloride Concentrations
Chloride (mg/L)
2500
2000
1500
1000
500
0
Oct-95
Jul-98
Apr-01
Jan-04
Oct-06
Jul-09
Apr-12
Dec-14
Sep-17
Jun-20
Mar-23
B1
B2
B3 (B3s)
C2
E2S
C1
C2DS
G2S

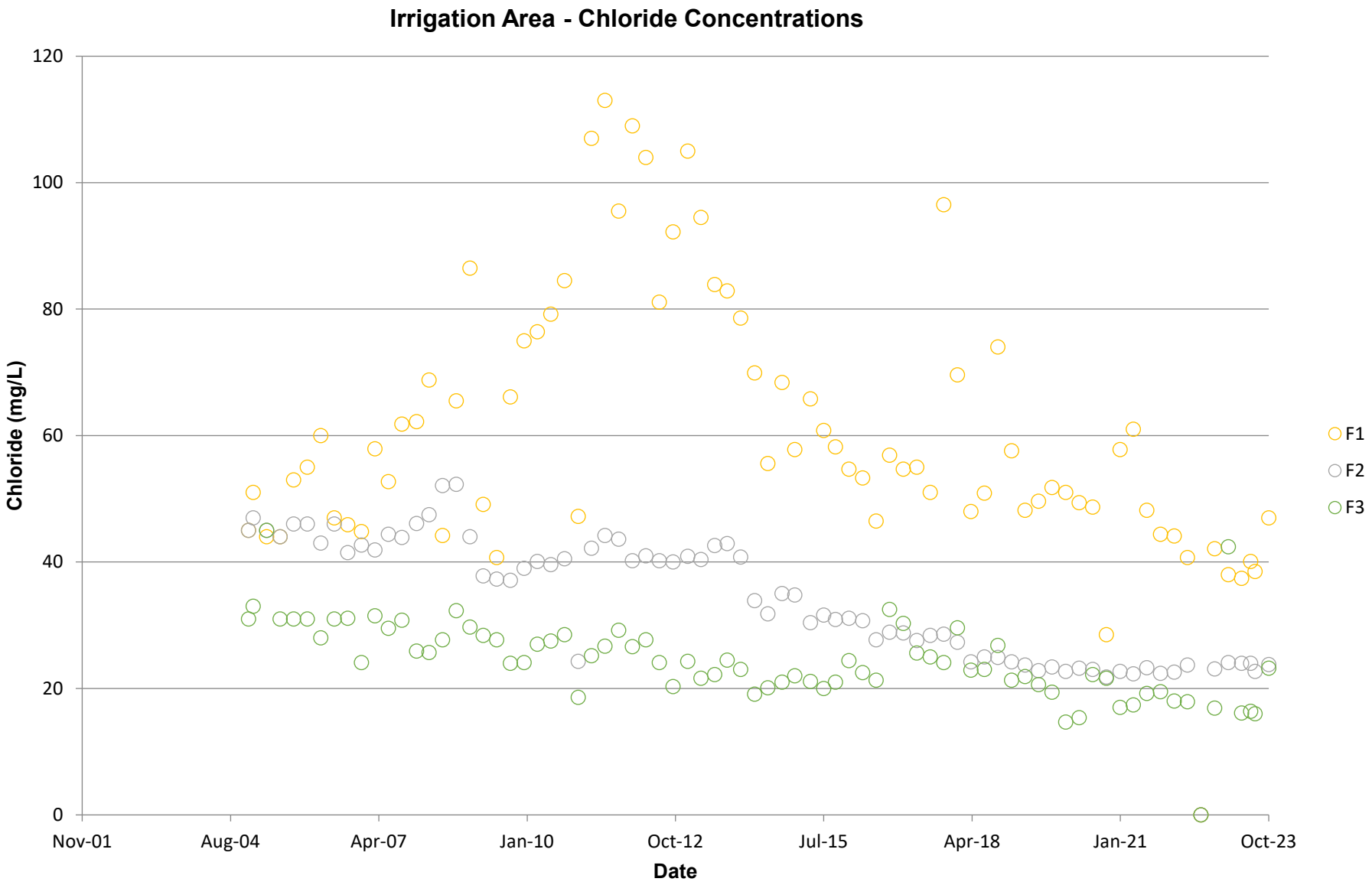

Sand Aquifer Downgradient of Old Landfill - Ammonia-N Concentrations
Ammonia-N (mg/L)
500
450
400
350
300
250
200
150
100
50
0
Oct-95
Jul-98
Apr-01
Jan-04
Oct-06
Jul-09
Apr-12
Dec-14
Sep-17
Jun-20
Mar-23
B1
B2
B3 (B3s)
C2
E2S
C1
C2DS
G2S

