Levin Landfill January 2025 Quarterly Groundwater, Surface Water and Leachate Monitoring Report

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Revision Schedule

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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 third quarter (i.e., November 2024 to January 2025) 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 third 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 January 2025. Additionally, five surface water sites plus the leachate pond manhole were each sampled during November 2024, December 2024, and January 2025. All samples were analysed for the parameters set out in ATH-2002003983.02, and as listed in the results tables presented in this report.

The surface water samples were all collected on the same day in each month, and groundwater samples were collected within a 3-day period in January, which also included the dates when the surface water sampling was done. Given the number of samples that needed to be taken, this is a significant effort.

The surface water samples were received by the laboratory outside the normally accepted 24-hour timeframe between sampling and reception in November and December, and the sampling time stated for the January sampling round (00:00) gives reduced confidence about delivery timeframes for those samples. HDC has provided the field sampling sheets from the Local Waters sampling team for January, and comparing them to the laboratory sheets showed there was more than 24 hours between sampling and receipt at the laboratory.

Groundwater samples ostensibly took between 22 and 24 hours from the time the samples were taken to the time they were accepted at the laboratory, but all the laboratory sheets recorded very similar sampling times, which does not seem credible. However, HDC has confirmed that all the groundwater samples were received at the laboratory within the 24-hour period.

An investigation of this issue has shown that unless the sampler enters the actual sampling date and time in the data system, the system will, by default, assign the time at which the data entry was made. Council will check what can be done to enable staff to record actual sample times in the Infrastructure Data software and so resolve this issue.



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It is noted, however, that a delay of more than 24 hours only affects water samples for microbiological analysis (e.g., *E. coli*).

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 Australian and New Zealand Environment and Conservation Council 2000 Livestock Drinking Water (ANZECC LDW) trigger values, respectively. Compliance limits for surface water are based on the ANZECC 2000¹ 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 November 2024 to January 2025 monitoring results have been assessed against these limits, where they are applicable.

Twenty-one exceedances of resource consent trigger values were recorded across ten monitoring locations, as follows:

- pH at bore D2 (pH of 5.9) was lower than the minimum pH value of 6.0 stated in the ANZECC LDW standards. The pH value at D2 has been lower on two occasions, but the median value is normally 6.5, and it is not considered to be a significant occurrence.
- The *E.coli* result at E2d was 3 CFU/100mL, which is greater than the DWSNZ MAV of NIL.
- Dissolved arsenic exceeded the DWSNZ MAV of 0.01 mg/L at bore D3rd (0.021 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 (0.599 mg/L), E2d (0.42 mg/L), Xd1 (0.509 mg/L) and D3rd (0.463 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.
- At TD1 the level of detection applied to scBOD₅ in November 2024 was such that, even at half the detection level (i.e., 3 mg/L), the concentration exceeded the ANZECC AE (95%ile) DGV of 2 mg/L.
- The concentrations of ammoniacal-nitrogen at TD1 in all three months (10.3mg/L, 7.4 mg/L and 21.7 mg/L, respectively) exceeded the ANZECC AE (95%ile) DGV of 2.1 mg/L.
- The concentration of copper at TD1 in January 2025 (0.0022 mg/L) exceeded the ANZECC AE (95%ile) DGV of 0.0014 mg/L.
- The level of detection applied to scBOD₅ in November 2024 at HS1A was such that, even at half the detection level (i.e., 3 mg/L), the concentration exceeded the ANZECC AE (95%ile) DGV of 2 mg/L.
- Nitrate-N exceeded both the ANZECC AE (95%ile) DGV and consent trigger value of 0.16 mg/L at HS1, HS2 and HS3 in November 2024, all with a value of 0.27 mg/L.
- The concentration of ammoniacal-nitrogen at HS1A in December 2024 (5.24 mg/L) exceeded the ANZECC AE (95%ile) DGV and consent trigger value of 2.1 mg/L.
- The concentrations of dissolved copper at all Hōkio Stream sites in January 2025 (ranging between 0.0025 and 0.0034 mg/L) exceeded the ANZECC AE (95%ile) DGV and consent trigger value of 0.0014 mg/L.

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.



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Of the twenty-one exceedances, seventeen are considered to be unrelated to the landfill activities as follows:

- One exceedance in the shallow aquifer down-gradient of the new landfill was for a low pH level. There is no evidence of leachate contamination from other parameters and so this is not considered to be related to landfill activities.
- Five exceedances in the deep aquifer are not unusual and are related to the existing water quality.
- One exceedance in the deep aquifer is on account of an incorrect level of detection being applied for *E.coli* testing but is considered to be a non-compliance that is unrelated to landfill activities.
- Two exceedances, one in the Northern Farm Drain and one at HS1A, are on account of incorrect levels of detection being applied for scBOD₅ testing and so are considered to be non-compliances that are not related to landfill activities.
- Three exceedances in the Hōkio Stream are for elevated nitrate-N levels, which are similarly elevated upstream. There is doubt that it is from landfill activities because the bores close to the "source" of the shallow groundwater contamination do not have elevated nitrate-N levels.
- Four exceedances in the Hōkio Stream are for elevated concentrations of dissolved copper. The highest levels occur upstream of the landfill property, so the upstream activities are likely to be the source, rather than landfill activities.
- One exceedance in the Hōkio Stream is for elevated ammoniacal-nitrogen which occurred upstream of the landfill property, so the upstream activities are likely to be the source.

Three exceedances for the Northern Farm Drain were on account of elevated ammoniacal-nitrogen concentrations, and one in January was due to an elevated copper concentration. These results could well be associated with leachate from the old landfill contaminating the shallow groundwater, and then daylighting into the Northern Farm Drain. Modelling of the plume has shown that there could also be unacceptable future impacts on the Hōkio Stream. This matter is being further assessed through the Leachate Best Practicable Option (BPO) project to which Council has committed. Progress with this project has been communicated to Horizons Regional Council (HRC), the Project Management Group (PMG) and the Neighbourhood Liaison Group (NLG).

The November 2024 to January 2025 'background' monitoring results were also considered in the context of relevant guidelines, both within the groundwater aquifers (shallow and deep bores) and the surface water receiving environment. Elevated iron concentrations were observed in background bore G1s, indicating that groundwater could be being impacted by up-gradient activities unrelated to the landfill operations. Because of this, bores D5, F2 and F3 have been used to represent background water quality, because of their location upstream of the new and old landfills.

Whilst the shallow groundwater down-gradient of the old landfill meets the resource consent trigger values for all parameters, it is well documented that leachate from the old landfill is extending in a plume northward and is impacting the quality of the shallow aquifer. As noted above modelling of the plume has shown that there could be unacceptable future impacts on the Hōkio Stream and is being dealt with through the Leachate BPO project.

Methane was detected in nine bores in January 2025, with readings varying between 0.01% and 0.07%. The maximum concentration reported is well below the explosive limit of 5% and therefore represents 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, except at bore B2 which recorded 3.07%, which is somewhat high. Hydrogen sulphide was detected at 12 of the bores, all being at a concentration of 1 ppm, which is not of concern.



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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.

There were fourteen 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. Seven 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.

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

- Council will check what can be done to enable staff to record actual sample times in the Infrastructure Data software, and so resolve the issue of having sampling times recorded incorrectly on the laboratory sheets.
- HDC should discuss with HRC the need for a further two rounds of comprehensive testing of bores D3rs and D3rd, given that out of the 15 sampling events conducted since they were installed in October 2021, comprehensive testing has been done on 13 occasions.
- The ANZECC AE DGV (95% ile species protection) for scBOD₅ is 2 mg/L. So, the level of detection to be applied to the surface water samples must be set at a level where half the detection limit is less than the DGV of 2 mg/L. As for the above, this is a matter that needs to be discussed with the parties involved in requesting sampling and undertaking the laboratory testing.
- Consecutive monthly sampling has occurred at all Hōkio Stream sites since October 2021. HDC has had these results assessed, as required by the conditions of the consent, to determine their significance. HDC should discuss the results of this assessment with HRC to ascertain if a reduction in sampling frequency of the surface water monitoring locations can be made.
- Gas sampling of the bores has been recorded on days different from when the groundwater sampling was undertaken. In future, the gas sampling needs to be done when groundwater samples are taken, as required by the resource consent conditions.



Acronyms / Abbreviations

Acronym / Abbreviation	Full Name
ANZECC	Australian and New Zealand Environment and Conservation Council
ANZECC AE	ANZECC Guidelines for Fresh and Marine Water Quality - Aquatic Ecosystems
ANZECC LDW	ANZECC 2000 Livestock Drinking Water
BPO	Best Practicable Option
CFU	Colony-forming unit
COD	Chemical Oxygen Demand
DGV	Default guideline value
DWSNZ	Drinking Water Standards for New Zealand
DWSNZ GV	Drinking Water Standards for New Zealand - Guideline Values for aesthetic determinants
DWSNZ MAV	Drinking Water Standards for New Zealand – Maximum Acceptable Values
HDC	Horowhenua District Council
HRC	Horizons Regional Council
mbgl	Metres below ground level
NLG	Neighbourhood Liaison Group
PMG	Project Management Group
scBOD ₅	Soluble carbonaceous Biochemical Oxygen Demand (5-day)
WWTP	Wastewater Treatment Plant



Levin Landfill January 2025 Quarterly Groundwater, Surface Water & Leachate Monitoring Report 1 Introduction

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 Hōkio 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 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, which are separated by an aquiclude. 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. There is also an upward flow gradient from the deep aquifer to the shallow aquifer. Horizons Regional Council (HRC) hydrology staff advises that *"the general confined groundwater flow direction is towards the west"* (i.e., from the ranges to the coast). 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 November 2024 - January 2025 quarterly monitoring period.

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



2 Groundwater and Surface Water Monitoring

2.1 Sample Analyses

Surface water samples were collected by HDC's "Local Waters" team on 21 November 2024, 12 December 2024, and 14 January 2025, 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 27 and 34 hours for the first two monitoring events. In January 2025 the sampling time in all cases was given as 00:00, which is clearly incorrect. HDC has provided the field sample sheets from the Local Waters sampling team, and they show the actual time that the January samples were taken, which was between 08:50 and 10:10 on 14 January. With the reception time at the laboratory being around 18:30 for the January samples on the following day, the timeframe exceeded 24 hours.

Groundwater samples were collected by the Local Waters team on 21, 22 and 23 January 2025, again with the samples being received by the Eurofins ELS Ltd laboratory in Lower Hutt, Wellington. All the laboratory sheets ostensibly recorded times of between 22 and 24 hours between the samples being taken and them being accepted at the laboratory. However, all the laboratory sheets recorded very similar sampling times being between 13:09 and 13:18 on the 21 and 22 January, and practically at the same time (13:25 and 13:26) for all bores sampled on the 23 January, which is also clearly incorrect.

An investigation of this issue has shown that unless the sampler enters the actual sampling date and time in the data system, the system will, by default, assign the time at which the data entry was made. Council will check what can be done to enable staff to record actual sample times in the Infrastructure Data software and so resolve this issue.

It is also noted that a delay of more than 24 hours only affects water samples for microbiological analysis (e.g., *E. coli*).

The monitoring schedule for July 2023 - April 2026 is summarised in Appendix C. From July 2019, *E. coli* counts analyses have been included within the indicator and comprehensive analytical suites, as agreed by HDC with 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 indicator list of parameters which is outlined in Table 2-1. Surface water samples from Hōkio Stream, the Northern Farm Drain and the manhole next to the leachate pond, were 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 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.



Туре	Indicator Parameters	Comprehensive Parameters
Physico-chemical characteristics	pH, Electrical Conductivity	pH, Electrical Conductivity, Alkalinity, Total Hardness, Suspended Solids
Oxygen demand	Chemical Oxygen Demand (COD), scBOD5 ^{**}	COD, scBOD ₅ **
Nutrients*	Nitrate nitrogen, Ammoniacal-nitrogen	Nitrate nitrogen, Ammoniacal-nitrogen, Dissolved Reactive Phosphorus, Sulphate
Metals*	Aluminium, Manganese, Nickel, Lead, Mercury**	Aluminium, Arsenic, Cadmium, Chromium, Copper, Iron***, Magnesium, Manganese, Nickel, Lead, Zinc, Mercury**
Other elements	Boron, Chloride	Boron, Calcium, Chloride, Potassium, Sodium***
Biological+	E. coli	E. coli
Organics	Not required	Total organic carbon, total phenols, volatile acids

Table 2-1: Test Parameters

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

** scBOD₅ 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.

+ E.coli added from December 2019 onwards, with first sampling in April 2020 (see Appendix C).

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 up-gradient from the landfill site is not subject to any consent conditions. However, for comparison purposes, both the Australian and New Zealand Environment and Conservation Council 2000 Livestock Drinking Water (ANZECC LDW) trigger values and the Drinking Water Standards for New Zealand (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 January 2025 (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 B and the historical graphs are presented in Appendix D.

The results for the January 2025 monitoring round are presented in Table 2-2.

For bore G1s the following result was outside the range of relevant guidelines:

• Dissolved iron (1.94 mg/L) exceeded the DWSNZ limit of 0.2 mg/L, in line with historical reporting.

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. 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 was reviewed as part of the Annual Report, with the recommendation that bores F2, F3 and D5 be used as the primary background reference bores (i.e., control bores) for shallow groundwater.

Determinant	Units	DWSNZ MAV	ANZECC LDW	G1s	G1d	D5	F2	F3
Sampling date				21/01/25	21/01/25	21/01/25	21/01/25	21/01/25
Water Level	mbgl	-	-	14.27	14.7	10.2	2.55	5.14
рН	pH units	7 to 8.5*	6 to 9	7.0	7.4	7.2	7.2	7.1
Conductivity	mS/m	-	-	25.6	25.1	29.1	22.5	16
COD	mg/L	-	-	43	7.5	7.5	7.5	7.5
scBOD ₅	mg/L	-	-	1.5	1.5	1.5	1.5	1.5
E. coli	CFU/100ml	NIL	100	0.5	0.5	0.5	0.5	0.5
Chloride	mg/L	250*	-	32.3	28.2	27.6	22.6	14.5
Nitrate-N	mg/L	11.3	90.3	0.005	0.005	1.28	0.65	2.22
Ammoniacal-N	mg/L	1.17	-	0.27	0.09	0.01	0.01	0.06
Sodium	mg/L	200*	-	33.9	n/r	n/r	n/r	19.2



Determinant	Units	DWSNZ MAV	ANZECC LDW	G1s	G1d	D5	F2	F3
Dissolved Aluminium	mg/L	0.1*	5	0.077	0.001	0.001	0.002	0.004
Dissolved Boron	mg/L	1.4	5	0.025	0.033	0.032	0.033	0.025
Dissolved Iron	mg/L	0.2*	-	1.94	n/r	n/r	n/r	0.143
Dissolved Lead	mg/L	0.01	0.1	0.00025	0.00025	0.00025	0.00025	0.00025
Dissolved Manganese	mg/L	0.4	-	0.0426	0.0591	0.0056	0.0046	0.003
Dissolved Mercury	mg/L	-	0.002	0.00025	0.00025	0.00025	0.00025	0.00025
Dissolved Nickel	mg/L	0.08	1	0.0009	0.00025	0.00025	0.00025	0.00025

Notes: *denotes guideline values for aesthetic determinants (GV)

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**

ND - not detected n/r - not required



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 upgradient 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. Since October 2021, bores D3rd and D3rs have been sampled 15 times, and on 13 of those occasions the testing has been for the comprehensive suite of parameters. Because testing has been done twice for the indicator suite (i.e., in July 2022 and April 2023), two continuous years of comprehensive testing has yet to be done. It is recommended that HDC discusses this matter with HRC to determine if the sampling regime can revert to the "normal" regime, without having to continue with the comprehensive sampling for another two rounds.

The results from the January 2025 monitoring round for these bores are presented 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 B and the historical graphs are presented in Appendix D.

There was **one exceedance of the resource consent conditions** during the quarterly (January 2025) monitoring round in samples from the shallow aquifer down-gradient of the new landfill.

• The pH at bore D2 was 5.9 which is lower than the minimum pH stated in the ANZECC LDW standards.

The value of pH has been lower on two occasions, but the median value is normally 6.5.

It is noted that the nitrate-N levels at D6 have dropped significantly from the previous monitoring round value of 41.4 mg/L to 18.4 mg/L. Similarly, the conductivity value, which was at 60.3 mS/m last monitoring round, has dropped down to 36.2 mS/m.



Determinant	Units	ANZECC LDW	D1	D2	D3rs	D4	D5	D6	E1s
Sampling date			22/01/25	22/01/25	22/01/25	22/01/25	21/01/25	22/01/25	22/01/25
Water Level	mbgl	-	17.07	21.62	5.76	8.95	10.2	16.56	11.23
рН	pH units	6 to 9	8.1	5.9	7.8	7.5	7.2	7.7	7.6
Suspended Solids	mg/l	-	n/r	n/r	9	n/r	n/r	n/r	n/r
Phenol	mg/l	-	n/r	n/r	n/p	n/r	n/r	n/r	n/r
VFA	mg/l	-	n/r	n/r	2.5	n/r	n/r	n/r	n/r
TOC	mg/L	-	n/r	n/r	18.3	n/r	n/r	n/r	n/r
Alkalinity	mg CaCO₃/L	-	n/r	n/r	76	n/r	n/r	n/r	n/r
Conductivity	mS/m	-	53.2	67	22.7	28.4	29.1	36.2	25
COD	mg/L	-	15	39	61	7.5	7.5	7.5	17
$scBOD_5$	mg/L	-	1.5	1.5	1.5	1.5	1.5	1.5	1.5
E. coli	CFU/100ml	100	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Chloride	mg/L	-	25.3	99.9	19.4	29.9	27.6	24.9	28.6
Nitrate-N	mg/L	90.3	6.28	0.005	0.005	0.005	1.28	18.4	0.005
Sulphate	mg/L	1000	n/r	n/r	0.93	n/r	n/r	n/r	n/r
Ammoniacal-N	mg/L	-	0.06	0.81	1.12	0.15	0.01	0.005	0.16
Hardness	mg CaCO₃/L	-	n/r	n/r	56	n/r	n/r	n/r	n/r
Calcium	mg/L	1000	n/r	n/r	12.5	n/r	n/r	n/r	n/r
Magnesium	mg/L	-	n/r	n/r	6.04	n/r	n/r	n/r	n/r
Potassium	mg/L	-	n/r	n/r	4.84	n/r	n/r	n/r	n/r
Sodium	mg/L	-	n/r	51.2	24.9	28.9	n/r	n/r	25.7
D.R. Phosphorus	mg/L	-	n/r	n/r	0.306	n/r	n/r	n/r	n/r

Table 2-3: D-Series and E1s Monitoring Bore Results for January 2025



Determinant	Units	ANZECC LDW	D1	D2	D3rs	D4	D5	D6	E1s
Dissolved Aluminium	mg/L	5	0.001	0.003	0.046	0.006	0.001	0.001	0.005
Dissolved Arsenic	mg/L	0.5	n/r	n/r	0.0005	n/r	n/r	n/r	n/r
Dissolved Boron	mg/L	5	0.051	0.047	0.033	0.03	0.032	0.064	0.025
Dissolved Cadmium	mg/L	0.01	n/r	n/r	0.0001	n/r	n/r	n/r	n/r
Dissolved Chromium (VI)	mg/L	1	n/r	n/r	0.002	n/r	n/r	n/r	n/r
Dissolved Copper	mg/L	0.4	n/r	n/r	0.00025	n/r	n/r	n/r	n/r
Dissolved Iron	mg/L	-	n/r	11.3	14.8	4.26	n/r	n/r	3.6
Dissolved Lead	mg/L	0.1	0.00025	0.00025	0.00025	0.00025	0.00025	0.00025	0.00025
Dissolved Manganese	mg/L	-	0.0008	0.644	0.418	0.218	0.0056	0.0009	0.19
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	0.0005	0.00025	0.00025	0.00025	0.00025	0.00025
Dissolved Zinc	mg/L	20	n/r	n/r	0.001	n/r	n/r	n/r	n/r

Notes:

Bold – denotes an exceedance of the ANZECC LDW

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

n/r – not require

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 at the site is assumed to be towards the northwest (as opposed to the regional groundwater flow which is towards the west – see section 1).

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 down-gradient of the old landfill.

Results for the quarterly (January 2025) 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 B 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 January 2025 monitoring round, as follows:

- The *E.coli* result at E2d was 3 CFU/100mL, which is greater than the DWSNZ MAV of NIL. It is not unusual for the *E. coli* levels to be elevated for this bore.
- Dissolved arsenic exceeded the DWSNZ MAV of 0.01 mg/L at bore D3rd (0.021 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 (0.599 mg/L), E2d (0.42 mg/L), Xd1 (0.509 mg/L) and D3rd (0.463 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.

The quality of the groundwater is such that concentrations of some parameters for certain groundwater bores, regularly exceed the trigger values. This is true for elevated manganese values in four of the deep aquifer bores (C2dd, E2d, Xd1 and D3rd).

It is also true for arsenic concentrations measured in bore D3rd, which have always been elevated. This is not related to poor shallow water quality because bore D3rd is nested with bore D3rs, and that bore has consistent levels of arsenic below the trigger value.

The deep aquifer is separated from the shallow aquifer by an aquiclude, which is a layer of low permeability material that acts as a barrier between the two aquifers. Additionally, there is an upgradient flow from the deep aquifer to the shallow aquifer, which will prevent contamination of the deep aquifer from overlying groundwater.

So, the exceedances for the deep aquifer bores are not unusual and are extremely unlikely to be related to landfill activities, particularly because of the environmental setting.



Determinant	Units	DWSNZ MAV	E1d	C2dd	E2d	Xd1	D3rd
Sampling date			21/01/25	21/01/25	22/01/25	23/01/25	22/01/25
Water Level	mbgl	-	10.8	2.77	4.72	2.73	6.08
рН	pH units	7 to 8.5*	7.8	8.0	8.3	7.8	7.9
Suspended Solids	mg/l	-	n/r	n/r	n/r	n/r	11
Phenol	mg/l	-	n/r	n/r	n/r	n/r	n/p
VFA	mg/l	-	n/r	n/r	n/r	n/r	2.5
TOC	C mg/L		n/r	n/r	n/r	n/r	5.5
Alkalinity	mg CaCO₃/L	-	n/r	223	n/r	n/r	219
Conductivity	mS/m	-	44.2	56	44.2	53.3	52.3
COD	mg/L	-	16	25	18	30	21
scBOD₅	DD₅ mg/L		1.5	1.5	1.5	1.5	1.5
E. coli	CFU/100ml	NIL	0.5	0.5	3	0.5	0.5
Chloride	mg/L	250*	40.8	42.8	41.3	57.5	32.8
Nitrate-N	mg/L	11.3	0.005	0.02	0.005	0.005	0.005
Sulphate	mg/L	250*	n/r	0.06	n/r	n/r	0.01
Ammoniacal- N	mg/L	1.17	0.2	0.33	0.01	0.81	0.38
Hardness	mg CaCO₃/L	200*	n/r	n/r	n/r	n/r	186
Calcium	mg/L	-	n/r	n/r	n/r	n/r	52
Magnesium	mg/L	-	n/r	n/r	n/r	n/r	13.6
Potassium	mg/L	-	n/r	n/r	n/r	n/r	6.65
Sodium	mg/L	200*	34.9	n/r	n/r	n/r	22.6
D.R. Phosphorus	mg/L	-	n/r	n/r	n/r	n/r	1.21
Dissolved Aluminium	mg/L	0.1*	0.002	0.004	0.004	0.001	0.002
Dissolved Arsenic	mg/L	0.01	n/r	n/r	n/r	n/r	0.021
Dissolved Boron	mg/L	1.4	0.049	0.063	0.052	0.044	0.043
Dissolved Cadmium	mg/L	0.004	n/r	n/r	n/r	n/r	0.0001
Dissolved Chromium (VI)	omium mg/L 0.05		n/r	n/r	n/r	n/r	0.0005
Dissolved Copper	mg/L	2	n/r	n/r	n/r	n/r	0.00025
Dissolved Iron	mg/L	0.2*	0.026	n/r	n/r	n/r	0.029

Table 2-4: Results for Monitoring Bores within the Deep Aquifer for January 2025



Determinant	Units	DWSNZ MAV	E1d	C2dd	E2d	Xd1	D3rd
Dissolved Lead	mg/L	0.01	0.00025	0.00025	0.00025	0.00025	0.00025
Dissolved Manganese	mg/L	0.4	0.237	0.599	0.42	0.509	0.463
Dissolved Mercury	mg/L	-	0.00025	0.00025	0.00025	0.00025	0.00025
Dissolved Nickel	mg/L	0.08	0.00025	0.00025	0.00025	0.00025	0.00025
Dissolved Zinc	mg/L	1.5*	n/r	n/r	n/r	n/r	0.001

Notes:

*Denotes DWSNZ GV

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

n/r - not required



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 50 m 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 Hōkio 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 downgradient of the old landfill by Hōkio Road and the entrance road to the landfill.

Bores Xs1 and Xs2 are located along Hōkio 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 (January 2025) 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 B and the historical graphs are presented in Appendix D.

There were **no exceedances** of the ANZECC LDW trigger values for the shallow boreholes downgradient of the old landfill during the January 2025 monitoring round.

Whilst the shallow groundwater down-gradient of the old landfill meets the resource consent trigger values for all parameters for all bores, it is well documented that leachate from the old landfill is extending in a plume northward and is impacting the quality of the shallow aquifer. Modelling of the plume has shown that there could be unacceptable future impacts on the Hōkio Stream. This matter is being addressed through the Leachate Best Practicable Option (BPO) project. Progress with that project is being communicated to relevant parties, such as the HRC, Project Management Group (PMG) and Neighbourhood Liaison Group (NLG).



2 Groundwater and Surface Water Monitoring

Determinant	Units	ANZECC LDW	E2s	B1	B2	B3s	C1	C2	C2ds	G2S	Xs1	Xs2
Sampling date			22/01/25	23/01/25	23/01/25	23/01/25	23/01/25	23/01/25	23/01/25	21/01/25	23/01/25	23/01/25
Water level	mbgl	-	5.6	1.21	1.24	0.54	1.25	0.24	2.78	2.22	0.74	2.64
рН	pH units	6 to 9	7.6	7.5	7.3	7.3	7.5	7.2	7.4	7.2	6.7	6.8
Alkalinity	mg CaCO₃/L	-	n/r	n/r	996	1380	n/r	1510	712	n/r	n/r	n/r
Conductivity	mS/m	-	34.6	238	267	309	103	357	161	126	139	28.8
COD	mg/L	-	7.5	291	134	371	75	503	85	22	99	7.5
scBOD5	mg/L	-	1.5	1.5	1.5	4	1.5	5	1.5	1.5	1.5	1.5
E. coli	CFU/100ml	100	0.5	0.5	0.5	0.5	0.5	1	0.5	0.5	0.5	0.5
Chloride	mg/L	-	37.7	318	212	203	118	311	126	251	112	49.2
Nitrate-N	mg/L	90.3	0.005	0.005	6.52	0.03	0.02	0.005	0.005	0.005	0.05	0.72
Sulphate	mg/L	1,000	n/r	n/r	14.8	1.75	n/r	4.18	0.01	n/r	n/r	n/r
Ammoniacal-N	mg/L	-	0.09	35.4	124	199	18	195	4.09	0.03	13.3	0.19
Sodium	mg/L	-	29.2	n/r								
Dissolved Aluminium	mg/L	5	0.009	0.055	0.005	0.006	0.024	0.013	0.001	0.004	0.023	0.006
Dissolved Boron	mg/L	5	0.027	1.26	2.43	1.54	0.751	1.92	0.471	0.574	0.418	0.027
Dissolved Iron	mg/L	-	0.103	n/r								
Dissolved Lead	mg/L	0.1	0.0007	0.00025	0.00025	0.00025	0.00025	0.00025	0.00025	0.00025	0.00025	0.00025
Dissolved Manganese	mg/L	-	0.265	7.7	3.92	4.69	0.211	0.303	2.55	0.308	0.975	0.0698
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	0.006	0.0038	0.0118	0.0012	0.0074	0.002	0.0023	0.0024	0.00025

Table 2-5: Monitoring Results for Shallow Boreholes Down-Gradient from the Old Landfill for January 2025

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/r – not required



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 (WWTP). 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 B 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 January 2025 (quarterly) monitoring round.

Determinant	Units	ANZECC LDW	F1	F2	F3
Sampling Date			21/01/25	21/01/25	21/01/25
Water level	mbgl	-	7.62	2.55	5.14
рН	pH units	6 to 9	7	7.2	7.1
Conductivity	mS/m	-	50.3	22.5	16
COD	mg/L	-	7.5	7.5	7.5
scBOD5	mg/L	-	1.5	1.5	1.5
E. coli	CFU/100ml	100	0.5	0.5	0.5
Chloride	mg/L	-	76	22.6	14.5
Nitrate-N	mg/L	90.3	2.16	0.65	2.22
Ammoniacal-N	mg/L	-	0.01	0.01	0.06
Sodium	mg/L	-	n/r	n/r	19.2
Dissolved Aluminium	mg/L	5	0.001	0.002	0.004
Dissolved Boron	mg/L	5	0.031	0.033	0.025
Dissolved Iron	mg/L	-	n/r	n/r	0.143
Dissolved Lead	mg/L	0.1	0.00025	0.00025	0.00025
Dissolved Manganese	mg/L	-	0.0055	0.0046	0.003
Dissolved Mercury	mg/L	0.002	0.00025	0.00025	0.00025
Dissolved Nickel	mg/L	1	0.0008	0.00025	0.00025

Table 2-6: Results from Monitoring Bores in the Irrigation Area for January 2025

Notes:

All `<' values have been reported as half the detection limit for statistical purposes and are *expressed in italics* n/r – not required



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 WWTP for treatment. However, for comparison purposes, typical leachate characteristics for landfills, as published by the Waste Management Institute New Zealand (WasteMINZ) *Technical Guidelines for Disposal to Land* (September 2023), have been compared against the leachate quality monitoring results (Table 2-7). The full laboratory report is included in Appendix B 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 November 2024, December 2024, and January 2025.

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 Hōkio Stream was required.

There were **fourteen outliers** from the typical leachate characteristics in the November 2024, December 2024, and January 2025 results. **Seven** of these were for parameters having **less** concentration than the typical minimal concentrations.

- Alkalinity exceeded the maximum typical concentration in all three months.
- COD exceeded the maximum typical concentration in November 2024.
- Nitrate-N was less than the minimum typical concentration in all three months.
- 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.
- Dissolved lead was less than the minimum typical concentration in November 2024.

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 November 2024, December 2024, and January

 2025

Determinant	Units	Typical Leachate Characteristics* (range)	November 2024	December 2024	January 2025
Sampling Date			21/11/24	12/12/24	14/01/25
pН		5.9 - 8.5	7.7	7.7	7.9
Suspended Solids	mg/l	-	274	48	83
Phenol	mg/L	-	n/p	n/p	n/p
VFA	mg/L	-	2.5	4.4	2.5
TOC	mg/L	17.2 - 822	780	667	726
Alkalinity	mg CaCO ₃ /L	264 - 6,820	6,990	6,960	7,130
Conductivity	mS/m	308 – 27,900	1,530	152	1,560
COD	mg/L	84 - 5,090	5,190	3,010	2,480
scBOD₅	mg/L	12 – 3,867	102	57	87
E-Coli	CFU/100mL	-	50	600	300
Chloride	mg/L	45 – 2,584	1,310	1,180	1,090
Nitrate-N	mg/L	0.1 – 50**	0.05	0.05	0.05
Sulphate	mg/L	1 - 780	41.4	56.7	55.8
Ammonia-N	mg/L	3.4 - 1,440	1,320	1,180	1,240
Hardness	mg CaCO ₃ /L	300 – 11,500**	415	387	384
Calcium	mg/L	20 - 600***	84.7	75.1	80.4
Magnesium	mg/L	40 - 350***	49.4	48.3	44.4
Potassium	mg/L	10 – 2,500**	709	549	560
Sodium	mg/L	50 - 4,000**	1,080	815	818
D.R. Phosphorus	mg/L	-	14.9	13.6	14.5
Dissolved Aluminium	mg/L	-	0.785	0.751	0.641
Dissolved Arsenic	mg/L	0.006 – 0.191	0.244	0.248	0.275
Dissolved Boron	mg/L	0.54 – 20	6.09	3.39	5.27
Dissolved Cadmium	mg/L	0.0005 - 0.140**	0.0001	0.0001	0.0001
Dissolved Chromium	mg/L	0.005 - 50.4	0.718	0.544	0.628
Dissolved Copper	mg/L	0.004 - 1.4**	0.0049	0.004	0.0293
Dissolved Iron			7.17	7.08	8.01
Dissolved Lead	Dissolved Lead mg/L		0.00025	0.0015	0.0017
Dissolved Manganese	mg/L	0.03 - 45***	1.19	1.12	1.05
Dissolved Mercury	Dissolved Mercury mg/L		0.00025	0.00025	0.00025
Dissolved Nickel	mg/L	0.02 - 2.05**	0.112	0.123	0.11
Dissolved Zinc	mg/L	0.015 – 24.2	0.046	0.043	0.046

Notes:

* For Class 1-type landfills, Table 5-5, p60, Technical Guidelines for Disposal to Land, WasteMINZ September 2023



**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 Hōkio Stream.

Results from the November 2024, December 2024 and January 2025 sampling rounds are presented in Table 2-8 and have been compared with the ANZECC Guidelines for Fresh and Marine Water Quality - Aquatic Ecosystems² (ANZECC AE) (95%ile) default guideline values (DGVs), as per the revised resource consent conditions.

There have been **five exceedances** of the resource consent conditions for three monitored parameters in samples from the Northern Farm property at the TD1 location during the November 2024, December 2024 and January 2025 sampling rounds.

- The level of detection applied to scBOD₅ in November 2024 was such that, even at half the detection level (i.e., 3 mg/L), the concentration exceeded the ANZECC AE (95%ile) DGV of 2 mg/L.
- The concentrations of ammoniacal-nitrogen in all three months (10.3mg/L, 7.4 mg/L and 21.7 mg/L, respectively) exceeded the ANZECC AE (95%ile) DGV of 2.1 mg/L.
- The concentration of copper in January 2025 (0.0022 mg/L) exceeded the ANZECC AE (95%ile) DGV of 0.0014 mg/L.

High ammoniacal-nitrogen levels are not uncharacteristic of results for the Northern Farm Drain over the last two years or so. It is well-documented that a plume of leachate originating from the old landfill is affecting the water quality of the shallow groundwater.

The concentration of copper in January 2025 was the highest recorded to date in the Northern Farm Drain. Mostly it is at levels which are undetected, and occasionally the concentration increases.

Bores close to the Northern Farm Drain and the area considered the source of contamination for the drain (i.e., bores C1, C2 and B3) show elevated ammoniacal-nitrogen levels and occasionally copper concentrations that are higher than that measured at the drain. So, the shallow groundwater is quite possibly the cause for the elevated ammoniacal-nitrogen and copper concentrations in the Northern Farm Drain. The issue of leachate affecting the groundwater that daylights into the Northern Farm Drain

²Australian 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



is being addressed through the Leachate BPO project, which has been discussed with HRC, the PMG and the NLG.

		ANZECC AE	T	D1 (formerly SW3)	
Determinant	Units	DGV (95%ile species protection)	November 2024	December 2024	January 2025	
Sampling date			21/11/24	12/12/24	14/01/25	
pН	pH units	-	8.0	7.2	8.0	
Suspended Solids	mg/L	-	20	9	186	
Phenol	mg/L	-	0.005	n/p	n/p	
VFA	mg/L	-	2.5	2.5	2.5	
TOC	mg/L	-	23.6	24	37.4	
Alkalinity	mg CaCO ₃ /L	-	353	316	511	
Conductivity	mS/m	-	90.1	84.9	124	
COD	mg/L	-	83	76	156	
scBOD5			3	1.5	1.5	
E-Coli	E-Coli CFU/100ml		100	1200	56	
Chloride	Chloride mg/L		77.3	77.8	87.7	
Nitrate-N	Nitrate-N mg/L		0.02	0.09	0.03	
Sulphate	3		1.4	1.52	1.33	
Ammoniacal-N			10.3	7.4	21.7	
Hardness	mg CaCO₃/L	-	242	183	351	
Calcium	mg/L	-	54.1	45.6	86	
Magnesium	mg/L	-	26	16.8	33.1	
Potassium	mg/L	-	20	21.4	25.7	
Sodium	mg/L	-	61.3	56.9	75.6	
D.R. Phosphorus	mg/L	-	0.033	0.014	0.103	
Dissolved Aluminium	mg/L	0.055	0.007	0.008	0.004	
Dissolved Arsenic	mg/L	0.024	0.002	0.002	0.002	
Dissolved Boron	mg/L	-	0.281	0.162	0.333	
Dissolved Cadmium	mall		0.0001	0.0001	0.0001	
Dissolved mg/L		-	0.001	0.001	0.001	
Dissolved Copper			0.00025	0.00025	0.0022	
Dissolved Iron	mg/L	-	0.891	2.04	0.082	
Dissolved Lead	mg/L	0.0034	0.00025	0.00025	0.00025	

Table 2-8: Northern Farm Drain Monitoring Results for November 2024, December 2024 and January2025



		ANZECC AE	TD1 (formerly SW3)							
Determinant	Units	DGV (95%ile species protection)	November 2024	December 2024	January 2025					
Dissolved Manganese	mg/L	1.9	0.71	0.529	0.689					
Dissolved Mercury	mg/L	0.0006	0.00025	0.00025	0.00025					
Dissolved Nickel	mg/L	0.011	0.0016	0.0017	0.0025					
Dissolved Zinc	Dissolved Zinc mg/L		0.001	0.001	0.001					

Notes:

Bold - denotes an exceedance of the ANZECC AE 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 Hōkio Stream

Surface water grab samples are obtained monthly from Hōkio 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 Hōkio Stream are analysed for a comprehensive suite of parameters every month (as shown in Appendix C).