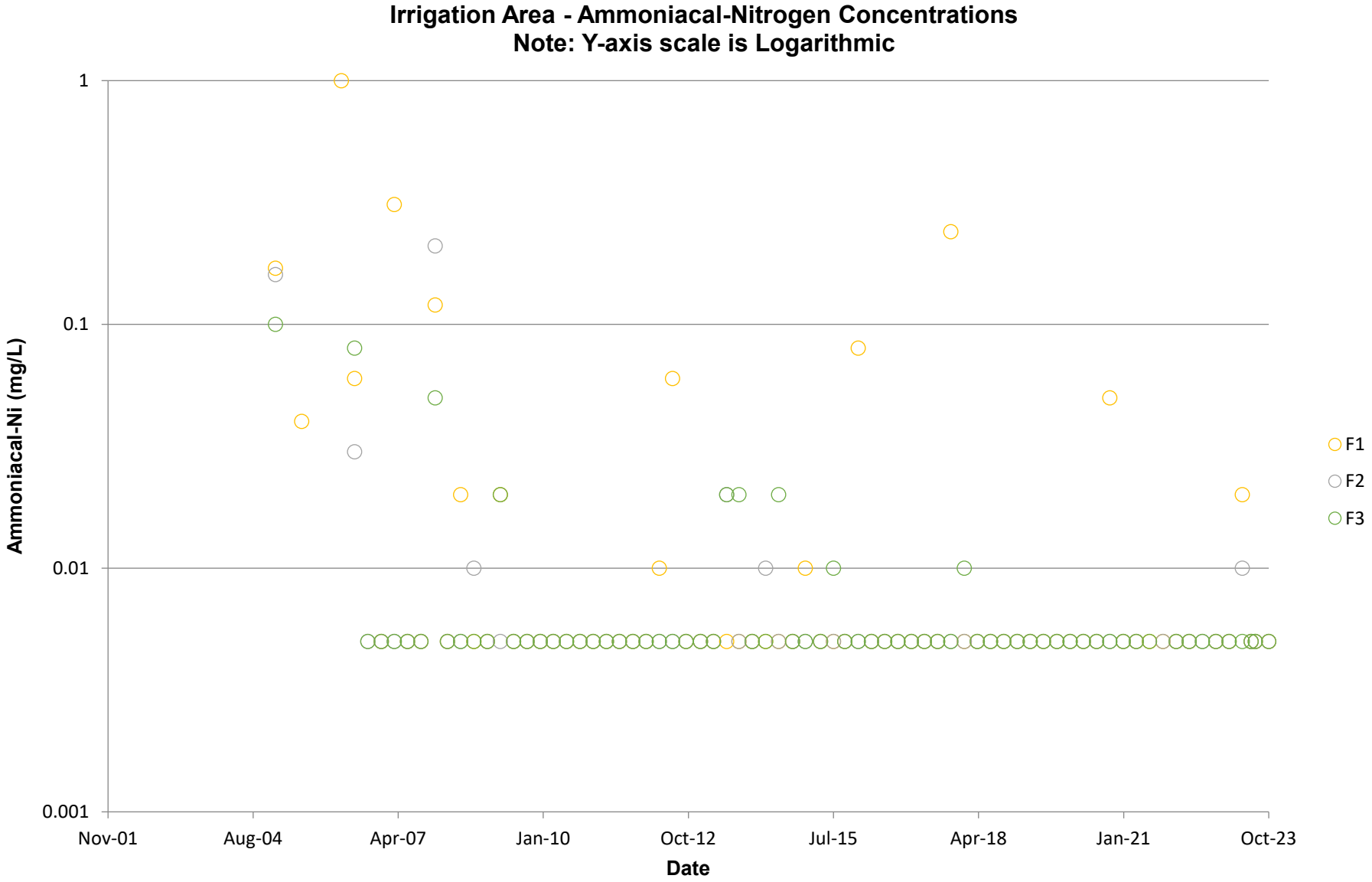

Sand Aquifer Downgradient of Old Landfill - Conductivity Levels
Conductivity (mS/m)
800
700
600
500
400
300
200
100
0
Oct-95
Jul-98
Apr-01
Jan-04
Oct-06
Jul-09
Apr-12
Dec-14
Sep-17
Jun-20
Mar-23
B1
B2
B3 (B3s)
C2
E2S
C1
C2DS
G2S

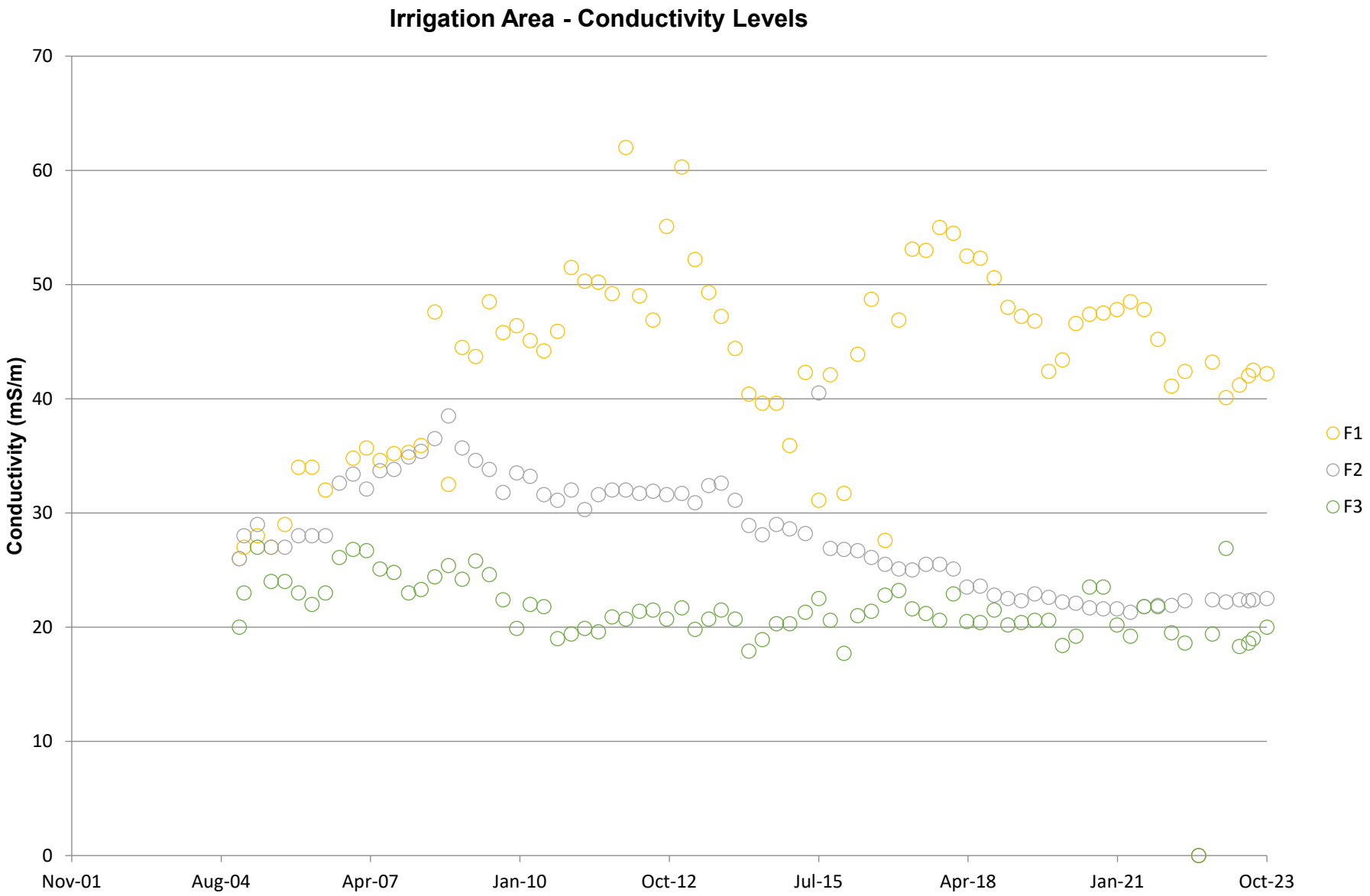

Sand Aquifer Downgradient of Old Landfill - Sodium Concentrations
Sodium (mg/L)
900
800
700
600
500
400
300
200
100
0
Oct-95
Jul-98
Apr-01
Jan-04
Oct-06
Jul-09
Apr-12
Dec-14
Sep-17
Jun-20
Mar-23
B1
B2
B3 (B3s)
C2
E2S
C1
C2DS
G2S