Results from the November 2024, December 2024, and January 2025 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 **nine exceedances** of the resource consent conditions in samples from the Hōkio Stream during the November 2024, December 2024, and January 2025 sampling rounds.

- The level of detection applied to scBOD₅ in November 2024 at HS1A was such that, even at half the detection level (i.e., 3 mg/L), the concentration exceeded the ANZECC AE (95%ile) DGV of 2 mg/L.
- Nitrate-N exceeded both the ANZECC AE (95%ile) DGV and consent trigger value of 0.16 mg/L at HS1, HS2 and HS3 in November 2024, all with a value of 0.27 mg/L.
- The concentration of ammoniacal-nitrogen at HS1A in December 2024 (5.24 mg/L) exceeded the ANZECC AE (95%ile) DGV and consent trigger value of 2.1 mg/L.
- The concentrations of dissolved copper at all sites in January 2025 (ranging between 0.0025 and 0.0034 mg/L) exceeded the ANZECC AE (95%ile) DGV and consent trigger value of 0.0014 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 Hōkio Stream, except for ammoniacal-nitrogen at HS1A in December 2024.

HS1A had an ammoniacal-nitrogen concentration value of 5.24 mg/L in December 2024, which was by far the highest value recorded at this site, and the second highest value ever recorded at any of the Hōkio Stream surface water monitoring locations. The highest value was at HS2 in October 2016 (7.66 mg/L). Yet the downstream sites did not record values even close to this. It is noted that the ammoniacal-nitrogen value recorded at HS3 in January 2025 (1.75 mg/L) is the highest value recorded to date at that location, but was still within the consent trigger value of 2.1 mg/L.



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.

Nitrate-N concentrations upstream of the landfill property (i.e., at HS1, though not at HS1A) are already elevated in November 2024, and the concentrations downstream do not increase, and so cannot be definitively attributed to landfill activities. The bores closest to the considered source of contamination of the shallow groundwater (i.e., bores C1, C2 and B3) have low nitrate-N levels, so there are likely other activities that are causing nitrate-N levels to maintain the same levels between the upstream and downstream monitoring locations.

Dissolved copper was most elevated at HS1A in January 2025, which is upstream of the landfill and so the elevated levels downstream cannot be attributed to the landfill activities.

Consecutive monthly sampling and testing for the comprehensive suite of parameters has occurred at all Hōkio Stream sites since October 2021. HDC has had the results of monthly sampling events assessed, as required by the conditions of the consent, to determine the significance of the results, and should discuss the results with HRC to determine if a reduction in sampling frequency can be made.



		ANZECC AE DGV (95%ile	Consent Trigger	HS1A	HS1	HS2	HS3	HS1A	HS1	HS2	HS3	HS1A	HS1	HS2	HS3
Determinant	Units	species protection)	Values (Table C1)		Novemb	1	December 2024								
Sampling date				21/11/24	21/11/24	21/11/24	21/11/24	12/12/24	12/12/24	12/12/24	12/12/24	14/01/25	14/01/25	14/01/25	14/01/25
рН	pH units	-	-	6.9	7.6	7.6	7.6	7.4	7.3	6.5	7.2	7.6	7.3	7.4	7.6
Suspended Solids	mg/l	-	-	44	10	8	11	10	3	3	3	54	17	16	8
Phenol	mg/l			0.005	0.005	0.005	0.005	n/p	n/p	n/p	n/p	n/p	n/p	n/p	n/p
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	-	-	7.6	6.6	6.9	6.4	6.1	6.2	5.6	5.9	10.4	10.9	9.8	9.7
Alkalinity	mg CaC O₃/L	-	-	64	47	49	51	52	50	51	52	63	63	68	69
Conductivity	mS/m	-	-	22.4	21.8	22.3	22.5	21.5	21.5	21.9	22.1	24.5	24.5	25.8	26.1
COD	mg/L	-	-	96	40	34	27	18	28	16	26	43	33	28	25
scBOD₅	mg/L	2	Monthly Avg. 2	3	2	2	2	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
E. coli	CFU/ 100ml	-	-	100	100	4,200	100	100	600	900	6,000	1,400	100	300	200
Chloride	mg/L	-	-	19.4	20.9	22.6	21.7	21.4	21.4	21.7	22.1	22.6	24.2	25.3	25.2
Nitrate-N	mg/L	0.16	0.16	0.02	<u>0.27</u>	<u>0.27</u>	<u>0.27</u>	0.06	0.08	0.11	0.16	0.005	0.02	0.02	0.03
Sulphate	mg/L	-	-	10.5	18.9	19.1	18.4	16.7	17.2	16.5	16.4	10.6	11.6	11.3	10.7
Ammoniacal- N	mg/L	2.1	Max. 2.1 Avg. 0.400	0.67	0.17	0.18	0.19	<u>5.24</u>	0.15	0.63	0.15	0.24	0.54	0.58	1.75
Hardness	mg CaC O₃/L	-	-	62	56	56	56	44	41	50	43	64	66	68	72
Calcium	mg/L	-	-	13.5	10.5	10.6	10.6	9.22	9.01	10.4	9.41	12.4	13	13.6	14.5

Table 2-9: Hōkio Stream Monitoring Results for November 2024, December 2024, and January 2025



		ANZECC AE DGV (95%ile	Consent Trigger	HS1A	HS1	HS2	HS3	HS1A	HS1	HS2	HS3	HS1A	HS1	HS2	HS3
Determinant	Units	species protection)	Values (Table C1)		Novemb	er 2024		December 2024				January 2025			
Magnesium	mg/L	-	-	6.95	7.3	7.26	7.24	5.08	4.56	5.84	4.7	7.97	8.22	8.21	8.58
Potassium	mg/L	-	-	5.89	3.01	2.96	2.96	3.08	2.88	3.25	2.93	4.24	4.4	4.38	4.56
Sodium	mg/L	-	-	18.3	19.9	19.8	19.9	19.3	18.7	20.4	18.7	23.6	23.9	23.9	25
D.R. Phosphorus	mg/L	-	-	0.023	0.119	0.141	0.137	0.112	0.124	0.127	0.143	0.099	0.142	0.125	0.137
Dissolved Aluminium	mg/L	0.055	Med. 0.055	0.011	0.014	0.016	0.028	0.006	0.005	0.005	0.004	0.007	0.003	0.004	0.004
Dissolved Arsenic	mg/L	0.024	Med. 0.024	0.002	0.002	0.002	0.002	0.002	0.003	0.002	0.002	0.002	0.002	0.002	0.002
Dissolved Boron	mg/L	0.370	-	0.045	0.055	0.057	0.057	0.033	0.031	0.037	0.031	0.051	0.05	0.052	0.053
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	0.0007	0.0009	0.0009	0.0010	0.00025	0.00025	0.00025	0.00025	<u>0.0034</u>	<u>0.0030</u>	<u>0.0031</u>	<u>0.0025</u>
Dissolved Iron	mg/L	-	-	1.44	0.153	0.206	0.208	0.085	0.096	0.116	0.147	0.041	0.046	0.057	0.062
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	-	0.641	0.0677	0.0806	0.0837	0.0093	0.0086	0.0122	0.0165	0.144	0.205	0.191	0.246
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	0.0009	0.0005	0.00025	0.0008	0.0006	0.00025	0.00025	0.00025	0.0006	0.0005	0.00025	0.00025

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2 Groundwater and Surface Water Monitoring

Determinant	Unite	ANZECC AE DGV (95%ile		HS1A	HS1	HS2	HS3	HS1A	HS1	HS2	HS3	HS1A	HS1	HS2	HS3
	Units	•			Novemb	er 2024		Decemb	oer 2024		January 2025				
Dissolved Zinc	mg/L	0.008	Med. 0.008	0.006	0.001	0.001	0.002	0.001	0.001	0.001	0.001	0.004	0.001	0.001	0.001

Notes:

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

<u>Underlined</u> – denotes exceedance of the Consent Trigger Value.

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



Levin Landfill January 2025 Quarterly Groundwater, Surface Water & Leachate Monitoring Report 3 Landfill Gas Detection in Monitoring Wells

3 Landfill Gas Detection in Monitoring Wells

Condition 4 of Discharge Permit ATH-2002003984.02 (DP 6011) 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..."

Appendix E summarises the results of landfill gas monitoring undertaken on 14, 15, 16 and 22 January 2025. As noted in previous reports, the gas monitoring was not done on the date of sampling of the groundwater bores, except for the 22 January 2025. This somewhat nullifies part of the reason for doing the gas monitoring when the groundwater sampling is done, as is required by the resource consent condition.

Note that landfill gas monitoring results for bore C2 have been assumed since two sets of results were labelled as bore C2ds.

Of the 27 groundwater monitoring bores:

- Methane was recorded at nine bores in concentrations varying between 0.01% and 0.07%. In the previous monitoring round methane was reported as being detected at 20 of the bores. The maximum concentration reported is well below the explosive limit of 5% and therefore represents 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 mostly at relatively minor concentrations, except for the concentration at bore B2, which was 3.07%, which is somewhat high.
- Hydrogen sulphide was detected at 12 of the bores, all being at a concentration of 1 ppm, which is not of concern.
- The landfill gas levels in January 2025 appear to reinforce the previous 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.



Levin Landfill January 2025 Quarterly Groundwater, Surface Water & Leachate Monitoring Report 4 Sampling Quality Control and Assurance

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 samples were all collected on the same day in each month, and groundwater samples were collected within a 3-day period in January, which also included the date when the surface water sampling was done. Given the number of samples that needed to be taken, this is a significant effort.

The surface water samples from the Hōkio Stream were received by the laboratory outside the normally accepted 24-hour timeframe between sampling and reception in November and December. Additionally, given the sampling time stated to be 00:00 for the January sampling round, which is clearly an error, it appears that it also took longer than 24 hours between sampling and delivery to the laboratory in January. This was confirmed from the field sampling sheets. This could affect the reliability of the results that require microbiological analysis (i.e., *E.coli*), which reduces the confidence in comparing the results with historical data.

Groundwater samples took ostensibly between 22 and 24 hours from the time the samples were taken to the time they were accepted at the laboratory. However, because all the laboratory sheets recorded very similar sampling times (i.e., being between 13:09 and 13:18 for samples taken on 21 and 22 January, and between 13:25 and 13:26 for samples taken on 23 January), it is questionable whether the period of 22 to 24 hours is accurate. However, HDC has confirmed that all the groundwater samples were received at the laboratory within the 24-hour period.

An investigation of this issue has shown that unless the sampler enters the actual sampling date and time in the data system, the system will, by default, assign the time at which the data entry was made. Council will check what can be done to enable staff to record actual sample times in the Infrastructure Data software and so resolve this issue.



Levin Landfill January 2025 Quarterly Groundwater, Surface Water & Leachate Monitoring Report 5 Consent Compliance

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.

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 has been reviewed as part of the Annual Report, with the recommendation that bores F2, F3 and D5 be used as the primary background reference bores for shallow groundwater, which has been done in this report.

Shallow Aquifer and Irrigation Area

There was **one exceedance** of consent conditions hydraulically up-gradient of the old landfill and downgradient of the new landfill during this quarterly (January 2025) monitoring period. This was for pH at bore D2 (pH of 5.9) which was lower than the minimum pH value stated in the ANZECC LDW standards. The pH value at D2 has been lower on two occasions, but the median value is normally 6.5, and it is not considered to be a significant occurrence.

There were **no exceedances** of the resource consent conditions during this quarterly (January 2025) sampling round for samples obtained from bores within the old irrigation area.

There were **no exceedances** of consent conditions hydraulically down-gradient of the old landfill during this quarterly (January 2025) monitoring period.

Deeper Gravel Aquifer

There were **six exceedances** of the DWSNZ limits in samples from the deep gravel aquifer during the January 2025 monitoring round, as follows:

- The E.coli result at E2d was 3 CFU/100mL, which is greater than the DWSNZ MAV of NIL.
- Dissolved arsenic exceeded the DWSNZ MAV of 0.01 mg/L at bore D3rd (0.021 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 (0.599 mg/L), E2d (0.42 mg/L), Xd1 (0.509 mg/L) and D3rd (0.463 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.



E.coli levels in bore E2d have been elevated previously, so this is not an unusual occurrence.

As noted in section 2.3.2, the six exceedances are not unusual and are related to the quality of the groundwater regularly observed with respect to manganese concentrations (for boresC2dd, E2d, Xd1 and D3rd), and arsenic concentrations (for bore D3rd).

These six exceedances do not appear to be attributable to the landfill activities, particularly because there is an aquiclude between the shallow aquifer and the deep aquifer, with a flow gradient from the deep aquifer upwards (i.e., sub-artesian conditions exist).

Leachate Effluent

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

There were **fourteen outliers** from the typical leachate characteristics in the November 2024, December 2024, and January 2025 results. **Seven** of these were for parameters having **less** concentration than the typical minimal concentrations.

Northern Farm Drain

There have been **five exceedances** of the resource consent conditions for three monitored parameters in samples from the Northern Farm property at the TD1 location during the November 2024, December 2024 and January 2025 sampling rounds.

- The level of detection applied to scBOD₅ in November 2024 was such that, even at half the detection level (i.e., 3 mg/L), the concentration exceeded the ANZECC AE (95%ile) DGV of 2 mg/L.
- The concentrations of ammoniacal-nitrogen in all three months (10.3mg/L, 7.4 mg/L and 21.7 mg/L, respectively) exceeded the ANZECC AE (95%ile) DGV of 2.1 mg/L.
- The concentration of copper in January 2025 (0.0022 mg/L) exceeded the ANZECC AE (95%ile) DGV of 0.0014 mg/L.

Three exceedances for the Northern Farm Drain were on account of elevated ammoniacal-nitrogen concentrations. Ammoniacal-N levels have frequently exceeded trigger levels. The elevated ammoniacal-nitrogen level could well be associated with leachate from the Old Landfill contaminating the groundwater. This is well recognised and is being further assessed through the Leachate BPO project, which has been communicated to HRC, the PMG and the NLG.

The exceedance due to an elevated level of copper (0.0022 mg/L) in January 2025 is somewhat unusual. This is the highest concentration measured for copper to date, being well above the median value of 0.0006 mg/L. Copper levels at C1 and C2 have had similar concentrations in the past, so this elevated copper level could be associated with leachate from the Old Landfill contaminating the groundwater, as noted above.

The ANZECC AE DGV (95% ile species protection) for scBOD₅ is 2 mg/L. In November 2024, the laboratory test applied had a level of detection of 6 mg/L. Since no scBOD₅ was detected, the result must be recorded as half the detection limit (i.e., at 3 mg/L), which still exceeds the DGV, and so represents a non-compliance.



<u>Hōkio Stream</u>

There were **nine exceedances** of the resource consent conditions in samples from the Hōkio Stream during the November 2024, December 2024, and January 2025 sampling rounds.

- The level of detection applied to scBOD₅ in November 2024 at HS1A was such that, even at half the detection level (i.e., 3 mg/L), the concentration exceeded the ANZECC AE (95%ile) DGV of 2 mg/L.
- Nitrate-N exceeded both the ANZECC AE (95%ile) DGV and consent trigger value of 0.16 mg/L at HS1, HS2 and HS3 in November 2024, all with a value of 0.27 mg/L.
- The concentration of ammoniacal-nitrogen at HS1A in December 2024 (5.24 mg/L) exceeded the ANZECC AE (95%ile) DGV and consent trigger value of 2.1 mg/L.
- The concentrations of dissolved copper at all sites in January 2025 (ranging between 0.0025 and 0.0034 mg/L) exceeded the ANZECC AE (95%ile) DGV and consent trigger value of 0.0014 mg/L.

Three of the exceedances are for elevated nitrate-N concentrations. However, the nitrate-N concentration at HS1, upstream of the landfill property, is the same as that at the downstream HS2 and HS3 locations, so these elevated concentrations cannot be definitively attributed to landfill activities. The bores closest to the considered source of contamination of the shallow groundwater (i.e., bores C1, C2 and B3) have low nitrate-N levels, so there are likely other activities that are causing an increase in nitrate-N levels between the upstream and downstream monitoring locations.

Four of the exceedances were for elevated concentrations of dissolved copper which occurred at all sites in January 2025. The most elevated level was measured at HS1A (i.e., upstream of the landfill), and so upstream activities are likely to be the cause.

Similarly, one exceedance was for ammoniacal-nitrogen which was significantly elevated at HS1A in December 2024. Being upstream of the landfill, this cannot be attributed to the landfill activities. This is the second-highest level of ammoniacal-nitrogen measured at any of the Hōkio Stream monitoring locations to date, but a similar order of magnitude level was not measured at any of the downstream locations in that month.

It is noted that HS3 had a concentration of 1.75 mg/L for ammoniacal-nitrogen in January 2025, which is the highest recorded to date at that location, but this did not exceed the consent trigger limit.



Levin Landfill January 2025 Quarterly Groundwater, Surface Water & Leachate Monitoring Report 6 Conclusions

6 Conclusions

During the November 2024 to January 2025 monitoring period, there were twenty-one exceedances of the trigger values set out in the resource consent conditions: one from the shallow aquifer up-gradient of the Old Landfill, and down-gradient of the New Landfill, six from the deep gravel aquifer, five in the samples from the Northern Farm Drain (formerly known as Tatana Property Drain), and the remaining nine from surface water monitoring locations along the Hōkio Stream.

Of the twenty-one exceedances, seventeen are considered to be unrelated to the landfill activities as follows:

- One exceedance in the shallow aquifer down-gradient of the new landfill was for a low pH level. There is no evidence of leachate contamination from other parameters and so this is not considered to be related to landfill activities.
- Five exceedances in the deep aquifer are not unusual and are related to the existing water quality.
- One exceedance in the deep aquifer is on account of an incorrect level of detection being applied for *E.coli* testing but is considered to be a non-compliance that is unrelated to landfill activities.
- Two exceedances, one in the Northern Farm Drain and one at HS1A, are on account of incorrect levels of detection being applied for scBOD₅ testing and so are considered to be non-compliances that are not related to landfill activities.
- Three exceedances in the Hōkio Stream are for elevated nitrate-N levels, which are similarly elevated upstream. There is doubt that it is from landfill activities because the bores close to the "source" of the shallow groundwater contamination do not have elevated nitrate-N levels.
- Four exceedances in the Hōkio Stream are for elevated concentrations of dissolved copper. The highest levels occur upstream of the landfill property, so the upstream activities are likely to be the source, rather than landfill activities.
- One exceedance in the Hōkio Stream is for elevated ammoniacal-nitrogen which occurred upstream of the landfill property, so the upstream activities are likely to be the source.

Whilst the shallow groundwater down-gradient of the old landfill meets the resource consent trigger values for all parameters, it is well documented that leachate from the old landfill is extending in a plume northward and is impacting the quality of the shallow aquifer. Modelling of the plume has shown that there could be unacceptable future impacts on the Hōkio Stream, and this is being dealt with through the Leachate BPO project.

Elevated ammoniacal-nitrogen concentrations occurred in the Northern Farm Drain on each of the monitoring occasions. This could be related to the contaminated groundwater plume emanating from the Old Landfill and as noted above, is being dealt with through the Leachate BPO project.

Similarly, the elevated level of copper in the Northern Farm Drain in January 2025 is somewhat unusual. However, nearby bores C1 and C2 have had similar elevated concentrations in the past, so this occurrence could be associated with leachate from the Old Landfill contaminating the shallow groundwater.

Methane was detected in nine bores in January 2025, with readings varying between 0.01% and 0.07%. The maximum concentration reported is well below the explosive limit of 5% and therefore represents 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, except at bore B2 which recorded 3.07%, which is somewhat high. Hydrogen sulphide was detected at 12 of the bores, all being at a concentration of 1 ppm, which is not of concern.

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:

- Council will check what can be done to enable staff to record actual sample times in the Infrastructure Data software, and so resolve the issue of having sampling times recorded incorrectly on the laboratory sheets.
- HDC should discuss with HRC the need for a further two rounds of comprehensive testing of bores D3rs and D3rd, given that out of the 15 sampling events conducted since they were installed in October 2021, comprehensive testing has been done on 13 occasions.
- The ANZECC AE DGV (95% ile species protection) for scBOD₅ is 2 mg/L. So, the level of detection to be applied to the surface water samples must be set at a level where half the detection limit is less than the DGV of 2 mg/L. As for the above, this is a matter that needs to be discussed with the parties involved in requesting sampling and undertaking the laboratory testing.
- Consecutive monthly sampling has occurred at all Hōkio Stream sites since October 2021. HDC has had these results assessed, as required by the conditions of the consent, to determine their significance. HDC should discuss the results of this assessment with HRC to ascertain if a reduction in sampling frequency of the surface water monitoring locations can be made.
- Gas sampling of the bores has been recorded on days different from when the groundwater sampling was undertaken. In future, the gas sampling needs to be done when groundwater samples are taken, as required by the resource consent conditions.



Appendices

Levin Landfill January 2025 Quarterly Groundwater, Surface Water and Leachate Monitoring Report Appendix A Site Plan

Appendix A Site Plan



		K HS2	- Etter		/.
	ion -	7 H52		HOKIO STREAM	4
	HOKIO STREAM		BHXS1	EEER	
		2	binor	HOKIO BEA	CHROAD S HS1A
		TD1	TATANA'S		
	HS2				BHG2 🔄 🖉 🕑 😵
				BHC2 UNNAMED BORE	Р внс1
		BHXD1	BHC2D(D)	BHC2D(S)	
ASK		BHE2(d) BHE2(s)	BHB3(s) 🧬 BH3(n)		<u> </u>
SCALE - IF IN DOUBT		INSIDE SAME BHC3 STANDPIPE			 BHB1B (OLD STOCKWATER BORE)
ALE - IF I				➡ BHB2	📀 ВНВ1
			<i>Vs</i> ,		
BORE HOLE NO			0.02	CONTROL POINT	
A2 (DESTROYED A3 (DESTROYED	D) SHALLOW AQUIFER			(ORM-3)	
A4 A5	659 271.67 276 354.72 10.10 SHALLOW AQUIFER 659 530.47 276 185.91 9.62 SHALLOW AQUIFER		0 02 0 55 CONTROL POINT		
B1 B1B (STOCK BOR					
B2 B3(s) B3(n)	659 576.32 276 683.50 9.42 3.5 50 SHALLOW AQUIFER 659 651.19 276 519.52 7.76 2.83 50 SHALLOW AQUIFER 659 664.26 276 524.38 7.49 2.33 32 DEEP AQUIFER				
- <u>C1</u> C2	659 649 64 276 777.83 7.47 3.60 50 SHALLOW AQUIFER 659 669.80 276 631.22 7.50 2.81 32 SHALLOW AQUIFER	BHA5		IT 3 MWH	
- C2D(s) C2D(d)	659 671.19 276 641.63 10.13 12.88 32 SHALLOW AQUIFER 659 671.19 276 641.63 10.11 18.85 32 DEEP AQUIFER		· William · · · · · · · · · · · · · · · · · · ·		
- C3 D1	659 704.29 276.246.89 7.22 2.8 32 SHALLOW AQUIFER 659 134.97 276 771.65 27.46 23.69 50 EARLY DETECTION 026 01/0 200 01/0 0210 0 01/0 0 01/0	-		IT 2 MWH	
D2 D4	669 101.02 276 642.06 32.12 29.46 50 EARLY DETECTION 659 293.20 276 366.60 17.97 17.0 SHALLOW AQUIFER 676 09.00 276 306.40 17.97 17.0 SHALLOW AQUIFER				
2 D5 D6 8 F1/d)	659 00:00 276 02:40 20.65 16 BACKGROUND 659 200:31 276 761.08 26.41 16.07 50 EARLY DETECTION			//////////////////////////////////////	• PP • PP • NAIL 2 MWH • PP
8 E1(d) E1(s) E2(s)	659 349.54 276 329.48 20.91 37.80 32 SHALLOW AQUIFER 659 349.54 276 329.48 20.91 20.05 32 DEEP AQUIFER 659 667.30 276 354.69 13.15 15.24 32 SHALLOW AQUIFER		BHE1(d)		
2 E2(d) F1	659 667.30 276 354.69 13.15 28.66 32 DEEP AQUIFER	-	BHE1(s) INSIDE SAME	LIT I MWH 358 (NAIL 1 M	
8 F2	659 037.10 276 925.50 18.90 15.0 50 IRRIGATION 659 105.00 276 218.00 13.50 10.2 50 SHALOW AQUIFER LECHATE IRRIGATION	-	STANDPIPE		BHD6 POND
53 F3	658 951.70 276 434.00 16.70 10.5 50 SHALLOW AQUIFER LEACHATE IRRIGATION		• BH4A 2	R and	
G1(s) ⁴ G1(d) ⁴	658 786.00 277 046.00 24 15 50 SHALLOW AQUIFER BACKGROUND 658 786.00 277 046.00 24 31.5 50 DEEP AQUIFER BACKGROUND		BORROW AREA 1	IH THE REAL PROPERTY OF THE RO	BHD1
G2 ⁴	659 673.00 276 835.00 8 4 50 SHALLOW AQUIFER COORDINATES FOR BORE HOLES BELOW ARE APPROXIMATE ONLY		1 ST 1111		PAP For SW4 F 120 (RI URI SW4 F 120
© D3(r) s D3(r) d BHXS1	659 089.60 276 585.30 18 10 50 EARLY DETECTION 659 089.60 276 585.30 18 32 50 EARLY DETECTION 659 797.20 276 617.30 - 4 50 SHALLOW AQUIFER	5	EXISTING BORROW AREA	PEGIMWH	
BHXS2 BHXD1	659 620.80 276 984.30 - 4 50 SHALLOW AQUIFER 659 620.80 276 984.30 - 35 50 DEEP AQUIFER			FUTURE STAGE 5	BHD2 IRII (0.2m DWN)
<u>دەر</u>	ORDINATES ARE IN TERMS OF NEW ZEALAND GEODETIC DATUM 1949: WANGANUI CIRCUIT		BORROW AREA 2	50 BHD3(r)s	
L SIZE			20.0 THAREA 2	SW2 BHD3(r)d + H	LANDFILL STAGE 3
ž –	LEGEND			0 SI FUTURE 0 02 STAGE 4	
	 MONITORING SAMPLING LOCATION MONITOR BORES CURRENTLY SAMPLED (FROM JAN 2010) 	0 02 0 02 0 02 0 52 0 52 0 52 0 52 0 52		0.02	a 4 5 11 11 11 STAGE 2
	BORES NOT SAMPLED	005			
Q	B SHALLOW HANDAUGER STANDPIPES NOT ABLE TO BE LOCATED		20.0	STAGE 1	B
		30 0 F			
	 SOIL SAMPLING LOCATION PEG - NOT MONITORED EXISTING STORMWATER SOAKAGE AREA 			BHF3	R(0.2m DWN)
	PROPOSED STORMWATER SOAKAGE AREA		ZSS Z ZZZZZZZZZZZZZZZZZZZZZZZZZZZZZZZZ		SM SM
	PROPOSED BORROW AREAS	BHD5 50			
		0'52'			
		SURVEYED M			HOROWHENUA DISTRICT COUNCIL
E FOR INFORMATION	N - BHD3(r)s AND BHD3(r)d ADDED, AND CONTOURS UPDATED FROM JULY 2021 SURVEY N - BORROW AREA 2 RELOCATED, DEFINED AREAS OF FUTURE STAGES 1B, 4 AND 5 N - BORROW AREA AND LANDFULL AREA UPDATES AND BORE HOLES AND SAMPLING LOCATIONS ADDED FOR	BCJ PSL PSL 24.09.21 DRAWN Brent BCJ PSL PSL 01.06.21 CAD REVIEW Brent	James 08.2019 James 23.09.21 Stanted		
은 HOKIO STREAM AN	ND TATANA DRAIN N - BORROW AREA AND LANDFILL AREA UPDATES	BCJ PSL PSL 24.03.21 BCJ PSL PSL 22.09.20 APPROVED Phil La BC1 PSL PSL 22.09.40 PROVED Phil La			MONITORING BORES, SOIL SAMPLING LC SITE PLAN, LOCATION AND DETAILS
V9Z REV	REVISIONS RAWINGS SHALL ONLY BE USED FOR THE PURPOSE FOR WHICH THEY WERE SUPPLIED. ANY RE-USE IS PROHIBITED AND NO PART OF THIS DOCUMENT MAY BE	DRN CHK APP DATE PROF REGISTRATION:			STIE FLAN, LOCATION AND DETAILS pw:\lstantec-ap-pw.bentley.com:stantec-ap-pw-01\Docume



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HDC OWNED

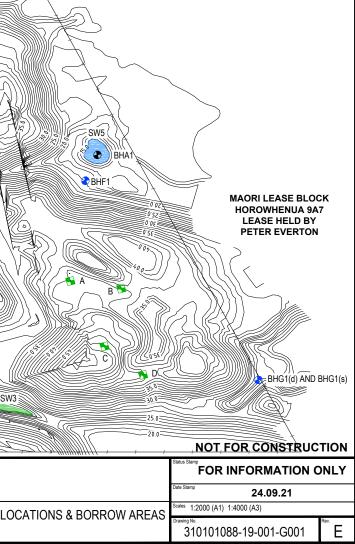
PROPERTY

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					
	ARE IN TERMS OF GEODETIC DATUM		UI CIRCUIT					

SOIL	CO-ORE	DINATES	LEVEL
MONITORING LOCATIONS	NORTHING mN	EASTING mE	(m)
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

BORF	ROW AREA 1 S COORDINATE	
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

- 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.
- "A" SERIES BORE HOLES ARE AUGER HOLES ONLY AND MAY NOT BE ABLE TO BE LOCATED.
 BORES INSTALLED IN AUG 2009. DETAILS ARE APPROXIMATE.
- 5. CONTOUR INTERVALS: 5m MAJOR, 1m MINOR



pw:\\stantec-ap-pw.bentley.com:stantec-ap-pw-01\Documents\New Zealand Clients\Horowhenua District Council\80500724 (310101088) - Levin Landfill Volumes\20

Levin Landfill January 2025 Quarterly Groundwater, Surface Water and Leachate Monitoring Report Appendix B Analytical Results

Appendix B Analytical Results



Landfill

Levin

Form ID: 13

Lechate, Hokio, Tatana

Vaters

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(

Supervisor	Aaron Lane		
Sample Date	1411125	Sent to Lab by	aller.
Sampled by	wither	Entered in ID by	1410

Sampling Point	Sample Time	Temp °C	Conductivity (ms/cm)	РН	Flow (m/s)	Depth to Water (m)	
Landfill Lechate	0:0	ro Ľ	72.62	50.0	1	1	
Tatana Drain 1	3, 53	5 . 1	218	87.L	1	À	
Hokio Stream 1	5	17.02	5872	ic as 2 Cmis	2 Cmish	(m)	
Hokio Stream 1A	S S	12.01	153	(S)~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	ZUMS)	(
Hokio Stream 2	9.25	20.11	233	F.	(Jub)	(m)	
Hokio Stream 3	9 to	1-1-08	851	11-2	2 (m/s)	(m)	
XS1							
XS2							Note: No samples
C2							collected. Readings only
C2DS							6

Lechate, Hokio, Tatana

Landfill

Form ID: 13

Levin

Vaters

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0

Supervisor	Aaron Lane		
Sample Date	12102125	Sent to Lab by	1. Dater
Sampled by	La Haan	Entered in ID by	Wate

Sampling Point	Sample Time	Temp °C	Conductivity (ms/cm)	μd	Flow (m/s)	Depth to Water (m)	
Landfill Lechate	12.20	20.08	1594	8.19	1	1	
Tatana Drain 1	12.00	16.08	1232	کائ. ۲			
Hokio Stream 1	ND . 80	19.05	182	OE L	2 (3)	2 (m)	
Hokio Stream 1A	01.01	19 @T	225	(5 7), ZE &	(5 C)	J.C.m.J.	
Hokio Stream 2	11-20	1d. 0 3	202	OEª L	2(0)2	2 (2)	
Hokio Stream 3	11- HO	19.01	306	わ9. レ	2(2)	2 (m)	
XS1							
XS2							Note: N sample
C3	1 2 2	й Х.					collecte Readings
C2DS							

Note: No samples collected. eadings only



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Food & Water Testing

ANALYTICAL REPORT

REPOR	TCODE	AF	R-25-NW-008	8021-01	REPORT DATE	05/02/2025
Attention	Horowhenua D Lab Results P 0 Box 642	istrict Cou	uncil			
	4741 Levin					
	NEW ZEALAN	П				
Phone	(06) 367 2705	D			Copy to: McMillan (Davidm@	horowhenua govt nz) Results
Email	labresults@horow	henua.govt.n	Z		(labresults@horowhenua.govt	
Contact	for your orders:		Carvalhaes		Order code:	EUNZWE-00229489
Contract	-	Levin La				
					Purchase Order Number:	144482 - Iandfill
SAMPL	E CODE	812-202	25-0001263	81		
Sample	Name	386294-	0			
Product:		Ground w	vater			
-	g Point code:	WIL-B1	05 10 17		Sampling Point name:	Levin B1
	on Date & Time: Started on:	24/01/20 24/01/20)25 13:17 25		Analysis Ending Date:	05/02/2025
Product		Ground w			Sampled Date & Time	23/01/2025 13:25
Sampler(minated exteri	nal sampler	Sampled by Eurofins	No
	•,			(UNCERTAINT)		
NW41 70	A		RESOLIS			
NW1/9	Ammonia Nitroge			(± 3.54) mg/l	0.04	
NUMO 4 1	Ammoniacal nitroger		35.4	(± 0.04) mg/i	0.01	
NW341	BOD5 - Soluble C	arbonaced			4	
	BOD5		<3	mg/l	1	
NW020	Chemical Oxyger		001	(I	45	
NU4007	Chemical oxygen der	nand (COD)	291	mg/l	15	
NW007	Chloride		210	(± 31.8) mg/l	0.00	
	Chloride (Cl)		318	(± 01.0) mg/r	0.02	
NW023	Conductivity		000	(± 4.8) mS/m		
	Conductivity	•	238	(1 4.0) 110/11	0.1	
NW098	Dissolved Alumin	lium	0.055		0.000	
NW4100	Aluminium		0.055	mg/l	0.002	
NW103	Dissolved Boron		1.00		0.005	
NW110	Boron (B)		1.26	mg/l	0.005	
NWIIU	Dissolved Lead		-0.000E	~~~ <u>~</u> /	0.0005	
NW/110	Lead (Pb)		<0.0005	mg/l	0.0005	
NW113	Dissolved Manga	nese	7.70	mg/l	0.0005	
NI\4/114	Manganese (Mn)		7.70	mg/l	0.0005	
1110114	Dissolved Mercur Mercury (Hg)	у	<0.0005	mg/l	0.0005	
NW116	Dissolved Nickel		~0.0005	1118/1	0.0000	
	Nickel (Ni)		0.0060	mg/l	0.0005	
		cohorichia			0.0003	
	Enumeration of E Escherichia coli	scherichia	<1 coll by Mem	cfu/100 ml	1	
	Nitrate-N		~1		I	
1111010	initiate-in		<0.01			

Eurofins ELS Limited 85 Port Road Seaview Lower Hutt Wellington 5010 NEW ZEALAND

+64 4 576 5016 www.eurofins.co.nz

Phone







		Food &	Water 1	Festing			
		RESU	LTS (UNCERT	AINTY) I	OQ		
NW195 рН (Т рН	ested beyond 15	minute APHA h 7.5	olding time) (± 0.2)		0.1		
IST OF METH	IODS						
W007 Chlori	de: APHA Online Ed	ition 4110 B		NW010	Nitrate-N: APHA	Online Edition 411	0 B
W020 Chemi	cal Oxygen Deman	d: APHA Online E	dition 5220 D	NW023	Conductivity: A	PHA 24th Edition 2	510 B
W098 Dissol	ved Aluminium: AP	PHA Online Edition	3125 B mod.	NW103	Dissolved Boro	n: APHA Online Ed	lition 3125 B mod.
W110 Dissol	ved Lead: APHA Or	nline Edition 3125 I	3 mod.	NW113	Dissolved Mang	janese: APHA Onli	ne Edition 3125 B mod.
IW114 Dissol	ved Mercury: APHA	A Online Edition 31	25 B mod.	NW116	Dissolved Nicke	el: APHA Online Ed	lition 3125 B mod.
IW179 Ammo	nia Nitrogen: APHA	A Online Edition 45	00-NH3 H	NW195	pH (Tested bey APHA 24th Editio	ond 15 minute API on 4500-H B	HA holding time):
W341 BOD5 B	- Soluble Carbonad	ceous: APHA Onlir	ne Edition 5210	ZM0UX		i E (Water) [NZ] <1 MEWW 9222I; AP⊦	> 6 000 /100 ml (0) IA 24th Edition
			Signa	ture			
mbe	icabrol		Th	Unt		$\int $	an
Marylou Cabra	Laboratory Man Eurofins ELS L		Jennifer Mont	Supervisor I Limited	Eurofins ELS	Leo Cleave	Senior Analyst Microbiology
Gabriela Carvalhaes	Business Unit I	Manager					
EXPLANATORY D Test is not acc D Test is subcon		ns group and is ac	credited	Not De	ans Not Applicabl	e detected at or abo	ve the Limit of

- ${f 3}$ Test is subcontracted within Eurofins group and is not accredited
- Test is subcontracted outside Eurofins group and is accredited
- $\ensuremath{\textcircled{\texttt{S}}}$ Test is subcontracted outside Eurofins group and is not accredited
- [®]Test result is provided by the customer and is not accredited
- ⑦ Tested at the sampling point by Eurofins and is not accredited⑧ Tested at the sampling point by Eurofins and is accredited

9 Test is RLP accredited

W Test is subcontracted within Eurofins group and is RLP accredited

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 **MAV** means Maximum Allowable Value

Lower Hutt Wellington 5010 NEW ZEALAND



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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.