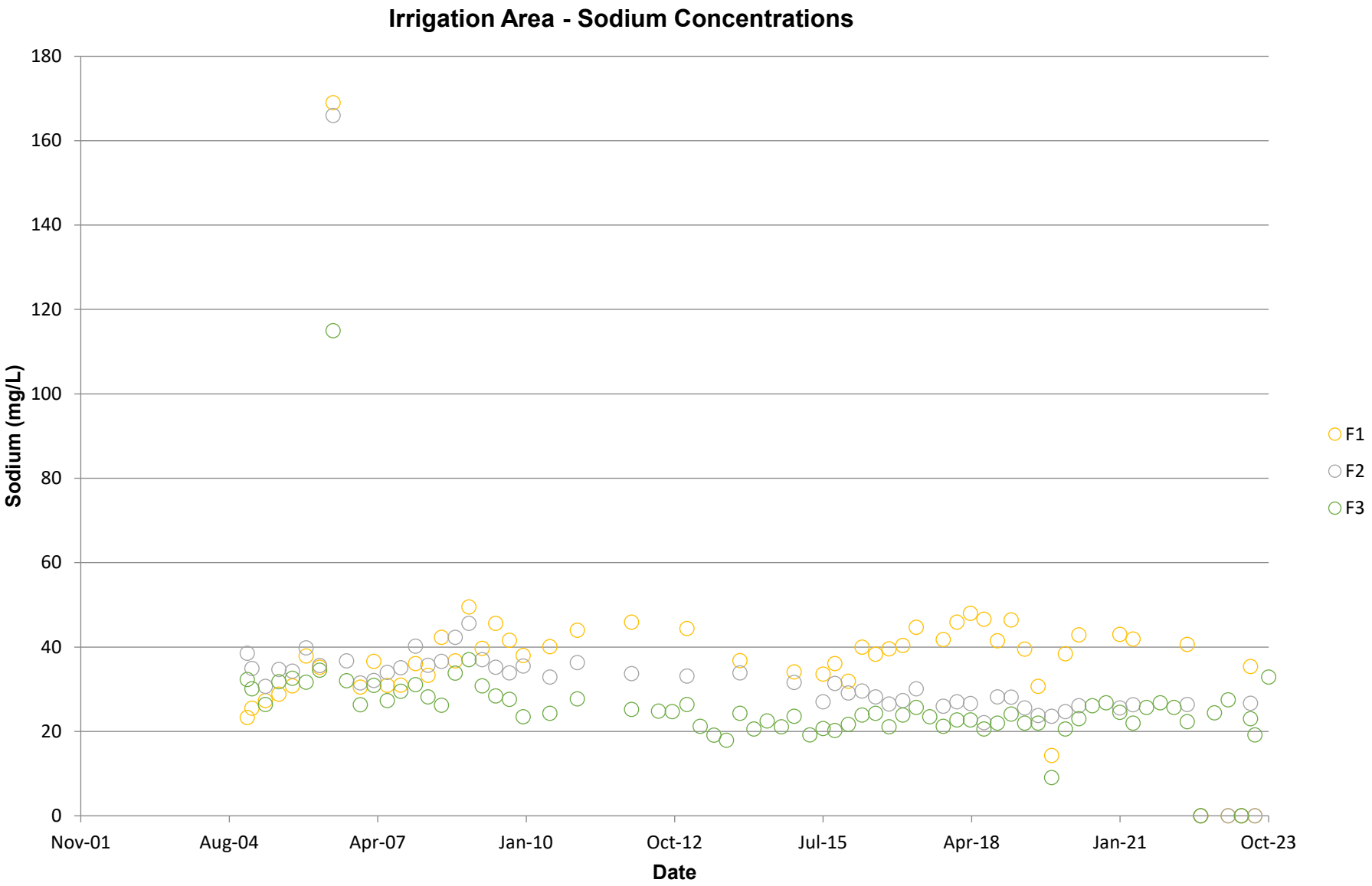

Sand Aquifer Downgradient of Old Landfill - E. coli
E. coli (CFU/mL)
800
700
600
500
400
300
200
100
0
Oct-95
Jul-98
Apr-01
Jan-04
Oct-06
Jul-09
Apr-12
Dec-14
Sep-17
Jun-20
Mar-23
B1
B2
B3 (B3s)
C2
E2S
C1
C2DS
G2S
ANZECC LDW E. coli Trigger Value

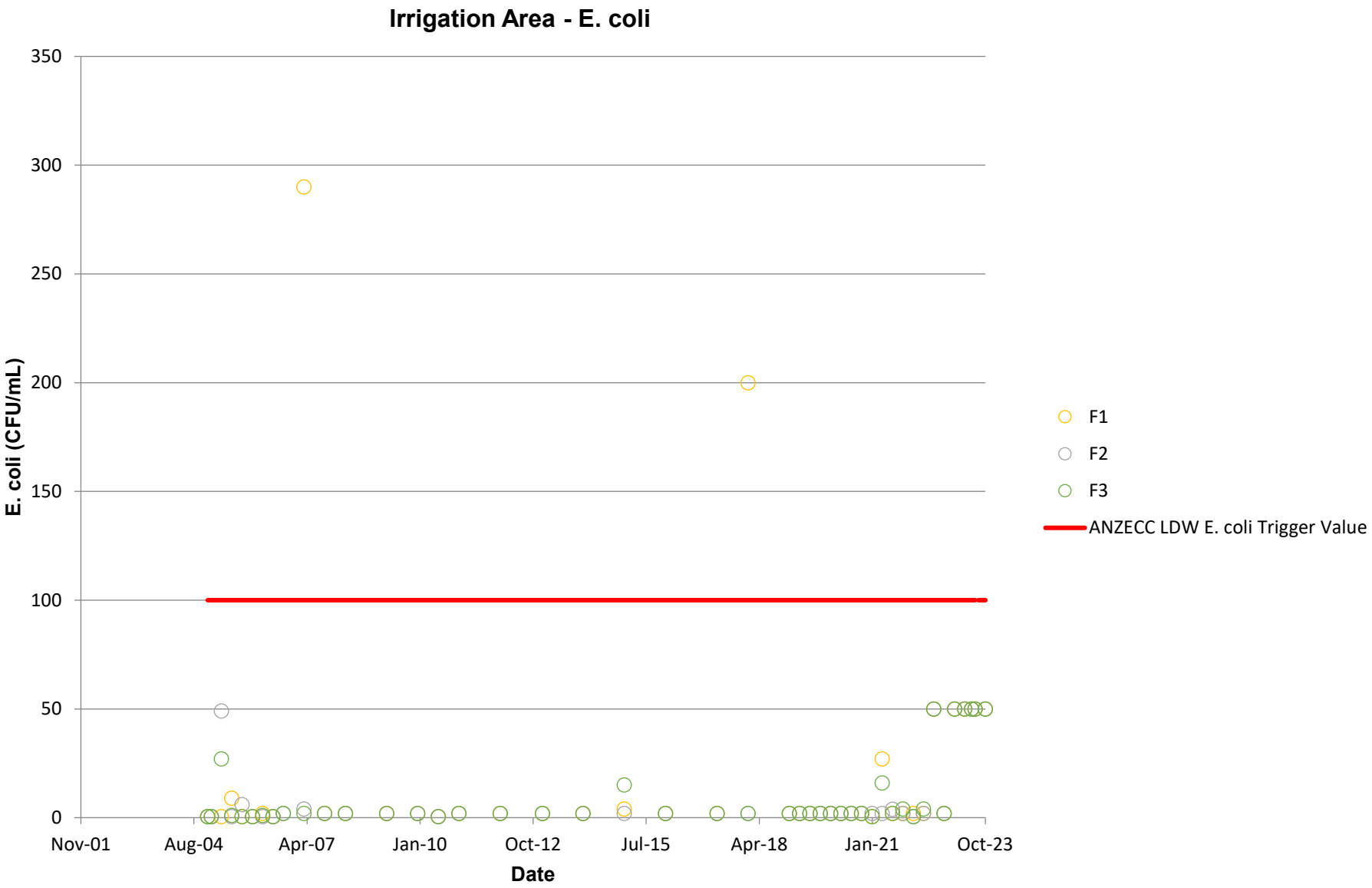

Irrigation Area - Boron Concentrations
Boron (mg/L)
400
350
300
250
200
150
100
50
0
Nov-01
Aug-04
Apr-07
Jan-10
Oct-12
Jul-15
Apr-18
Jan-21
Oct-23
F1
F2
F3

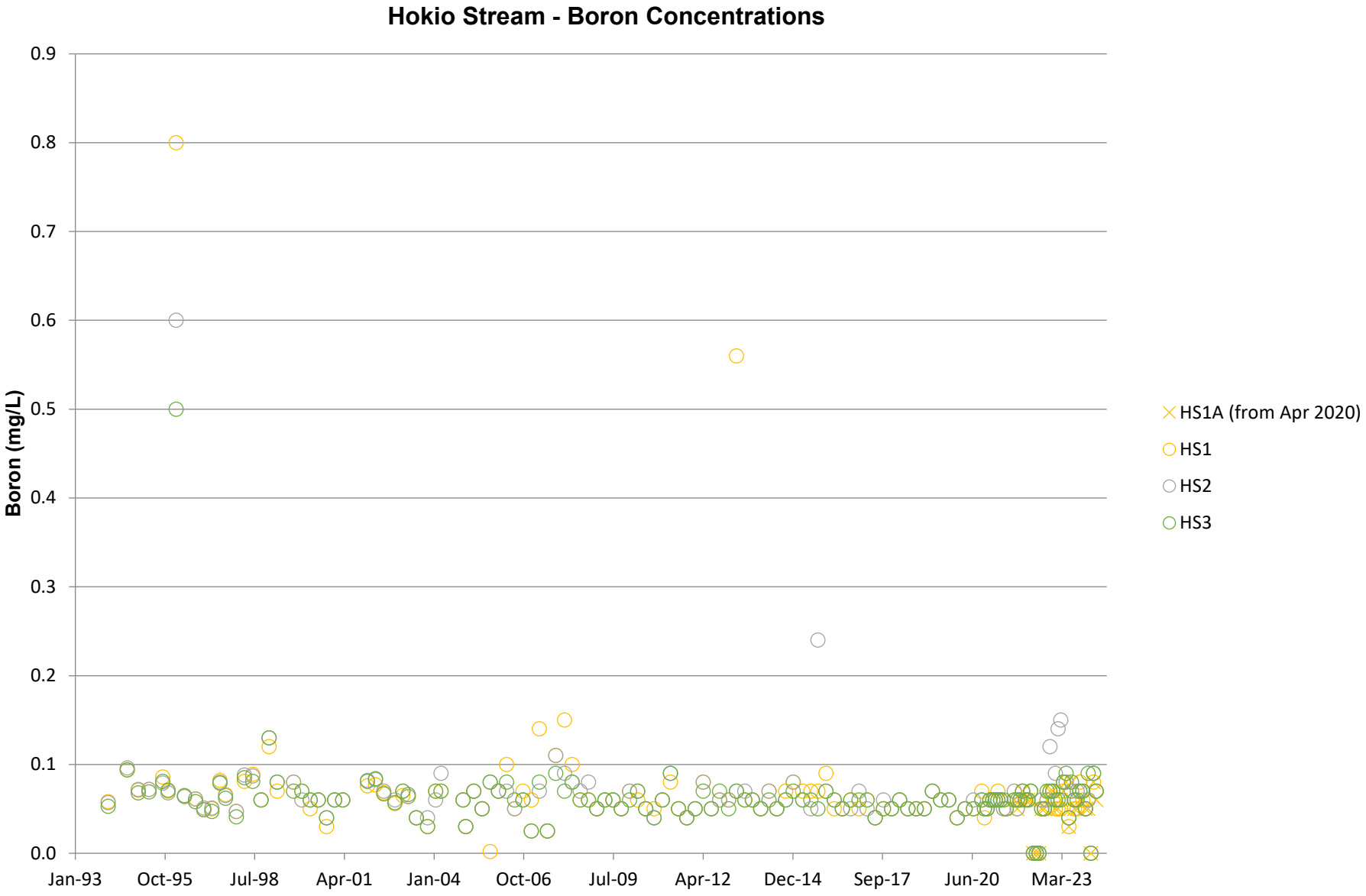

Irrigation Area - Chloride Concentrations
Chloride (mg/L)
120
100
80
60
40
20
0
Nov-01
Aug-04
Apr-07
Jan-10
Oct-12
Jul-15
Apr-18
Jan-21
Oct-23
Date
F1
F2
F3