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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.

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END OF REPORT



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VG LABOR



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Food & Water Testing

ANALYTICAL REPORT

REPOR	T CODE	AR	25-NW-008	8023-01	REPORT DATE	05/02/2025
Attention	Horowhenua D Lab Results	District Cou	uncil			
	P 0 Box 642					
	4741 Levin					
	NEW ZEALAN	D				
Phone	(06) 367 2705					≬horowhenua.govt.nz), Results
Email	labresults@horow				(labresults@horowhenua.gov	
Contact Contract	for your orders:	Gabriela (Levin Lar	Carvalhaes		Order code:	EUNZWE-00229489
Contract		Levin La			Purchase Order Number:	144482 - Iandfill
SAMPL	E CODE	812-202	25-0001263	35		
Sample	Name	386255-	0			
Product		Ground w	vater			
-	g Point code:	WIL-B2	12 12 20		Sampling Point name:	Levin B2
	on Date & Time: Started on:	24/01/20)25 13:20 25		Analysis Ending Date:	05/02/2025
Product		Ground w			Sampled Date & Time	23/01/2025 13:25
Sampler(• •		minated exter	nal sampler	Sampled by Eurofins	No
			RESULTS	G (UNCERTAINT)	 LOQ 	
NW179	Ammonia Nitroge	n				
	Ammoniacal nitroger		124	(± 12.4) mg/l	0.01	
NW341	BOD5 - Soluble C	arbonaced	ous			
	BOD5		<3	mg/l	1	
NW020	Chemical Oxyger	Demand				
	Chemical oxygen der	nand (COD)	134	mg/l	15	
NW007	Chloride					
	Chloride (Cl)		212	(± 21.2) mg/l	0.02	
NW023	Conductivity			<i>,</i>		
	Conductivity		267	(± 5.3) mS/m	0.1	
NW098	Dissolved Alumin	ium				
	Aluminium		0.005	mg/l	0.002	
NW103	Dissolved Boron		0.40		0.007	
NIW/110	Boron (B)		2.43	mg/l	0.005	
UTTMN	Dissolved Lead Lead (Pb)		<0.0005	mg/l	0.0005	
NW112	Dissolved Manga	0000	<0.0003	mg/l	0.0005	
ITWIT?	Manganese (Mn)	11696	3.92	mg/l	0.0005	
NW114	Dissolved Mercui	v			0.0000	
	Mercury (Hg)	3	<0.0005	mg/l	0.0005	
NW116	Dissolved Nickel			5		
	Nickel (Ni)		0.0038	mg/l	0.0005	
ZMOUX	Enumeration of E	scherichia	a coli by Men			
	Escherichia coli		<1	cfu/100 ml	1	
NW010	Nitrate-N					
	Nitrate-N		6.52	(± 0.65) mg/l	0.01	

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		RESULTS	(UNCERTAINTY)	LOQ
NW195 pH (Tested beyond 15 minute APHA holding time)				
	рH	7.3	(± 0.2)	0.1
NW011	Sulphate			
	Sulphate	14.8	(± 1.48) mg/l	0.02
NW003	Total Alkalinity			
	Alkalinity total	996	mg CaCO3/I	1

LIST OF METHODS

	METHODO		
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
NW098	Dissolved Aluminium: APHA Online Edition 3125 B mod.	NW103	Dissolved Boron: APHA Online Edition 3125 B mod.
NW110	Dissolved Lead: 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.
NW179	Ammonia Nitrogen: APHA Online Edition 4500-NH3 H	NW195	pH (Tested beyond 15 minute APHA holding time): APHA 24th Edition 4500-H B
NW341	BOD5 - Soluble Carbonaceous: APHA Online Edition 5210 B	ZM0UX	Escherichia coli E (Water) [NZ] <1 >6 000 /100 ml (0) m-FC Agar-F: SMEWW 9222I; APHA 24th Edition

mbacabro

Marylou Cabral

Laboratory Manager Eurofins ELS Limited



Gabriela Carvalhaes

Business Unit Manager

EXPLANATORY NOTE

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- S Test is subcontracted outside Eurofins group and is not accredited
- 6 Test result is provided by the customer and is not accredited
- Tested at the sampling point by Eurofins and is not accredited
- [®]Tested at the sampling point by Eurofins and is accredited

Test is RLP accredited

WTest is subcontracted within Eurofins group and is RLP accredited

Signature

Supervisor Eurofins ELS

Leo Cleave

Senior Analyst Microbiology

Jennifer Mont Limited

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

MAV means Maximum Allowable Value



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Food & Water Testing

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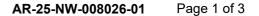
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VG LABOR





ANALYTICAL REPORT

REPOR	TCODE	AF	R-25-NW-00	8026-01	REPORT DATE	05/02/2025
Attention	Horowhenua [Lab Results	District Cou	uncil			
	P 0 Box 642					
	4741 Levin					
	NEW ZEALAN	D				
Phone	(06) 367 2705				Copy to: McMillan (Davidmo (labresults@horowhenua.gov	@horowhenua.govt.nz), Results
Email	labresults@horow					
Contract	for your orders: t:	Levin Lai	Carvalhaes ndfill		Order code:	EUNZWE-00229489
					Purchase Order Number:	: 144482 - landfill
SAMPL	E CODE	812-202	25-0001264	43		
Sample		386256-				
Product		Ground w WIL-B3	vater		Compling Doint nome	Levin B3s
-	g Point code: on Date & Time:)25 13:25		Sampling Point name:	Levin Dos
-	s Started on:	25/01/20			Analysis Ending Date:	05/02/2025
Product	Туре	Ground w	vater		Sampled Date & Time	23/01/2025 13:25
Sampler((s)	Client no	minated exter	nal sampler	Sampled by Eurofins	No
			RESULT	S (UNCERTAINT)	() LOQ	
NW179	Ammonia Nitroge			(
	Ammoniacal nitroger		199	(± 19.9) mg/l	0.01	
NW341	BOD5 - Soluble C	arbonace				
	BOD5		4	mg/l	1	
NW020	Chemical Oxyger Chemical oxygen der		371	mg/l	15	
	Chloride		571	mg/l	15	
144007	Chloride (Cl)		203	(± 20.3) mg/l	0.02	
NW023	Conductivity				0.02	
	Conductivity		309	(± 6.2) mS/m	0.1	
NW098	Dissolved Alumir	nium				
	Aluminium		0.006	mg/l	0.002	
NW103	Dissolved Boron					
	Boron (B)		1.54	mg/l	0.005	
NW110	Dissolved Lead		0.0005			
NIW/112	Lead (Pb)		<0.0005	mg/l	0.0005	
1444112	Dissolved Manga Manganese (Mn)	inese	4.69	mg/l	0.0005	
NW114	Dissolved Mercu	rv	1.00		0.0000	
,,, , ,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	Mercury (Hg)		<0.0005	mg/l	0.0005	
NW116	Dissolved Nickel					
	Nickel (Ni)		0.0118	mg/l	0.0005	
ZMOUX	Enumeration of E	Scherichia	a coli by Men	nbrane Filtration		
	Escherichia coli		<1	cfu/100 ml	1	
NW010	Nitrate-N			(1.0.00)		
	Nitrate-N		0.03	(± 0.00) mg/l	0.01	

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		RESULTS	(UNCERTAINTY)	LOQ
NW195 pH (Tested beyond 15 minute APHA holding time)				
	рH	7.3	(± 0.2)	0.1
NW011	Sulphate			
	Sulphate	1.75	(± 0.17) mg/l	0.02
NW003	Total Alkalinity			
	Alkalinity total	1380	mg CaCO3/I	1

LIST OF METHODS

METHODO		
Total Alkalinity: APHA Online Edition 2320 B	NW007	Chloride: APHA Online Edition 4110 B
Nitrate-N: APHA Online Edition 4110 B	NW011	Sulphate: APHA Online Edition 4110 B
Chemical Oxygen Demand: APHA Online Edition 5220 D	NW023	Conductivity: APHA 24th Edition 2510 B
Dissolved Aluminium: APHA Online Edition 3125 B mod.	NW103	Dissolved Boron: APHA Online Edition 3125 B mod.
Dissolved Lead: APHA Online Edition 3125 B mod.	NW113	Dissolved Manganese: APHA Online Edition 3125 B mod.
Dissolved Mercury: APHA Online Edition 3125 B mod.	NW116	Dissolved Nickel: APHA Online Edition 3125 B mod.
Ammonia Nitrogen: APHA Online Edition 4500-NH3 H	NW195	pH (Tested beyond 15 minute APHA holding time): APHA 24th Edition 4500-H B
BOD5 - Soluble Carbonaceous: APHA Online Edition 5210 B	ZM0UX	Escherichia coli E (Water) [NZ] <1 >6 000 /100 ml (0) m-FC Agar-F: SMEWW 9222I; APHA 24th Edition
	Total Alkalinity: APHA Online Edition 2320 B Nitrate-N: APHA Online Edition 4110 B Chemical Oxygen Demand: APHA Online Edition 5220 D Dissolved Aluminium: APHA Online Edition 3125 B mod. Dissolved Lead: APHA Online Edition 3125 B mod. Dissolved Mercury: APHA Online Edition 3125 B mod. Ammonia Nitrogen: APHA Online Edition 4500-NH3 H BOD5 - Soluble Carbonaceous: APHA Online Edition 5210	Total Alkalinity: APHA Online Edition 2320 BNW007Nitrate-N: APHA Online Edition 4110 BNW011Chemical Oxygen Demand: APHA Online Edition 5220 DNW023Dissolved Aluminium: APHA Online Edition 3125 B mod.NW103Dissolved Lead: APHA Online Edition 3125 B mod.NW113Dissolved Mercury: APHA Online Edition 3125 B mod.NW113Dissolved Mercury: APHA Online Edition 3125 B mod.NW116Ammonia Nitrogen: APHA Online Edition 4500-NH3 HNW195BOD5 - Soluble Carbonaceous: APHA Online Edition 5210ZM0UX

mbacabro

Marylou Cabral

Laboratory Manager Eurofins ELS Limited



Gabriela

Business Unit Manager

Carvalhaes

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Jennifer Mont Supervis Limited

Supervisor Eurofins ELS Limited

Leo Cleave

Senior Analyst Microbiology

- - 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

MAV means Maximum Allowable Value





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Page 1 of 3 AR-25-NW-007260-01

Food & Water Testing

ANALYTICAL REPORT

REPOR	T CODE	AF	R-25-NW-00	7260-01	REPORT DATE	01/02/2025
Attention	Lab Results P 0 Box 642	District Cou	uncil			
	4741 Levin					
	NEW ZEALAN	D				
Phone	(06) 367 2705				Copy to: McMillan (Davidm@h (labresults@horowhenua.govt.)	
Email	labresults@horow					
Contact Contrac	for your orders:	Gabriela Levin Lai	Carvalhaes ndfill		Order code:	EUNZWE-00229115
Contrac		Lovin La			Purchase Order Number:	144482 - landfill
SAMPL	E CODE	812-202	25-000114	86		
Sample		386292-				
Product		Ground w WIL-C1	vater		Sompling Doint name	Levin C1
	g Point code: on Date & Time:)25 11:31		Sampling Point name:	Levin Ci
	s Started on:	23/01/20			Analysis Ending Date:	01/02/2025
Product	Туре	Ground w	vater		Sampled Date & Time	22/01/2025 13:13
Sampler	(s)	Client no	minated exte	rnal sampler	Sampled by Eurofins	No
			RESULT	S (UNCERTAINT	r) LOQ	
NW179	Ammonia Nitroge	en				
	Ammoniacal nitroger		18.0	(± 1.80) mg/l	0.01	
NW341	BOD5 - Soluble C	arbonaced	ous			
	BOD5		<3	mg/l	1	
NW020	Chemical Oxyger	n Demand				
	Chemical oxygen der		75	mg/l	15	
NW007	Chloride					
	Chloride (Cl)		118	(± 11.8) mg/l	0.02	
NW023	Conductivity					
	Conductivity		103	(± 2.1) mS/m	0.1	
NW098	Dissolved Alumir	nium				
	Aluminium		0.024	mg/l	0.002	
NW103	Dissolved Boron					
	Boron (B)		0.751	mg/l	0.005	
NW110	Dissolved Lead					
	Lead (Pb)		<0.0005	mg/l	0.0005	
NW113	Dissolved Manga	inese				
	Manganese (Mn)		0.211	mg/l	0.0005	
NW114	Dissolved Mercu	ry				
	Mercury (Hg)		<0.0005	mg/l	0.0005	
NW116	Dissolved Nickel					
	Nickel (Ni)		0.0012	mg/l	0.0005	
ZMOUX	Enumeration of E	Scherichia	a coli by Mer			
	Escherichia coli		<1	cfu/100 ml	1	
NW010	Nitrate-N			(
	Nitrate-N		0.02	(± 0.00) mg/l	0.01	

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+64 4 576 5016

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		Foo	d & Water 1	Testing	J	
			RESULTS (UNCERT	AINTY) I	LOQ	
NW195	рН (Test рН	ed beyond 15 minute A 7.5	(0.1	
LIST O	F METHO	DS				
NW007	Chloride:	APHA Online Edition 4110 E	3	NW010	Nitrate-N: APHA Online Edition 4110 B	
NW020	Chemical	Oxygen Demand: APHA O	nline Edition 5220 D	NW023	Conductivity: APHA 24th Edition 2510 B	
NW098	Dissolved	Aluminium: APHA Online	Edition 3125 B mod.	NW103	Dissolved Boron: APHA Online Edition 3125 E	3 mod.
NW110	Dissolved	Lead: APHA Online Edition	a 3125 B mod.	NW113	Dissolved Manganese: APHA Online Edition 3	3125 B mod.
NW114	Dissolved	I Mercury: APHA Online Ed	ition 3125 B mod.	NW116	Dissolved Nickel: APHA Online Edition 3125 E	3 mod.
NW179	Ammonia	Nitrogen: APHA Online Ed	ition 4500-NH3 H	NW195	pH (Tested beyond 15 minute APHA holding APHA 24th Edition 4500-H B	time):
NW341	BOD5 - So B	oluble Carbonaceous: APH	A Online Edition 5210	ZM0UX	Escherichia coli E (Water) [NZ] <1 >6 000 /10 m-FC Agar-F: SMEWW 9222I; APHA 24th Edit	
			Signa	ture		
		abrol		lm		5
Maryl	lou Cabral	Laboratory Manager Eurofins ELS Limited	Jennifer Mont	Supervisor E Limited	Eurofins ELS Gabriela Busines Carvalhaes	s Unit Manager
Cody	y Forbes	Technical Specialist Technical Specialist	Hannah Smith	Laboratory S Microbiolog	•	
 ① Test is ② Test is ③ Test is ④ Test is ⑤ Test is 	s subcontrad s subcontrad s subcontrad esult is prov		nd is not accredited and is accredited and is not accredited	Not De Quantif LOQ m the rest	eans Not Applicable stected means not detected at or above the Limit fication (LOQ) neans Limit of Quantification and the unit of LOQ ult unit satisfactory) means does not meet the specification	is the same as

✓ (Satisfactory) means meets the specification
 MAV means Maximum Allowable Value

Test is RLP accredited

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AR-25-NW-007260-01

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ANALYTICAL REPORT

REPOR	T CODE	AF	R-25-NW-008	3022-01	REPORT DATE	05/02/2025
Attention	Horowhenua D Lab Results P O Box 642	istrict Cou	uncil			
	4741 Levin					
	NEW ZEALAN	D				
Phone	(06) 367 2705	D			Copy to: McMillan (Davidm@	Phorowhenua.govt.nz), Results
Email	labresults@horowl	henua.govt.n	Z		(labresults@horowhenua.gov	
Contact f	for your orders:	-	Carvalhaes		Order code:	EUNZWE-00229489
					Purchase Order Number:	144482 - Iandfill
SAMPLE	ECODE	812-202	25-0001263	32		
Sample N		386253-				
Product:		Ground w	vater			
	g Point code:	WIL-C2)25 13:19		Sampling Point name:	Levin C2
-	on Date & Time: Started on:	25/01/20			Analysis Ending Date:	05/02/2025
Product		Ground w	-		Sampled Date & Time	23/01/2025 13:25
Sampler(s	• •		minated exteri	nal sampler	Sampled by Eurofins	No
				G (UNCERTAINT)		
NW179	Ammonia Nitroge	en			·	
	Ammoniacal nitroger		195	(± 19.5) mg/l	0.01	
	BOD5 - Soluble C		ous			
	BOD5		5	mg/l	1	
NW020	Chemical Oxyger	Demand		0		
	Chemical oxygen der		503	mg/l	15	
	Chloride	(,		0		
	Chloride (Cl)		311	(± 31.1) mg/l	0.02	
NW023	Conductivity					
	Conductivity		357	(± 7.1) mS/m	0.1	
	Dissolved Alumin	nium				
	Aluminium		0.013	mg/l	0.002	
	Dissolved Boron			-		
	Boron (B)		1.92	mg/l	0.005	
NW110	Dissolved Lead					
	Lead (Pb)		<0.0005	mg/l	0.0005	
NW113	Dissolved Manga	nese				
	Manganese (Mn)		0.303	mg/l	0.0005	
NW114	Dissolved Mercui	ry				
	Mercury (Hg)		<0.0005	mg/l	0.0005	
NW116	Dissolved Nickel					
	Nickel (Ni)		0.0074	mg/l	0.0005	
ZMOUX	Enumeration of E	scherichia	a coli by Mem	brane Filtration		
	Escherichia coli		1	cfu/100 ml	1	
NW010	Nitrate-N					
	Nitrate-N		<0.01	mg/l	0.01	

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		RESULTS	(UNCERTAINTY)	LOQ
NW195	pH (Tested beyon	nd 15 minute APHA holdi	ng time)	
	рH	7.2	(± 0.2)	0.1
NW011	Sulphate			
	Sulphate	4.18	(± 0.42) mg/l	0.02
NW003	Total Alkalinity			
	Alkalinity total	1510	mg CaCO3/I	1