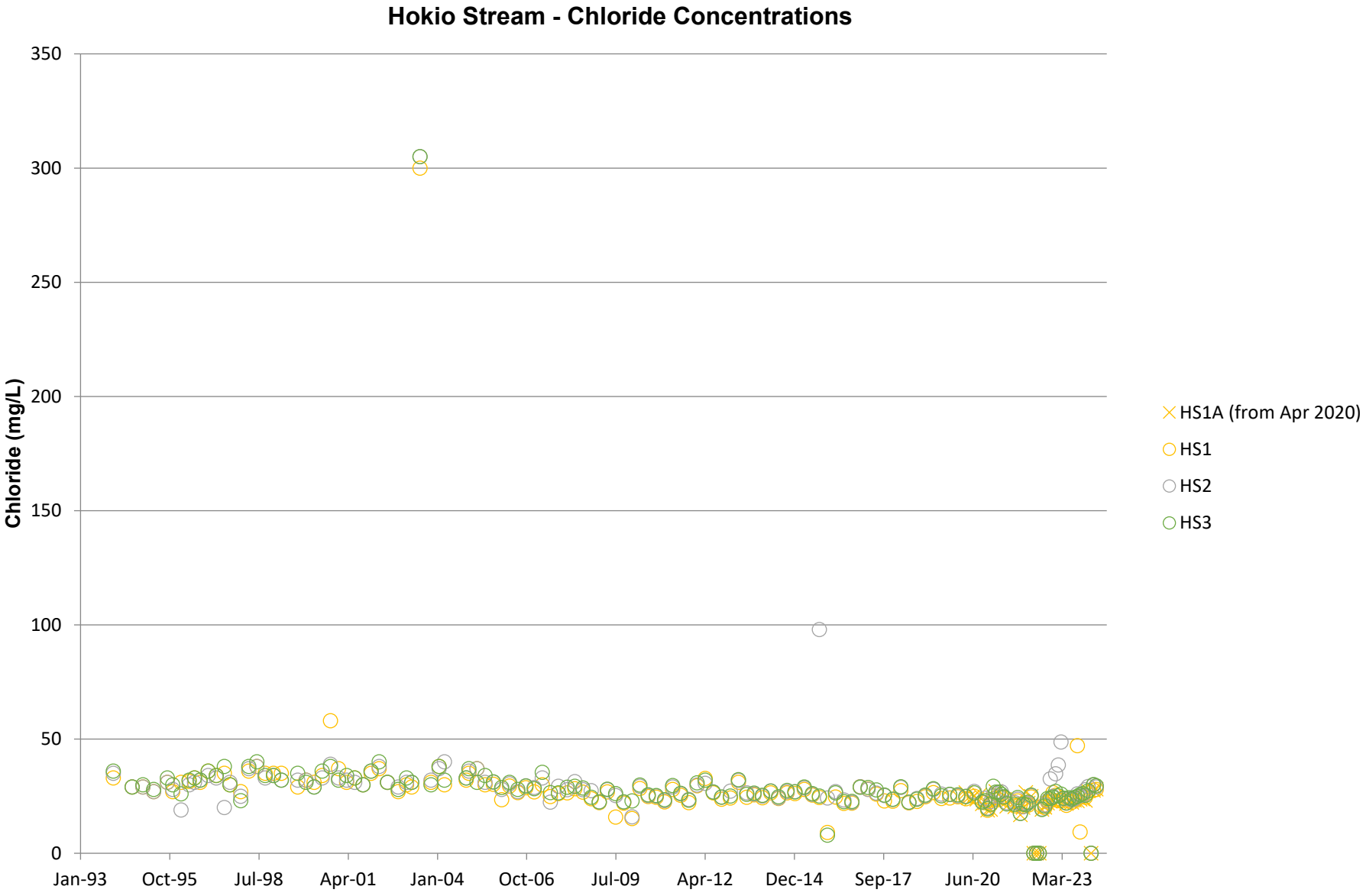

Irrigation Area - Ammoniacal-Nitrogen Concentrations
Note: Y-axis scale is Logarithmic
Ammoniacal-Ni (mg/L)
1
0.1
0.01
0.001
Nov-01
Aug-04
Apr-07
Jan-10
Oct-12
Jul-15
Apr-18
Jan-21
Oct-23
Date
F1
F2
F3

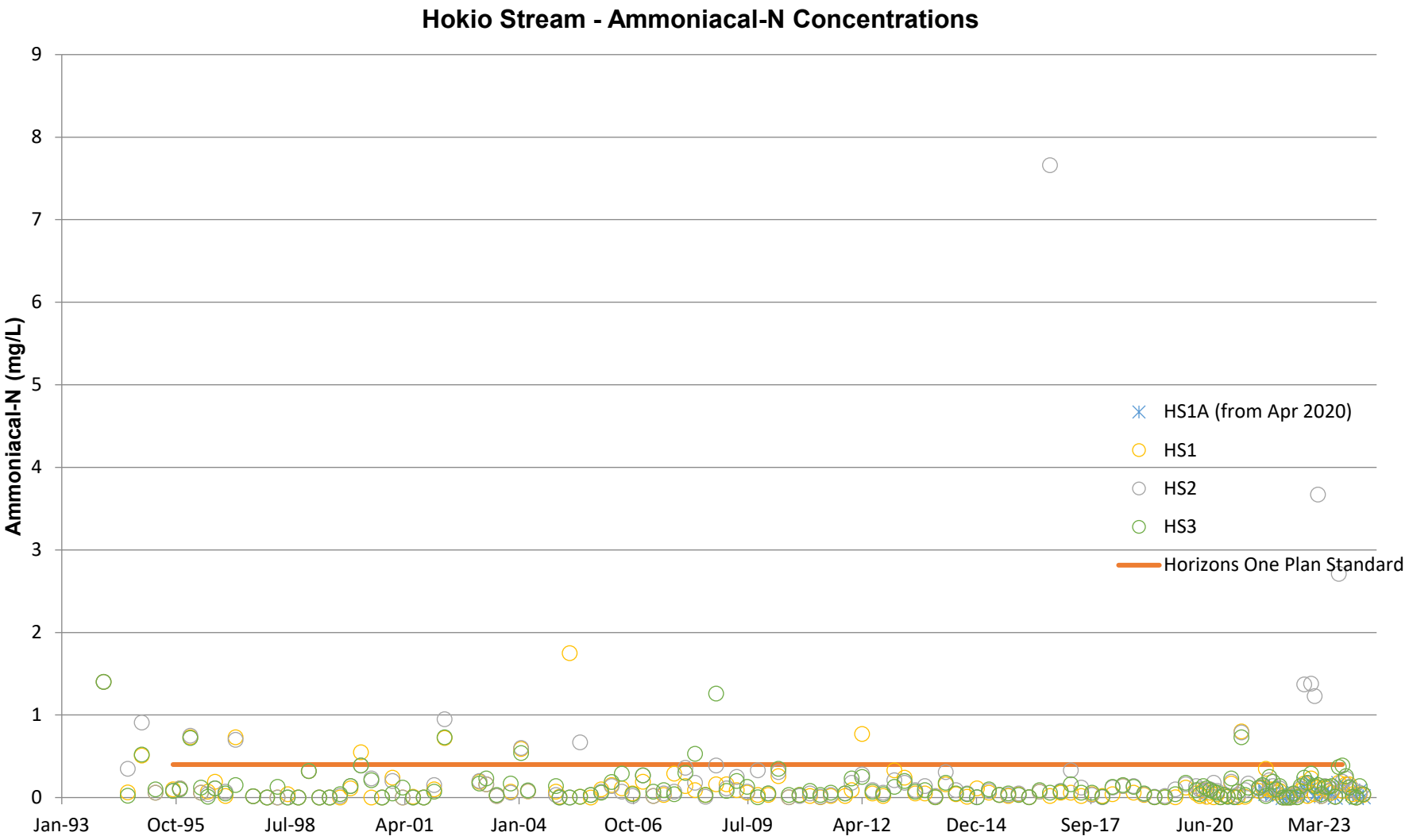

Irrigation Area - Conductivity Levels
Conductivity (mS/m)
70
60
50
40
30
20
10
0
Nov-01
Aug-04
Apr-07
Jan-10
Oct-12
Jul-15
Apr-18
Jan-21
Oct-23
F1
F2
F3

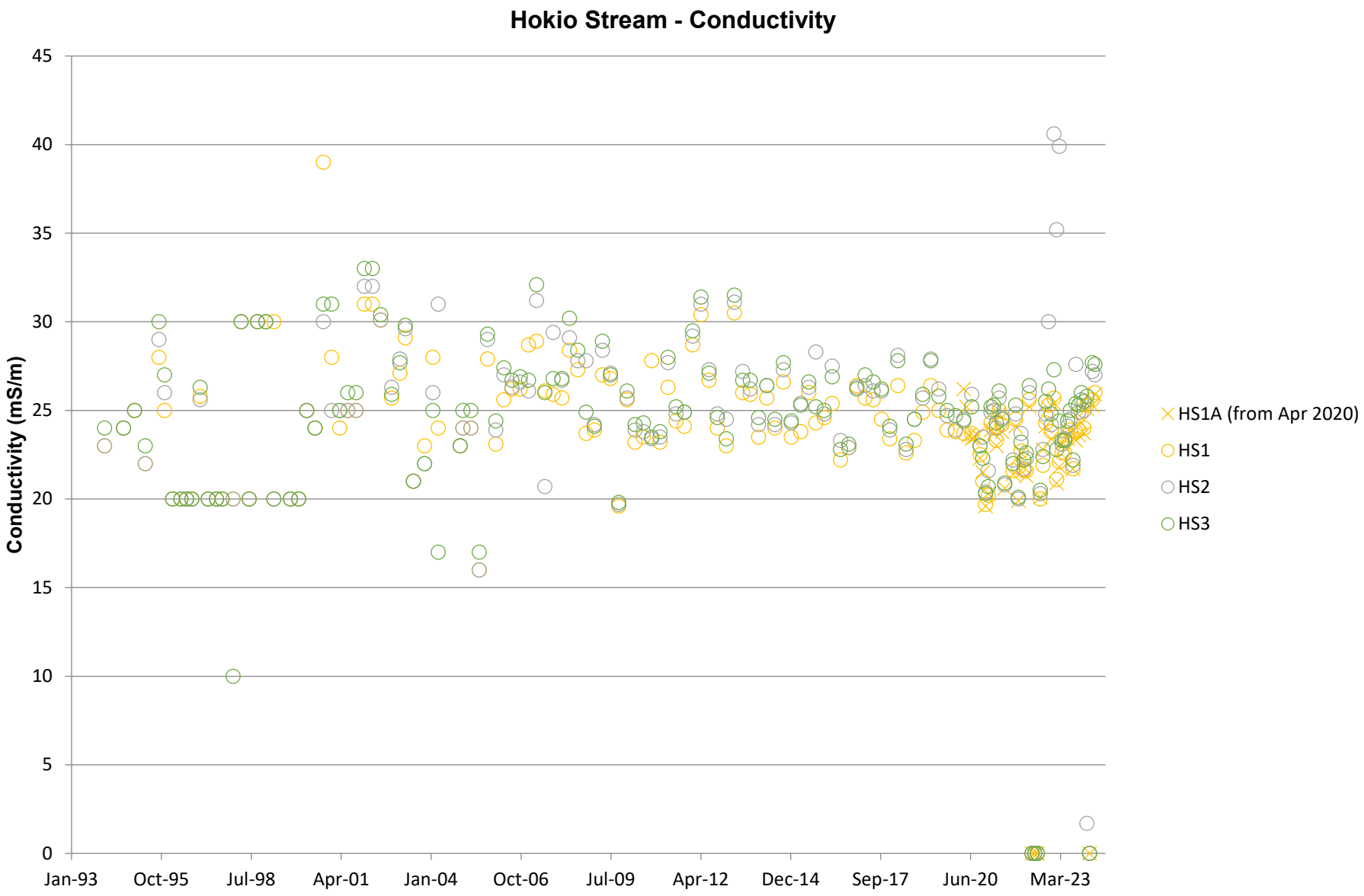

Irrigation Area - Sodium Concentrations
Sodium (mg/L)
180
160
140
120
100
80
60
40
20
0
Nov-01
Aug-04
Apr-07
Jan-10
Oct-12
Jul-15
Apr-18
Jan-21
Oct-23
Date
F1
F2
F3