LIST OF METHODS

Total Alkalinity: APHA Online Edition 2320 B	NW007	Chloride: APHA Online Edition 4110 B
Nitrate-N: APHA Online Edition 4110 B	NW011	Sulphate: APHA Online Edition 4110 B
Chemical Oxygen Demand: APHA Online Edition 5220 D	NW023	Conductivity: APHA 24th Edition 2510 B
Dissolved Aluminium: APHA Online Edition 3125 B mod.	NW103	Dissolved Boron: APHA Online Edition 3125 B mod.
Dissolved Lead: APHA Online Edition 3125 B mod.	NW113	Dissolved Manganese: APHA Online Edition 3125 B mod.
Dissolved Mercury: APHA Online Edition 3125 B mod.	NW116	Dissolved Nickel: APHA Online Edition 3125 B mod.
Ammonia Nitrogen: APHA Online Edition 4500-NH3 H	NW195	pH (Tested beyond 15 minute APHA holding time): APHA 24th Edition 4500-H B
BOD5 - Soluble Carbonaceous: APHA Online Edition 5210 B	ZM0UX	Escherichia coli E (Water) [NZ] <1 >6 000 /100 ml (0) m-FC Agar-F: SMEWW 9222I; APHA 24th Edition
	Nitrate-N: APHA Online Edition 4110 B Chemical Oxygen Demand: APHA Online Edition 5220 D Dissolved Aluminium: APHA Online Edition 3125 B mod. Dissolved Lead: APHA Online Edition 3125 B mod. Dissolved Mercury: APHA Online Edition 3125 B mod. Ammonia Nitrogen: APHA Online Edition 4500-NH3 H BOD5 - Soluble Carbonaceous: APHA Online Edition 5210	Nitrate-N: APHA Online Edition 4110 BNW011Chemical Oxygen Demand: APHA Online Edition 5220 DNW023Dissolved Aluminium: APHA Online Edition 3125 B mod.NW103Dissolved Lead: APHA Online Edition 3125 B mod.NW113Dissolved Mercury: APHA Online Edition 3125 B mod.NW113Bobs - Soluble Carbonaceous: APHA Online Edition 5210ZM0UX

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Marylou Cabral

Laboratory Manager Eurofins ELS Limited



Gabriela

Business Unit Manager

Carvalhaes

EXPLANATORY NOTE

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- S Test is subcontracted outside Eurofins group and is not accredited
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Signature

Jennifer Mont

Supervisor Eurofins ELS

Leo Cleave

Senior Analyst Microbiology

Limited

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

MAV means Maximum Allowable Value



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Page 1 of 3 AR-25-NW-006483-01

Food & Water Testing

ANALYTICAL REPORT

REPOR	RT CODE	AF	R-25-NW-006	6483-01	REPORT DATE	30/01/2025
Attention	Horowhenua D Lab Results	istrict Cou	uncil			
	P 0 Box 642					
	4741 Levin					
	NEW ZEALAN	D				
Phone	(06) 367 2705	anua saut n	_		Copy to: McMillan (Davidme (labresults@horowhenua.gov	@horowhenua.govt.nz), Results wt.nz) Landmark
Email	labresults@horow				Order code:	
Contrac	for your orders: t:	Levin Lai	Carvalhaes ndfill		Order code:	EUNZWE-00228811
					Purchase Order Number:	144482 - landfill
SAMPL	E CODE	812-202	25-0001061	15		
Sample		386290-				
Product		Ground w			.	
-	ig Point code: on Date & Time:	WIL-C2d	a)25 13:17		Sampling Point name:	Levin C2dd
	s Started on:	22/01/20			Analysis Ending Date:	30/01/2025
Product	Туре	Ground w	vater		Sampled Date & Time	21/01/2025 13:17
Sampler	(s)	Client no	minated exter	nal sampler	Sampled by Eurofins	No
			RESULTS	G (UNCERTAINT)	() LOQ	
NW179	Ammonia Nitroge	n				
	Ammoniacal nitroger	n (N)	0.33	(± 0.03) mg/l	0.01	
NW341	BOD5 - Soluble C	arbonaced				
	BOD5		<3	mg/l	1	
NW020	Chemical Oxyger		05		45	
	Chemical oxygen der	nand (COD)	25	mg/l	15	
	Chloride Chloride (Cl)		42.8	(± 4.28) mg/l	0.02	
NW023	Conductivity		42.0		0.02	
111020	Conductivity		56.0	(± 1.1) mS/m	0.1	
NW098	Dissolved Alumin	ium				
	Aluminium		0.004	mg/l	0.002	
NW103	Dissolved Boron					
	Boron (B)		0.063	mg/l	0.005	
NW110	Dissolved Lead					
	Lead (Pb)		<0.0005	mg/l	0.0005	
NW113	Dissolved Manga	nese	0 500		0.0005	
NI\A/1 1 4	Manganese (Mn)		0.599	mg/l	0.0005	
1110114	Dissolved Mercur Mercury (Hg)	У	<0.0005	mg/l	0.0005	
NW116	Dissolved Nickel		<u></u>		0.0003	
	Nickel (Ni)		<0.0005	mg/l	0.0005	
ZMF1E	Enumeration of E	scherichia				
	Escherichia coli		<1	cfu/100 ml	1	
NW010	Nitrate-N					
	Nitrate-N		0.02	(± 0.00) mg/l	0.01	

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Phone



alahah





		RESULTS	(UNCERTAINTY)	LOQ
NW195	pH (Tested beyon	d 15 minute APHA hold	ing time)	
	pН	8.0	(± 0.2)	0.1
NW011	Sulphate			
	Sulphate	0.06	(± 0.01) mg/l	0.02
NW003	Total Alkalinity			
	Alkalinity total	223	mg CaCO3/I	1

LIST OF METHODS

	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
NW098	Dissolved Aluminium: APHA Online Edition 3125 B mod.	NW103	Dissolved Boron: APHA Online Edition 3125 B mod.
NW110	Dissolved Lead: 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.
NW179	Ammonia Nitrogen: APHA Online Edition 4500-NH3 H	NW195	pH (Tested beyond 15 minute APHA holding time): APHA 24th Edition 4500-H B
NW341	BOD5 - Soluble Carbonaceous: APHA Online Edition 5210 B	ZMF1E	Escherichia coli E (Water) [NZ] <1 >80 /100 ml (0) Ml Agar-F: SMEWW 9222K; APHA 24th Edition

, mbecabro,

Marylou Cabral

Laboratory Manager Eurofins ELS Limited



Business Unit Manager



Jennifer Mont Supervisor Eurofins ELS Limited

Cody Forbes

Technical Specialist Technical Specialist s an

Leo Cleave

Senior Analyst Microbiology

EXPLANATORY NOTE

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N/A means Not Applicable

Not Detected means not detected at or above the Limit of Quantification (LOQ)

 $\ensuremath{\textbf{LOQ}}$ means Limit of Quantification and the unit of LOQ is the same as the result unit

- × (Unsatisfactory) means does not meet the specification
- \checkmark (Satisfactory) means meets the specification

MAV means Maximum Allowable Value



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ANALYTICAL REPORT

REPOR	TCODE	AF	R-25-NW-008	3024-01	REPORT DATE	05/02/2025
Attention	Horowhenua D Lab Results	istrict Co	uncil			
	P 0 Box 642					
	4741 Levin					
	NEW ZEALAN	D				
Phone	(06) 367 2705				Copy to: McMillan (Davidm@h	
Email	labresults@horow				(labresults@horowhenua.govt.	
Contact Contract	for your orders:	Gabriela Levin La	Carvalhaes ndfill		Order code:	EUNZWE-00229489
Contract		Lovin Lu			Purchase Order Number:	144482 - Iandfill
SAMPL	E CODE	812-202	25-0001263	36		
Sample		386254-				
-	g Point code:	Ground w WIL-C2d	S		Sampling Point name:	Levin C2ds
•	on Date & Time: Started on:	24/01/20 25/01/20)25 13:21 25		Analysis Ending Date:	05/02/2025
Product		Ground w			Sampled Date & Time	05/02/2025 23/01/2025 13:25
Sampler(••		minated exter	nal sampler	Sampled by Eurofins	No
NW179	Ammonia Nitroge	'n		(01102111111	.,	
111175	Ammoniacal nitroger		4.09	(± 0.41) mg/l	0.01	
NW341	BOD5 - Soluble C					
	BOD5		<3	mg/l	1	
NW020	Chemical Oxyger	Demand		U U		
	Chemical oxygen der		85	mg/l	15	
NW007	Chloride					
	Chloride (Cl)		126	(± 12.6) mg/l	0.02	
NW023	Conductivity					
	Conductivity		161	(± 3.2) mS/m	0.1	
NW098	Dissolved Alumin	ium				
	Aluminium		<0.002	mg/l	0.002	
NW103	Dissolved Boron					
	Boron (B)		0.471	mg/l	0.005	
NW110	Dissolved Lead		0.0005		0.0005	
NI\4/1 1 O	Lead (Pb)		<0.0005	mg/l	0.0005	
NW113	Dissolved Manga Manganese (Mn)	nese	2.55	mg/l	0.0005	
NW114	Dissolved Mercui	~	2.00	1118/1	0.0005	
1444 T T++	Mercury (Hg)	y	<0.0005	mg/l	0.0005	
NW116	Dissolved Nickel			o .		
	Nickel (Ni)		0.0020	mg/l	0.0005	
ZMOUX	Enumeration of E	scherichia				
	Escherichia coli		<1	cfu/100 ml	1	
NW010	Nitrate-N					
	Nitrate-N		<0.01	mg/l	0.01	

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		RESULTS	(UNCERTAINTY)	LOQ
NW195	pH (Tested beyor	nd 15 minute APHA holdi	ng time)	
	рH	7.4	(± 0.2)	0.1
NW011	Sulphate			
	Sulphate	<0.02	(± 0.01) mg/l	0.02
NW003	Total Alkalinity			
	Alkalinity total	712	mg CaCO3/I	1

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
NW098	Dissolved Aluminium: APHA Online Edition 3125 B mod.	NW103	Dissolved Boron: APHA Online Edition 3125 B mod.
NW110	Dissolved Lead: 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.
NW179	Ammonia Nitrogen: APHA Online Edition 4500-NH3 H	NW195	pH (Tested beyond 15 minute APHA holding time): APHA 24th Edition 4500-H B
NW341	BOD5 - Soluble Carbonaceous: APHA Online Edition 5210 B	ZM0UX	Escherichia coli E (Water) [NZ] <1 >6 000 /100 ml (0) m-FC Agar-F: SMEWW 9222I; APHA 24th Edition

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Marylou Cabral

Laboratory Manager Eurofins ELS Limited



Gabriela

Business Unit Manager

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Carvalhaes
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Jennifer Mont Limited

Supervisor Eurofins ELS

Leo Cleave

Senior Analyst Microbiology

- 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
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Page 1 of 3 AR-25-NW-007056-01

Food & Water Testing

ANALYTICAL REPORT

REPORT CODE		AR-25-NW-007056-01			REPORT DATE	01/02/2025		
Attention Horowhenua Lab Results		istrict Cou	uncil					
	P 0 Box 642							
	4741 Levin							
	NEW ZEALAN	D						
Phone	(06) 367 2705				Copy to: McMillan (Davidm@horowhenua.govt.nz), Results			
Email	labresults@horow	henua.govt.nz			(labresults@horowhenua.gov			
Contact Contrac	for your orders:	Gabriela Levin Lar	Carvalhaes		Order code:	EUNZWE-00229115		
Contrac		LOVIN La			Purchase Order Number:	144482 - Iandfill		
SAMDI	E CODE	812-203	25-0001146	37				
Sample		386257-		,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,				
Product		Ground w						
-	g Point code:	WIL-D1			Sampling Point name:	Levin D1		
	on Date & Time: Started on:	23/01/20 23/01/20)25 11:20 25		Analysis Ending Date:	01/02/2025		
Product		Ground w			Sampled Date & Time	01/02/2025 22/01/2025 13:10		
Sampler(•••		minated exter	nal sampler	Sampled by Eurofins	No		
•	· -							
NW179	Ammonia Nitroge	'n		•	,			
	Ammoniacal nitroger		0.06	(± 0.01) mg/l	0.01			
NW341	BOD5 - Soluble C		ous					
	BOD5		<3	mg/l	1			
NW020	Chemical Oxyger	Demand						
	Chemical oxygen der	nand (COD)	15	mg/l	15			
NW007	Chloride							
	Chloride (Cl)		25.3	(± 2.53) mg/l	0.02			
NW023	Conductivity							
	Conductivity		53.2	(± 1.1) mS/m	0.1			
NW098	Dissolved Alumin	ium	0.000					
	Aluminium		<0.002	mg/l	0.002			
NW103	Dissolved Boron Boron (B)		0.051	mg/l	0.005			
NW110	Dissolved Lead		0.051	mg/l	0.005			
	Lead (Pb)		<0.0005	mg/l	0.0005			
NW113	Dissolved Manga	nese			0.0000			
	Manganese (Mn)		0.0008	mg/l	0.0005			
NW114	Dissolved Mercur	у						
	Mercury (Hg)	-	<0.0005	mg/l	0.0005			
NW116	Dissolved Nickel							
	Nickel (Ni)		<0.0005	mg/l	0.0005			
ZMOUX	Enumeration of E	scherichia	a coli by Merr	brane Filtration				
	Escherichia coli		<1	cfu/100 ml	1			
NW010	Nitrate-N							
	Nitrate-N		6.28	(± 0.63) mg/l	0.01			

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	Food & water	lesting	
	RESULTS (UNCERT	AINTY) I	LOQ
NW195 рН рН	(Tested beyond 15 minute APHA holding time) 8.1 (± 0.2)		0.1
LIST OF ME	THODS		
NW007 Chi	oride: APHA Online Edition 4110 B	NW010	Nitrate-N: APHA Online Edition 4110 B
NW020 Che	mical Oxygen Demand: APHA Online Edition 5220 D	NW023	Conductivity: APHA 24th Edition 2510 B
NW098 Dis	solved Aluminium: APHA Online Edition 3125 B mod.	NW103	Dissolved Boron: APHA Online Edition 3125 B mod.
NW110 Dis	solved Lead: APHA Online Edition 3125 B mod.	NW113	Dissolved Manganese: APHA Online Edition 3125 B mod.
NW114 Dis	solved Mercury: APHA Online Edition 3125 B mod.	NW116	Dissolved Nickel: APHA Online Edition 3125 B mod.
NW179 Am	monia Nitrogen: APHA Online Edition 4500-NH3 H	NW195	pH (Tested beyond 15 minute APHA holding time): APHA 24th Edition 4500-H B
NW341 BOI B	D5 - Soluble Carbonaceous: APHA Online Edition 5210	ZM0UX	Escherichia coli E (Water) [NZ] <1 >6 000 /100 ml (0) m-FC Agar-F: SMEWW 9222I; APHA 24th Edition
	Signa	ature	
, <i>19</i> 1	becabrod Th	Uml	ally
Marylou Ca	Indext Laboratory Manager Jennifer Mont Eurofins ELS Limited H	Supervisor E Limited	Eurofins ELS Gabriela Business Unit Manager Carvalhaes
Cody Fort	Technical Specialist Hannah Smith Technical Specialist	Laboratory S Microbiology	•
 Test is subo Test is subo Test is subo 		Not De Quantif LOQ m the rest	eans Not Applicable tected means not detected at or above the Limit of ication (LOQ) leans Limit of Quantification and the unit of LOQ is the same as ult unit satisfactory) means does not meet the specification

Test result is provided by the customer and is not accredited

Tested at the sampling point by Eurofins and is not accredited
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Test is RLP accredited

W Test is subcontracted within Eurofins group and is RLP accredited

 \checkmark (Satisfactory) means meets the specification

MAV means Maximum Allowable Value



Page 2 of 3

AR-25-NW-007056-01

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Page 1 of 3 AR-25-NW-007053-01

Food & Water Testing

ANALYTICAL REPORT

REPOR	T CODE	AR	R-25-NW-00	07053-01	REPORT DATE	01/02/2025
Attention	Horowhenua D Lab Results P O Box 642 4741 Levin		uncil			
	NEW ZEALAN	D				
Phone	(06) 367 2705				Copy to: McMillan (Davidm@ (labresults@horowhenua.gov	<pre>Interpretation () () () () () () () () () () () () ()</pre>
Email	labresults@horowl	_				
Contact	for your orders:	Levin Lar	Carvalhaes ndfill		Order code:	EUNZWE-00229115
	-				Purchase Order Number:	144482 - Iandfill
SAMPLE	E CODE	812-202	25-000114	-64		
Sample I		386258-				
Product:		Ground w	vater			
	g Point code:	WIL-D2			Sampling Point name:	Levin D2
	on Date & Time: Started on:	23/01/20)25 11:16 25		Analysis Ending Date:	01/02/2025
Product		Ground w			Sampled Date & Time	22/01/2025 13:10
Sampler(• •			ernal sampler	Sampled by Eurofins	No
			RESUL1	S (UNCERTAINT)	() LOQ	
NW179	Ammonia Nitroge	n				
	Ammoniacal nitroger		0.81	(± 0.08) mg/l	0.01	
NW341	BOD5 - Soluble C	arbonaced	ous			
	BOD5		<3	mg/l	1	
NW020	Chemical Oxygen	Demand				
	Chemical oxygen den	nand (COD)	39	mg/l	15	
NW007	Chloride					
	Chloride (Cl)		99.9	(± 9.99) mg/l	0.02	
NW023	Conductivity			(1.1.2) m C/m		
	Conductivity	_	67.0	(± 1.3) mS/m	0.1	
NW098	Dissolved Alumin	ium	0.002		0.000	
NIW/102	Aluminium Dissolved Boron		0.003	mg/l	0.002	
1111103	Boron (B)		0.047	mg/l	0.005	
NW109	Dissolved Iron		0.017		0.000	
1111205	Iron (Fe)		11.3	mg/l	0.005	
NW110	Dissolved Lead			-		
	Lead (Pb)		<0.0005	mg/l	0.0005	
NW113	Dissolved Manga	nese				
	Manganese (Mn)		0.644	mg/l	0.0005	
NW114	Dissolved Mercur	у				
	Mercury (Hg)		<0.0005	mg/l	0.0005	
NW116	Dissolved Nickel					
NU44 00	Nickel (Ni)		0.0005	mg/l	0.0005	
NW120	Dissolved Sodium	n	51.0	m ~ /l	0.01	
	Sodium (Na)		51.2	mg/l	0.01	
						64 4 576 5016

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Phone



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		RESULT	S (UNCERTAINTY)	LOQ
ZMOUX	Enumeration of Esch	erichia coli by Mer	nbrane 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 1	5 minute APHA hol	ding time)	
	pН	5.9	(± 0.2)	0.1