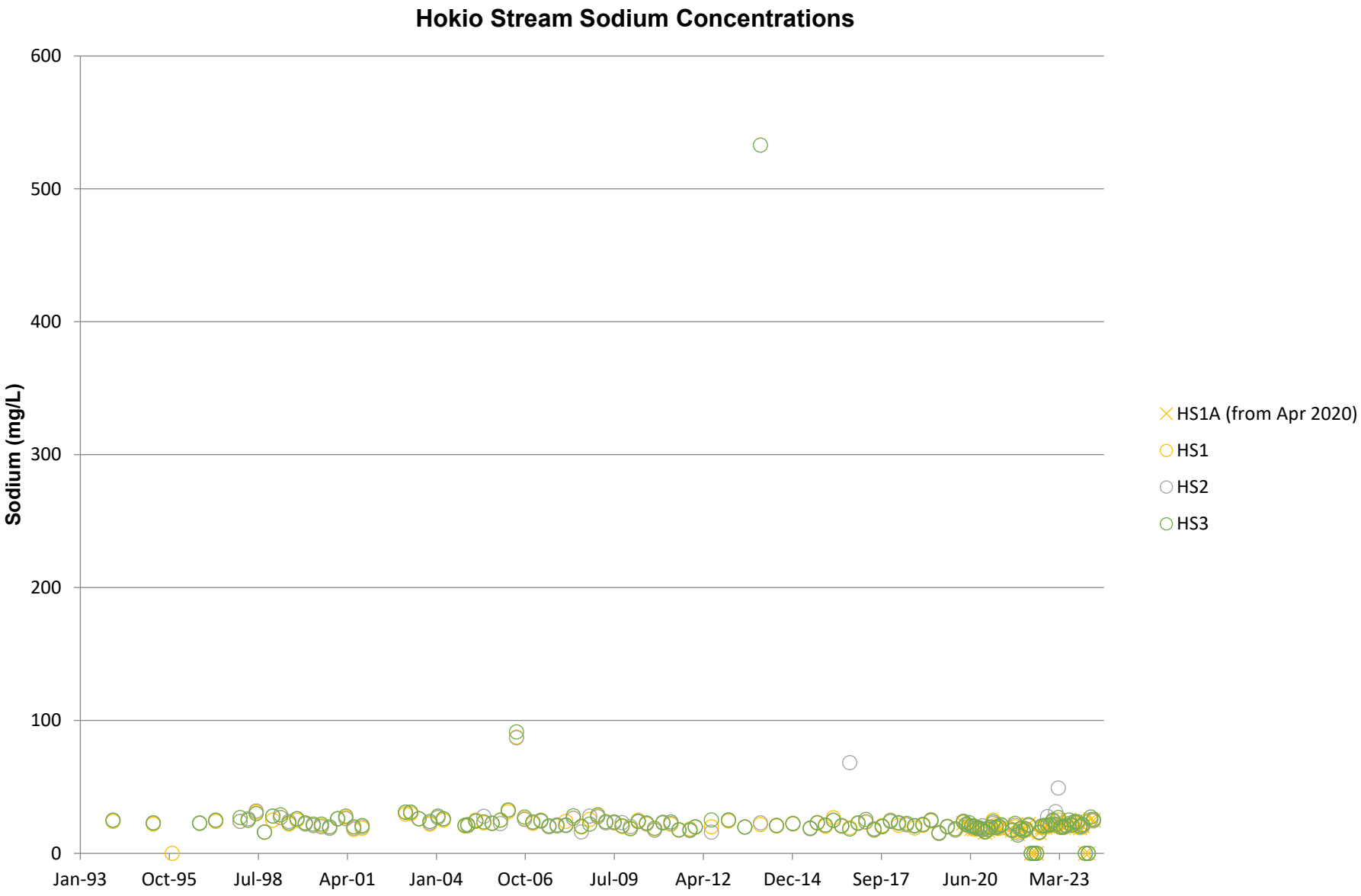

Irrigation Area - E. coli
E. coli (CFU/mL)
350
300
250
200
150
100
50
0
Nov-01
Aug-04
Apr-07
Jan-10
Oct-12
Jul-15
Apr-18
Jan-21
Oct-23
Date
F1
F2
F3
ANZECC LDW E. coli Trigger Value