LIST OF METHODS

Chloride: APHA Online Edition 4110 B		
	NW010	Nitrate-N: APHA Online Edition 4110 B
Chemical Oxygen Demand: APHA Online Edition 5220 D	NW023	Conductivity: APHA 24th Edition 2510 B
Dissolved Aluminium: APHA Online Edition 3125 B mod.	NW103	Dissolved Boron: APHA Online Edition 3125 B mod.
Dissolved Iron: APHA Online Edition 3125 B mod.	NW110	Dissolved Lead: APHA Online Edition 3125 B mod.
Dissolved Manganese: APHA Online Edition 3125 B mod.	NW114	Dissolved Mercury: APHA Online Edition 3125 B mod.
Dissolved Nickel: APHA Online Edition 3125 B mod.	NW120	Dissolved Sodium: APHA Online Edition 3125 B mod.
Ammonia Nitrogen: APHA Online Edition 4500-NH3 H	NW195	pH (Tested beyond 15 minute APHA holding time): APHA 24th Edition 4500-H B
BOD5 - Soluble Carbonaceous: APHA Online Edition 5210 B	ZM0UX	Escherichia coli E (Water) [NZ] <1 >6 000 /100 ml (0) m-FC Agar-F: SMEWW 9222I; APHA 24th Edition
	Dissolved Aluminium: APHA Online Edition 3125 B mod. Dissolved Iron: APHA Online Edition 3125 B mod. Dissolved Manganese: APHA Online Edition 3125 B mod. Dissolved Nickel: APHA Online Edition 3125 B mod. Ammonia Nitrogen: APHA Online Edition 4500-NH3 H BOD5 - Soluble Carbonaceous: APHA Online Edition 5210	Dissolved Aluminium: APHA Online Edition 3125 B mod.NW103Dissolved Iron: APHA Online Edition 3125 B mod.NW110Dissolved Manganese: APHA Online Edition 3125 B mod.NW114Dissolved Nickel: APHA Online Edition 3125 B mod.NW120Ammonia Nitrogen: APHA Online Edition 4500-NH3 HNW195BOD5 - Soluble Carbonaceous: APHA Online Edition 5210ZM0UX

mbecabros

Marylou Cabral

Laboratory Manager Eurofins ELS Limited



Business Unit Manager



Signature

Jennifer Mont Supervisor Eurofins ELS Limited



Cody Forbes



Gordon McArthur Senior Laboratory Analyst Eurofins ELS Limited Hannah Smith Laboratory Supervisor

Microbiology

Carvalhaes **EXPLANATORY NOTE**

Gabriela

①Test is not accredited

- 2 Test is subcontracted within Eurofins group and is accredited 3 Test is subcontracted within Eurofins group and is not accredited
- Test is subcontracted outside Eurofins group and is accredited
- S Test is subcontracted outside Eurofins group and is not accredited
- 6 Test result is provided by the customer and is not accredited
- Tested at the sampling point by Eurofins and is not accredited
- [®]Tested at the sampling point by Eurofins and is accredited
- Test is RLP accredited
- **W**Test is subcontracted within Eurofins group and is RLP accredited

N/A means Not Applicable

Technical Specialist

Technical Specialist

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

MAV means Maximum Allowable Value

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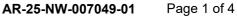
END OF REPORT



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ANALYTICAL REPORT

REPORT CODE		AR-25-NW-007049-01			REPORT DATE	01/02/2025		
Attention	Horowhenua D Lab Results	District Cou	uncil					
	P 0 Box 642							
	4741 Levin							
	NEW ZEALAN	D						
Phone	(06) 367 2705					@horowhenua.govt.nz), Results		
Email	labresults@horow	henua.govt.n	Z		(labresults@horowhenua.gov	vt.nz), Landmark		
Contact for your orders: Contract:		Gabriela Levin Lar	Carvalhaes		Order code:	EUNZWE-00229115		
oonnact.		Lovin Lui			Purchase Order Number:	144482 - landfill		
SAMPLE	CODE	812-202	25-00011	454				
Sample Na	ame	386363-	0					
Product:		Ground w						
	Point code:	WIL-D3rd			Sampling Point name:	Levin D3rd		
	Date & Time:		25 11:08		Analysia Fradier Date	01/00/0005		
Analysis S		23/01/20			Analysis Ending Date:			
Product Ty Sampler(s)	1he	Ground w		ernal sampler	Sampled Date & Time Sampled by Eurofins	22/01/2025 13:11 No		
ORGANICS				•		INU		
			RESUL	TS (UNCERTAINT	() LOQ			
	olatile Fatty Acio	ds (VFA)	F	(I	_			
	cetic acid		<5 <5	mg/l	5			
	utyric acid		<5 <5	mg/l	5			
	leptanoic acid lexanoic acid		<5 <5	mg/l	5 5			
	socaproic acid		<5 <5	mg/l				
	sobutyric acid		<5 <5	mg/l mg/l	5 5			
	sovaleric acid		<5	mg/l	5			
	ropionic acid		<5	mg/l	5			
	aleric acid		<5	mg/l	5			
	olatile fatty acids a	sacetic	<5	mg/l	5			
	cid	s acelic		1116/1	5			
			RESUL	TS (UNCERTAINT	() LOQ			
	mmonia Nitroge							
	mmoniacal nitroger		0.38	(± 0.04) mg/l	0.01			
	OD5 - Soluble C	arbonaced						
	OD5		<3	mg/l	1			
	hemical Oxyger							
	hemical oxygen der	mand (COD)	21	mg/l	15			
NW007 C	hloride							
С	hloride (Cl)		32.8	(± 3.28) mg/l	0.02			
NW023 C	onductivity							
С	onductivity		52.3	(± 1.0) mS/m	0.1			
NW098 D	issolved Alumir	nium						
A	luminium		0.002	mg/l	0.002			
NW583 D	issolved Arseni	с						
А	rsenic (As)		0.021	mg/l	0.001			

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		RESULTS	(UNCERTAINTY)	LOQ	
NW103	Dissolved Boron				
	Boron (B)	0.043	mg/l	0.005	
NW104	Dissolved Cadmium				
	Cadmium (Cd)	<0.0002	mg/l	0.0002	
NW105	Dissolved Calcium				
	Calcium (Ca)	52.0	mg/l	0.05	
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)	0.029	mg/l	0.005	
NW110	Dissolved Lead				
	Lead (Pb)	<0.0005	mg/l	0.0005	
NW112	Dissolved Magnesium	12.6		0.01	
NN/110	Magnesium (Mg)	13.6	mg/l	0.01	
NW113	Dissolved Manganese	0.462		0 0005	
	Manganese (Mn)	0.463	mg/l	0.0005	
NW114	Dissolved Mercury Mercury (Hg)	<0.0005	mg/l	0.0005	
NW116	Dissolved Nickel	<0.0005	mg/l	0.0005	
INWIIO	Nickel (Ni)	<0.0005	mg/l	0.0005	
NW117	Dissolved Potassium	<0.0003	1118/1	0.0005	
1111/	Potassium (K)	6.65	mg/l	0.01	
NW193	Dissolved Reactive Phosph			0.01	
	Phosphorus (soluble reactive)	1.21	mg/l	0.005	
NW120	Dissolved Sodium		U		
	Sodium (Na)	22.6	mg/l	0.01	
NW125	Dissolved Zinc				
	Zinc (Zn)	<0.002	mg/l	0.002	
ZMOUX	Enumeration of Escherichi	a coli by Memb	rane 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 minu	ute APHA holdir			
	рН	7.9	(± 0.2)	0.1	
NW011	Sulphate				
	Sulphate	<0.02	(± 0.01) mg/l	0.02	
NW206	Suspended Solids				
	Suspended Solids	11	mg/l	3	
NW003	Total Alkalinity		_		
	Alkalinity total	219	mg CaCO3/I	1	
NW030	Total Hardness				
	Hardness	186	mg CaCO3/I	1	
NW210	Total Non-Purgeable Organ				
	Total Organic Carbon	5.5	mg/l	0.1	





AR-25-NW-007049-01

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.
ZM0UX	Escherichia coli E (Water) [NZ] <1 >6 000 /100 ml (0) m-FC Agar-F: SMEWW 9222I; APHA 24th Edition		

Signature



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Test is RLP accredited

Eurofins ELS Limited

85 Port Road

Seaview Lower Hutt Wellington 5010 NEW ZEALAND

- Test is subcontracted within Eurofins group and is RLP accredited
- Phone
 +64 4 576 5016

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 Image: Constraint of the second secon



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Food & Water Testing

ANALYTICAL REPORT

REPORT CODE		AR-25-NW-007055-01			REPORT DATE	01/02/2025
Attention	Horowhenua E Lab Results	District Cou	ncil			
	P 0 Box 642					
	4741 Levin					
	NEW ZEALAN	D				
Phone	(06) 367 2705				Copy to: McMillan (Davidm	@horowhenua.govt.nz), Results
Email	labresults@horow	henua.govt.nz	2		(labresults@horowhenua.go	ovt.nz), Landmark
Contact for	or your orders:	Gabriela (Carvalhaes		Order code:	EUNZWE-00229115
Contract:		Levin Lan	dfill			144400
					Purchase Order Number	: 144482 - landfill
SAMPLE	CODE	812-202	25-000114	66		
Sample N	ame	386364-0)			
Product:		Ground w				
	Point code:	WIL-D3rs			Sampling Point name	: Levin D3rs
	Date & Time: Started on:	23/01/20	25 11:19 25		Analysis Ending Date:	01/02/2025
Product T		Ground w			Sampled Date & Time	22/01/2025 13:12
Sampler(s)				ernal sampler	Sampled by Eurofins	No
ORGANICS		Client nominated external sampler RESULTS (UNCERTAINT)				
	olatile Fatty Aci	ds (VFA)			.,	
	cetic acid	us (VI A)	<5	mg/l	5	
	Butyric acid		<5	mg/l	5	
	leptanoic acid		<5	mg/l	5	
	lexanoic acid		<5	mg/l	5	
	socaproic acid		<5	mg/l	5	
	sobutyric acid		<5	mg/l	5	
	sovaleric acid		<5	mg/l	5	
F	Propionic acid		<5	mg/l	5	
١	aleric acid		<5	mg/l	5	
١	olatile fatty acids a	s acetic	<5	mg/l	5	
	cid					
			RESUL	IS (UNCERTAINT	r) loq	
	mmonia Nitroge		1.10	(+ 0 11)		
	mmoniacal nitroger		1.12	(± 0.11) mg/l	0.01	
	OD5 - Soluble C	arbonaceo				
	30D5		<3	mg/l	1	
	hemical Oxyger					
	Chemical oxygen der	nand (COD)	61	mg/l	15	
NW007 C						
(Chloride (Cl)		19.4	(± 1.94) mg/l	0.02	
	onductivity					
	Conductivity		22.7	(± 0.5) mS/m	0.1	
NW098 C	issolved Alumir	nium				
ŀ	luminium		0.046	mg/l	0.002	
NW583 C	issolved Arseni	с				
I	Arsenic (As)		<0.001	mg/l	0.001	

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		RESULTS	(UNCERTAINTY)	LOQ	
NW103	Dissolved Boron				
	Boron (B)	0.033	mg/l	0.005	
NW104	Dissolved Cadmium				
	Cadmium (Cd)	<0.0002	mg/l	0.0002	
NW105	Dissolved Calcium				
	Calcium (Ca)	12.5	mg/l	0.05	
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)	14.8	mg/l	0.005	
NW110	Dissolved Lead				
	Lead (Pb)	<0.0005	mg/l	0.0005	
NW112	Dissolved Magnesium				
	Magnesium (Mg)	6.04	mg/l	0.01	
NW113	Dissolved Manganese				
	Manganese (Mn)	0.418	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)	4.84	mg/l	0.01	
NW193	Dissolved Reactive Phosph				
	Phosphorus (soluble reactive)	0.306	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	
ZMOUX	Enumeration of Escherichi				
	Escherichia coli	<1	cfu/100 ml	1	
NW010	Nitrate-N	0.01	"		
	Nitrate-N	<0.01	mg/l	0.01	
NW195	pH (Tested beyond 15 minu		ng time) (± 0.2)	. ·	
	pH	7.8	(± 0.2)	0.1	
NW011	•	0.00	(± 0.09) mg/l	0.07	
	Sulphate	0.93	(± 0.09) mg/i	0.02	
NW206	Suspended Solids	0			
	Suspended Solids	9	mg/l	3	
NW003	Total Alkalinity	70			
	Alkalinity total	76	mg CaCO3/I	1	
NW030	Total Hardness	FC			
	Hardness	56	mg CaCO3/I	1	
NW210	Total Non-Purgeable Organ			0.4	
	Total Organic Carbon	18.3	mg/l	0.1	





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.
ZM0UX	Escherichia coli E (Water) [NZ] <1 >6 000 /100 ml (0) m-FC Agar-F: SMEWW 9222I; APHA 24th Edition		

Signature mbecabr Business Unit Manager Marylou Cabral Laboratory Manager Jennifer Mont Supervisor Eurofins ELS Gabriela Eurofins ELS Limited I imited Carvalhaes Cody Forbes **Technical Specialist** Hannah Smith Laboratory Supervisor **Technical Specialist** Microbiology **EXPLANATORY NOTE** Test is not accredited N/A means Not Applicable Not Detected means not detected at or above the Limit of Test is subcontracted within Eurofins group and is accredited Quantification (LOQ) 3 Test is subcontracted within Eurofins group and is not accredited LOQ means Limit of Quantification and the unit of LOQ is the same as Test is subcontracted outside Eurofins group and is accredited the result unit ⑤ Test is subcontracted outside Eurofins group and is not accredited ✗ (Unsatisfactory) means does not meet the specification 6 Test result is provided by the customer and is not accredited \checkmark (Satisfactory) means meets the specification Tested at the sampling point by Eurofins and is not accredited MAV means Maximum Allowable Value

 ${\ensuremath{\mathfrak{B}}}$ Tested at the sampling point by Eurofins and is accredited

Test is RLP accredited

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Food & Water Testing

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Page 1 of 3 AR-25-NW-007050-01

Food & Water Testing

ANALYTICAL REPORT

REPORT CODE		AF	R-25-NW-00	7050-01	REPORT DATE	01/02/2025
Attention Horowhenu Lab Results		istrict Co	uncil			
	P 0 Box 642					
	4741 Levin					
	NEW ZEALAN	D				
Phone	(06) 367 2705					@horowhenua.govt.nz), Results
Email	labresults@horow	henua.govt.n	IZ		(labresults@horowhenua.gov	vt.nz), Landmark
	for your orders:		Carvalhaes		Order code:	EUNZWE-00229115
Contract		Levin La	ndfill		Durchasa Ordar Number	144482 - Iandfill
					Purchase Order Number:	144482 - 181101111
	ECODE		25-000114	61		
Sample I		386293-				
Product:		Ground w WIL-D4	vater		Sampling Doint name	Levin D4
	g Point code: on Date & Time:		025 11:12		Sampling Point name:	
	Started on:	23/01/20			Analysis Ending Date:	01/02/2025
Product	Туре	Ground w	vater		Sampled Date & Time	22/01/2025 13:13
Sampler(s)	Client no	minated exter	rnal sampler	Sampled by Eurofins	No
			RESULT	S (UNCERTAINT)	() LOQ	
NW179	Ammonia Nitroge	n				
	Ammoniacal nitroger		0.15	(± 0.02) mg/l	0.01	
NW341	BOD5 - Soluble C	arbonace	ous			
	BOD5		<3	mg/l	1	
NW020	Chemical Oxygen	Demand				
	Chemical oxygen der		<15	mg/l	15	
NW007	Chloride					
	Chloride (Cl)		29.9	(± 2.99) mg/l	0.02	
NW023	Conductivity					
	Conductivity		28.4	(± 0.6) mS/m	0.1	
NW098	Dissolved Alumin	ium				
	Aluminium		0.006	mg/l	0.002	
NW103	Dissolved Boron					
	Boron (B)		0.030	mg/l	0.005	
NW109	Dissolved Iron					
	Iron (Fe)		4.26	mg/l	0.005	
NW110	Dissolved Lead					
	Lead (Pb)		<0.0005	mg/l	0.0005	
NW113	Dissolved Manga	nese	0.010			
	Manganese (Mn)		0.218	mg/l	0.0005	
NW114	Dissolved Mercur	у	0.0005	"		
	Mercury (Hg)		<0.0005	mg/l	0.0005	
NW116	Dissolved Nickel		.0.0005		0.0005	
NW/100	Nickel (Ni)		<0.0005	mg/l	0.0005	
NW120	Dissolved Sodium	n	20.0		0.04	
	Sodium (Na)		28.9	mg/l	0.01	

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		RESULT	S (UNCERTAINTY)	LOQ			
ZMOUX	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)						
	pН	7.5	(± 0.2)	0.1			

LIST OF METHODS

LISTO	FMETHODS		
NW007	Chloride: APHA Online Edition 4110 B	NW010	Nitrate-N: APHA Online Edition 4110 B
NW020	Chemical Oxygen Demand: APHA Online Edition 5220 D	NW023	Conductivity: APHA 24th Edition 2510 B
NW098	Dissolved Aluminium: APHA Online Edition 3125 B mod.	NW103	Dissolved Boron: APHA Online Edition 3125 B mod.
NW109	Dissolved Iron: APHA Online Edition 3125 B mod.	NW110	Dissolved Lead: 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.	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
NW341	BOD5 - Soluble Carbonaceous: APHA Online Edition 5210 B	ZM0UX	Escherichia coli E (Water) [NZ] <1 >6 000 /100 ml (0) m-FC Agar-F: SMEWW 9222I; APHA 24th Edition

Signature

m

Jennifer Mont

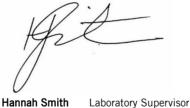
Supervisor Eurofins ELS Limited



Technical Specialist Technical Specialist



Gordon McArthur Senior Laboratory Analyst Eurofins ELS Limited



Laboratory Supervisor Microbiology U A

Gabriela Carvalhaes

Business Unit Manager

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Itest is RLP accredited

WTest 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)

 $\ensuremath{\textbf{LOQ}}$ 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