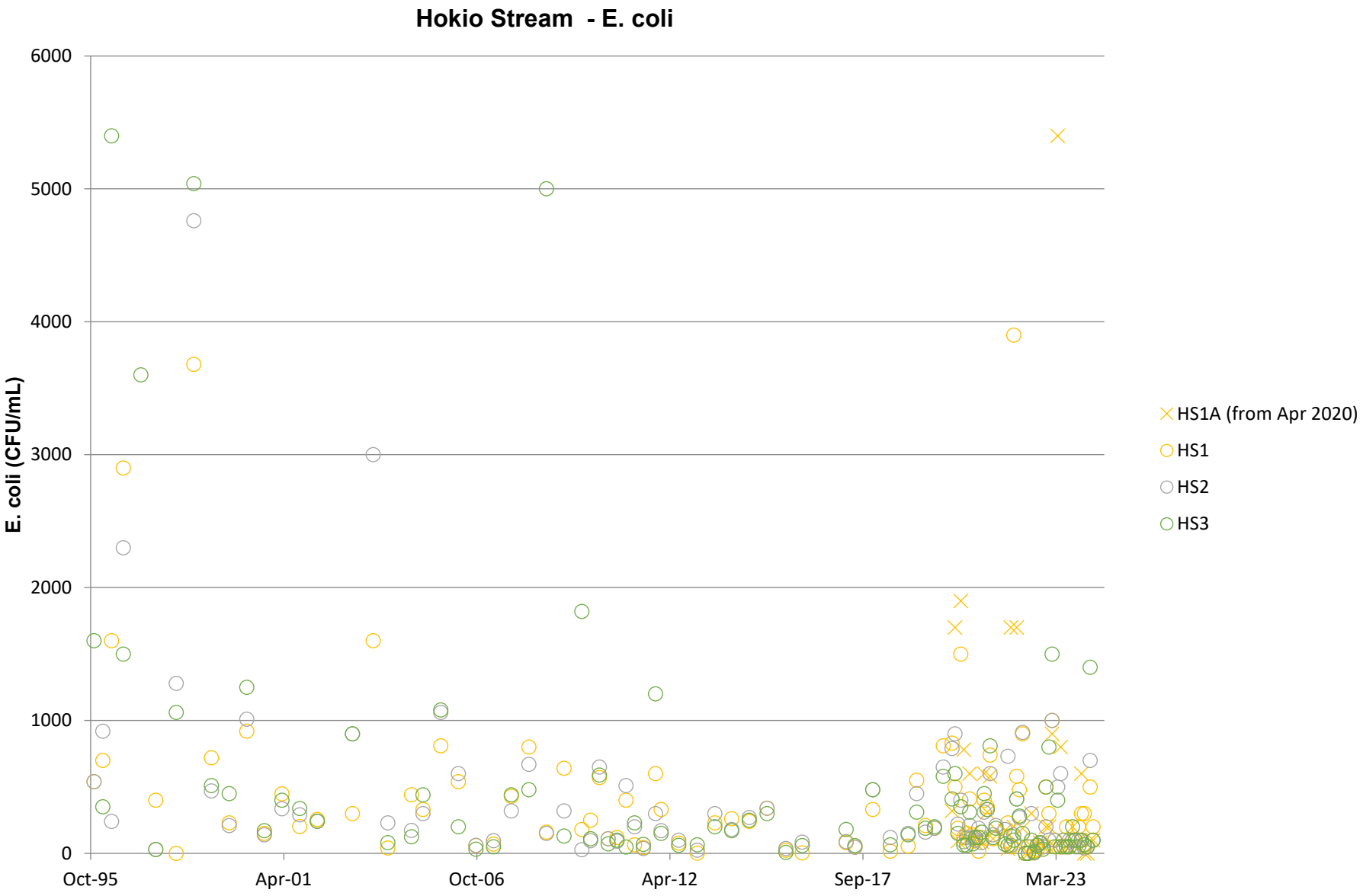

Hokio Stream - Boron Concentrations
Boron (mg/L)
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
Jan-93
Oct-95
Jul-98
Apr-01
Jan-04
Oct-06
Jul-09
Apr-12
Dec-14
Sep-17
Jun-20
Mar-23
HS1A (from Apr 2020)
HS1
HS2
HS3


Hokio Stream - Chloride Concentrations
Chloride (mg/L)
350
300
250
200
150
100
50
0
Jan-93
Oct-95
Jul-98
Apr-01
Jan-04
Oct-06
Jul-09
Apr-12
Dec-14
Sep-17
Jun-20
Mar-23
HS1A (from Apr 2020)
HS1
HS2
HS3


Hokio Stream - Ammoniacal-N Concentrations
Ammoniacal-N (mg/L)
9
8
7
6
5
4
3
2
1
0
Jan-93
Oct-95
Jul-98
Apr-01
Jan-04
Oct-06
Jul-09
Apr-12
Dec-14
Sep-17
Jun-20
Mar-23
HS1A (from Apr 2020)
HS1
HS2
HS3
Horizons One Plan Standard


Hokio Stream - Conductivity
Conductivity (mS/m)
45
40
35
30
25
20
15
10
5
0
Jan-93
Oct-95
Jul-98
Apr-01
Jan-04
Oct-06
Jul-09
Apr-12
Dec-14
Sep-17
Jun-20
Mar-23
HS1A (from Apr 2020)
HS1
HS2
HS3


Hokio Stream Sodium Concentrations
Sodium (mg/L)
600
500
400
300
200
100
0
Jan-93
Oct-95
Jul-98
Apr-01
Jan-04
Oct-06
Jul-09
Apr-12
Dec-14
Sep-17
Jun-20
Mar-23
HS1A (from Apr 2020)
HS1
HS2
HS3


Hokio Stream - E. coli
E. coli (CFU/mL)
6000
5000
4000
3000
2000
1000
0
Oct-95
Apr-01
Oct-06
Apr-12
Sep-17
Mar-23
HS1A (from Apr 2020)
HS1
HS2
HS3

Appendix E Landfill Gas Monitoring Results at GW Bores for April 2024

Entry Date	Borehole	Methane (CH_4) %	Carbon Dioxide (CO_2) %	Hydrogen Sulphide (H_2S) ppm	Oxygen (O_2) %
2024-04-05	Levin Landfill: Levin B3s	0	0.04	0	21.4
2024-04-05	Levin Landfill: Levin G1s	0.02	0.05	0	20.8
2024-04-05	Levin Landfill: Levin G1d	0	0.05	0	20.9
2024-04-05	Levin Landfill: Levin F1	0	0.04	0	20.9
2024-04-05	Levin Landfill: Levin D2	0	0.06	0	20.6
2024-04-05	Levin Landfill: Levin D1	0	0.05	0	20.9
2024-04-05	Levin Landfill: Levin D6	0.06	0.02	0	20.5
2024-04-05	Levin Landfill: Levin F2	0	0.04	0	20.8
2024-04-05	Levin Landfill: Levin F3	0	0.04	0	20.9
2024-04-05	Levin Landfill: Levin D3rs	0	0.03	0	20.4
2024-04-05	Levin Landfill: Levin D3rd	0	0.03	0	21
2024-04-05	Levin Landfill: Levin E1s	0	0.04	0	21.1
2024-04-05	Levin Landfill: Levin D4	0	0.04	0	21.5
2024-04-05	Levin Landfill: Levin D5	0.04	0.04	0	21.5
2024-04-05	Levin Landfill: Levin E1d	0	0.04	0	21.3
2024-04-05	Levin Landfill: Levin E2s	0.02	0.03	0	20.9
2024-04-05	Levin Landfill: Levin E2d	0.03	0.04	0	21
2024-04-05	Levin Landfill: Levin Xd1	0	0.05	0	21.4
2024-04-05	Levin Landfill: Levin C2	0	0.2	0	21
2024-04-05	Levin Landfill: Levin C2dd	0	0.03	0	21.1
2024-04-05	Levin Landfill: Levin C2ds	0	0.03	0	21.1
2024-04-05	Levin Landfill: BH103	0	0.04	0	20.9
2024-04-05	Levin Landfill: Levin B2	0	0.11	0	20.1
2024-04-05	Levin Landfill: Levin B1	0	0.08	0	20.2
2024-04-05	Levin Landfill: Levin G2s	0	0.07	0	20.2
2024-04-05	Levin Landfill: Levin C1	0.04	0.06	0	19
2024-04-05	Levin Landfill: Levin Xs2	0	0.05	0	20.7
2024-04-05	Levin Landfill: Levin Xs1	0.01	0.06	1	21.2

CREATING COMMUNITIES

Communities are fundamental. Whether around the corner or across the globe, they provide a foundation, a sense of belonging. That's why at Stantec, we always **design with community in mind**.

We care about the communities we serve—because they're our communities too. We're designers, engineers, scientists, and project managers, innovating together at the intersection of community, creativity, and client relationships. Balancing these priorities results in projects that advance the quality of life in communities across the globe.

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