MAV means Maximum Allowable Value



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Food & Water Testing

ANALYTICAL REPORT

REPOR	T CODE	AR	R-25-NW-006	6631-01	REPORT DATE	31/01/2025
Attention	Horowhenua I Lab Results	istrict Cou	uncil			
	P 0 Box 642					
	4741 Levin					
	NEW ZEALAN	D				
Phone	(06) 367 2705					horowhenua.govt.nz), Results
Email	labresults@horow				(labresults@horowhenua.govt	
	for your orders:	Gabriela Levin Lar	Carvalhaes		Order code:	EUNZWE-00228811
Contract		Levin Lai	Iailli		Purchase Order Number:	144482 - Iandfill
<u></u>		010.00	0001001			
	E CODE		25-0001061	.9		
Sample Product:		386298- Ground w				
	g Point code:	Ground w WIL-D5	aler		Sampling Point name:	Levin D5
-	on Date & Time:		25 13:22		camping i onit name.	2000 20
	Started on:	22/01/202			Analysis Ending Date:	31/01/2025
Product	Туре	Ground w	vater		Sampled Date & Time	21/01/2025 13:16
Sampler(s)	Client no	minated exter	nal sampler	Sampled by Eurofins	No
			RESULTS	(UNCERTAINT)	() LOQ	
NW179	Ammonia Nitroge	n				
	Ammoniacal nitroger		0.01	(± 0.00) mg/l	0.01	
NW341	BOD5 - Soluble C		ous			
	BOD5		<3	mg/l	1	
NW020	Chemical Oxyger	Demand		0		
	Chemical oxygen der		<15	mg/l	15	
NW007	Chloride			0		
	Chloride (Cl)		27.6	(± 2.76) mg/l	0.02	
NW023	Conductivity				0.02	
	Conductivity		29.1	(± 0.6) mS/m	0.1	
NW098	Dissolved Alumir	ium				
	Aluminium		<0.002	mg/l	0.002	
NW103	Dissolved Boron			U U		
	Boron (B)		0.032	mg/l	0.005	
NW110	Dissolved Lead			-		
	Lead (Pb)		<0.0005	mg/l	0.0005	
NW113	Dissolved Manga	nese				
	Manganese (Mn)		0.0056	mg/l	0.0005	
NW114	Dissolved Mercu	y				
	Mercury (Hg)	-	<0.0005	mg/l	0.0005	
NW116	Dissolved Nickel					
	Nickel (Ni)		<0.0005	mg/l	0.0005	
ZMOUX	Enumeration of E	scherichia				
	Escherichia coli		<1	cfu/100 ml	1	
NW010	Nitrate-N					
			1.28	(± 0.13) mg/l		

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NW195	pH (Tested beyond	15 minute APH	A holding time)				
	рН	7.2	(± 0.2)		0.1		
IST O	F METHODS						
W007	Chloride: APHA Online	e Edition 4110 B		NW010	Nitrate-N: APHA	Online Edition 4110	ЭB
NW020	Chemical Oxygen Der	mand: APHA Online	e Edition 5220 D	NW023	Conductivity: A	PHA 24th Edition 25	510 B
NW098	Dissolved Aluminium	: APHA Online Editi	on 3125 B mod.	NW103	Dissolved Boro	n: APHA Online Edi	ition 3125 B mod.
NW110	Dissolved Lead: APH	A Online Edition 312	25 B mod.	NW113	Dissolved Manganese: APHA Online Edition 3125 B mod.		
NW114	Dissolved Mercury: A	PHA Online Edition	3125 B mod.	NW116	Dissolved Nickel: APHA Online Edition 3125 B mod.		
NW179	Ammonia Nitrogen: A	Ammonia Nitrogen: APHA Online Edition 4500-NH3 H			pH (Tested beyo APHA 24th Editio	ond 15 minute APH on 4500-H B	IA holding time):
NW341	BOD5 - Soluble Carbo B	onaceous: APHA O	nline Edition 5210	ZM0UX		i E (Water) [NZ] <1 MEWW 9222I; APH	· · ·
			Signat	ure			
Ŷ	mbecabros	/	A	(Der		Jur	bes
Mary	lou Cabral Laboratory	Manager S Limited	Gabriela Carvalhaes	Business Ur	iit Manager	Cody Forbes	Technical Specialis Technical Specialis

Hannah Smith Lat

Laboratory Supervisor Microbiology

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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

 \checkmark (Satisfactory) means meets the specification **MAV** means Maximum Allowable Value





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Food & Water Testing

ANALYTICAL REPORT

REPORT CODE AR-25-NW-007057-01			7057-01	REPORT DATE	01/02/2025	
Attention Horowhenua District Council Lab Results						
	P 0 Box 642					
	4741 Levin					
	NEW ZEALAN	D				
Phone	(06) 367 2705					⊉horowhenua.govt.nz), Results
Email	labresults@horow	nenua.govt.n	Z		(labresults@horowhenua.gov	t.nz), Landmark
Contact Contract	for your orders:	Gabriela Levin Lar	Carvalhaes ndfill		Order code:	EUNZWE-00229115
					Purchase Order Number:	144482 - Iandfill
SAMPLE	E CODE	812-202	25-0001146	58		
Sample I		386297-				
Product:		Ground w	vater			
	g Point code: on Date & Time:	WIL-D6)25 11:24		Sampling Point name:	Levin D6
	Started on:	23/01/20			Analysis Ending Date:	01/02/2025
Product		Ground w			Sampled Date & Time	22/01/2025 13:12
Sampler(• •		minated exter	nal sampler	Sampled by Eurofins	No
F	-			G (UNCERTAINT)		
NW179	Ammonia Nitroge	'n		· · · · · · · · · · · · · · · · · · ·		
	Ammoniacal nitroger		<0.01	mg/l	0.01	
NW341	BOD5 - Soluble C				0.01	
1110+1	BOD5		<3	mg/l	1	
	Chemical Oxyger	Domand				
111020	Chemical oxygen der		<15	mg/l	15	
	Chloride		(10		10	
111007	Chloride (Cl)		24.9	(± 2.49) mg/l	0.02	
NW023	Conductivity		21.5	· / -	0.02	
111023	Conductivity		36.2	(± 0.7) mS/m	0.1	
NWAQS	Dissolved Alumin	ium	50.2		0.1	
	Aluminium		<0.002	mg/l	0.002	
NW103	Dissolved Boron		NU.UUL		0.002	
	Boron (B)		0.064	mg/l	0.005	
NW110	Dissolved Lead		5.00 r		0.000	
	Lead (Pb)		<0.0005	mg/l	0.0005	
NW113	Dissolved Manga	nese			0.0000	
	Manganese (Mn)	1000	0.0009	mg/l	0.0005	
NW114	Dissolved Mercur	v	5.0005		0.0000	
	Mercury (Hg)	3	<0.0005	mg/l	0.0005	
NW116	Dissolved Nickel				0.0000	
	Nickel (Ni)		<0.0005	mg/l	0.0005	
ZMOUX	Enumeration of E	scherichia				
	Escherichia coli		<1 <1	cfu/100 ml	1	
NW010	Nitrate-N					
				(± 1.84) mg/l		

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	Food & Water	riesting						
RESULTS (UNCERTAINTY) LOQ								
NW195 pl	H (Tested beyond 15 minute APHA holding time H 7.7 (± 0.		0.1					
pi	/// (**	,	0.1					
LIST OF M	ETHODS							
NW007 Ch	Ioride: APHA Online Edition 4110 B	NW010	Nitrate-N: APHA Online Edition 4110 B					
NW020 Ch	emical Oxygen Demand: APHA Online Edition 5220 D	NW023	Conductivity: APHA 24th Edition 2510 B					
NW098 Dis	ssolved Aluminium: APHA Online Edition 3125 B mod.	NW103	Dissolved Boron: APHA Online Edition 3125 B mod.					
NW110 Dis	ssolved Lead: APHA Online Edition 3125 B mod.	NW113	Dissolved Manganese: APHA Online Edition 3125 B mod.					
NW114 Dis	ssolved Mercury: APHA Online Edition 3125 B mod.	NW116	Dissolved Nickel: APHA Online Edition 3125 B mod.					
NW179 An	nmonia Nitrogen: APHA Online Edition 4500-NH3 H	NW195	pH (Tested beyond 15 minute APHA holding time): APHA 24th Edition 4500-H B					
NW341 BC B	DD5 - Soluble Carbonaceous: APHA Online Edition 52	10 ZMOUX	Escherichia coli E (Water) [NZ] <1 >6 000 /100 ml (0) m-FC Agar-F: SMEWW 9222I; APHA 24th Edition					
	Sig	gnature						
,11	becalord 7	Mmt	Clay					
Marylou C	Cabral Laboratory Manager Jennifer Mor Eurofins ELS Limited H	t Supervisor Limited	Eurofins ELS Gabriela Business Unit Manager Carvalhaes					
Cody Fo	rbes Technical Specialist Hannah Smit Technical Specialist	th Laboratory Microbiolog	•					
 Test is sub Test is sub Test is sub Test is sub Test result 		Not De Quantii LOQ m the res ✔ (Uns ✔ (Sat	eans Not Applicable tected means not detected at or above the Limit of ication (LOQ) leans Limit of Quantification and the unit of LOQ is the same as ult unit satisfactory) means does not meet the specification sfactory) means meets the specification eans Maximum Allowable Value					

Test is RLP accredited

[®]Tested at the sampling point by Eurofins and is accredited

 $\boldsymbol{\textcircled{0}}$ Test is subcontracted within Eurofins group and is RLP accredited





Page 2 of 3 AR-25-NW-007057-01

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END OF REPORT



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VG LABOR



AR-25-NW-006628-01 Page 1 of 3

Food & Water Testing

ANALYTICAL REPORT

REPOR	RT CODE	AF	R-25-NW-00	6628-01	REPORT DATE	31/01/2025
Attention	Lab Results	istrict Cou	uncil			
	P 0 Box 642					
	4741 Levin					
	NEW ZEALAN	D				
Phone Email	(06) 367 2705 labresults@horow	honua gout n	-		Copy to: McMillan (Davidm@ (labresults@horowhenua.gov	⊉horowhenua.govt.nz), Results ⊄ nz) andmark
	for your orders:		z Carvalhaes		Order code:	EUNZWE-00228811
Contrac	-	Levin Lai			Order code.	EUNZWE-00228811
					Purchase Order Number:	144482 - Iandfill
SAMPL	E CODE	812-202	25-000106	14		
Sample		386250-				
Product		Ground w WIL-E1d				
-	g Point code: on Date & Time:)25 13:16		Sampling Point name:	Levin E1d
	s Started on:	22/01/20			Analysis Ending Date:	31/01/2025
Product	Туре	Ground w	vater		Sampled Date & Time	21/01/2025 13:18
Sampler	(s)	Client no	minated exte	rnal sampler	Sampled by Eurofins	No
			RESUL1	S (UNCERTAINT	() LOQ	
NW179	Ammonia Nitroge	en				
	Ammoniacal nitroger	n (N)	0.20	(± 0.02) mg/l	0.01	
NW341	BOD5 - Soluble C	arbonaced	ous			
	BOD5		<3	mg/l	1	
NW020	Chemical Oxyger					
	Chemical oxygen der	nand (COD)	16	mg/l	15	
NW007	Chloride			(1, 4,00)		
	Chloride (Cl)		40.8	(± 4.08) mg/l	0.02	
NW023	Conductivity		44.0	(± 0.9) mS/m	. (
	Conductivity	•	44.2	(± 0.9) 113/11	0.1	
NW098	Dissolved Alumin	lium	0.002	mg/l	0.000	
NW103	Dissolved Boron		0.002	mg/l	0.002	
140103	Boron (B)		0.049	mg/l	0.005	
NW109	Dissolved Iron		01010		0.000	
	Iron (Fe)		0.026	mg/l	0.005	
NW110	Dissolved Lead					
	Lead (Pb)		<0.0005	mg/l	0.0005	
NW113	Dissolved Manga	nese				
	Manganese (Mn)		0.237	mg/l	0.0005	
NW114	Dissolved Mercur	У				
	Mercury (Hg)		<0.0005	mg/l	0.0005	
NW116	Dissolved Nickel		_			
	Nickel (Ni)		<0.0005	mg/l	0.0005	
NW120	Dissolved Sodiur	n	24.0			
	Sodium (Na)		34.9	mg/l	0.01	
						04 A 570 5040

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www.eurofins.co.nz







		RESULT	S (UNCERTAINTY)	LOQ
ZMF1E	Enumeration of Esch	erichia coli by Me	mbrane 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 1	5 minute APHA ho	lding time)	
	pН	7.8	(± 0.2)	0.1

LIGT OF METHODS

LISTO	FMETHODS		
NW007	Chloride: APHA Online Edition 4110 B	NW010	Nitrate-N: APHA Online Edition 4110 B
NW020	Chemical Oxygen Demand: APHA Online Edition 5220 D	NW023	Conductivity: APHA 24th Edition 2510 B
NW098	Dissolved Aluminium: APHA Online Edition 3125 B mod.	NW103	Dissolved Boron: APHA Online Edition 3125 B mod.
NW109	Dissolved Iron: APHA Online Edition 3125 B mod.	NW110	Dissolved Lead: 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.	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
NW341	BOD5 - Soluble Carbonaceous: APHA Online Edition 5210 B	ZMF1E	Escherichia coli E (Water) [NZ] <1 >80 /100 ml (0) Ml Agar-F: SMEWW 9222K; APHA 24th Edition

mbecabro

Marylou Cabral

Laboratory Manager Eurofins ELS Limited



Cody Forbes **Technical Specialist**

Technical Specialist

EXPLANATORY NOTE

①Test is not accredited

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- 3 Test is subcontracted within Eurofins group and is not accredited
- Test is subcontracted outside Eurofins group and is accredited
- S Test is subcontracted outside Eurofins group and is not accredited
- 6 Test result is provided by the customer and is not accredited
- Tested at the sampling point by Eurofins and is not accredited
- [®]Tested at the sampling point by Eurofins and is accredited
- Test is RLP accredited
- **W**Test is subcontracted within Eurofins group and is RLP accredited

Signature

Leo Cleave

Senior Analyst Microbiology



Gabriela Carvalhaes

Business Unit Manager

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

MAV means Maximum Allowable Value





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Page 1 of 3 AR-25-NW-007058-01

Food & Water Testing

ANALYTICAL REPORT

REPORT CODE		AR-25-NW-007058-01			REPORT DATE	01/02/2025	
Attention Horowhenua D Lab Results		istrict Co	uncil				
	P 0 Box 642						
	4741 Levin						
	NEW ZEALAN	D					
Phone	(06) 367 2705					@horowhenua.govt.nz), Results	
Email	labresults@horow	henua.govt.n	Z		(labresults@horowhenua.go	vt.nz), Landmark	
	for your orders:		Carvalhaes		Order code:	EUNZWE-00229115	
Contrac	t:	Levin La	ndfill		Durchasa Ordar Number	144482 Londfill	
					Purchase Order Number	144482 - landfill	
	E CODE		25-000114	69			
Sample		386295-					
Product Samplin	: g Point code:	Ground w WIL-E1s			Sampling Point name:	Levin E1s	
-	on Date & Time:)25 11:25		Samping Fornt name:		
	Started on:	23/01/20			Analysis Ending Date:	01/02/2025	
Product	Туре	Ground w	vater		Sampled Date & Time	22/01/2025 13:12	
Sampler(s)	Client no	minated exte	rnal sampler	Sampled by Eurofins	No	
			RESULT	S (UNCERTAINT)	() LOQ		
NW179	Ammonia Nitroge	n					
	Ammoniacal nitroger		0.16	(± 0.02) mg/l	0.01		
NW341	BOD5 - Soluble C	arbonace	ous				
	BOD5		<3	mg/l	1		
NW020	Chemical Oxyger	Demand					
	Chemical oxygen der	nand (COD)	17	mg/l	15		
NW007	Chloride						
	Chloride (Cl)		28.6	(± 2.86) mg/l	0.02		
NW023	Conductivity						
	Conductivity		25.0	(± 0.5) mS/m	0.1		
NW098	Dissolved Alumin	ium					
	Aluminium		0.005	mg/l	0.002		
NW103	Dissolved Boron						
	Boron (B)		0.025	mg/l	0.005		
NW109	Dissolved Iron						
	Iron (Fe)		3.60	mg/l	0.005		
NW110	Dissolved Lead		_				
	Lead (Pb)		<0.0005	mg/l	0.0005		
NW113	Dissolved Manga	nese					
	Manganese (Mn)		0.190	mg/l	0.0005		
NW114	Dissolved Mercu	У					
	Mercury (Hg)		<0.0005	mg/l	0.0005		
NW116	Dissolved Nickel		0.000-	"			
	Nickel (Ni)		<0.0005	mg/l	0.0005		
NW120	Dissolved Sodiur	n					
	Sodium (Na)		25.7	mg/l	0.01		

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		RESULT	S (UNCERTAINTY)	LOQ
ZMOUX	Enumeration of Esch	nerichia coli by Men	nbrane 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 1	5 minute APHA hol	ding time)	
	pН	7.6	(± 0.2)	0.1

LIST OF METHODS

Chloride: APHA Online Edition 4110 B	NW010	
		Nitrate-N: APHA Online Edition 4110 B
Chemical Oxygen Demand: APHA Online Edition 5220 D	NW023	Conductivity: APHA 24th Edition 2510 B
Dissolved Aluminium: APHA Online Edition 3125 B mod.	NW103	Dissolved Boron: APHA Online Edition 3125 B mod.
Dissolved Iron: APHA Online Edition 3125 B mod.	NW110	Dissolved Lead: APHA Online Edition 3125 B mod.
Dissolved Manganese: APHA Online Edition 3125 B mod.	NW114	Dissolved Mercury: APHA Online Edition 3125 B mod.
Dissolved Nickel: APHA Online Edition 3125 B mod.	NW120	Dissolved Sodium: APHA Online Edition 3125 B mod.
Ammonia Nitrogen: APHA Online Edition 4500-NH3 H	NW195	pH (Tested beyond 15 minute APHA holding time): APHA 24th Edition 4500-H B
BOD5 - Soluble Carbonaceous: APHA Online Edition 5210 B	ZM0UX	Escherichia coli E (Water) [NZ] <1 >6 000 /100 ml (0) m-FC Agar-F: SMEWW 9222I; APHA 24th Edition
	Dissolved Aluminium: APHA Online Edition 3125 B mod. Dissolved Iron: APHA Online Edition 3125 B mod. Dissolved Manganese: APHA Online Edition 3125 B mod. Dissolved Nickel: APHA Online Edition 3125 B mod. Ammonia Nitrogen: APHA Online Edition 4500-NH3 H BOD5 - Soluble Carbonaceous: APHA Online Edition 5210	Dissolved Aluminium: APHA Online Edition 3125 B mod.NW103Dissolved Iron: APHA Online Edition 3125 B mod.NW110Dissolved Manganese: APHA Online Edition 3125 B mod.NW114Dissolved Nickel: APHA Online Edition 3125 B mod.NW120Ammonia Nitrogen: APHA Online Edition 4500-NH3 HNW195BOD5 - Soluble Carbonaceous: APHA Online Edition 5210ZM0UX

mbecabros

Marylou Cabral Laboratory Manager Eurofins ELS Limited



es Technical Specialist Technical Specialist



Jennifer Mont Supervisor Eurofins ELS Limited

Microbiology

Hannah Smith Laboratory Supervisor



Gabriela Carvalhaes

Business Unit Manager

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- **(6)** Test result is provided by the customer and is not accredited
- Tested at the sampling point by Eurofins and is not accredited
- [®]Tested at the sampling point by Eurofins and is accredited
- Test is RLP accredited
- $\boldsymbol{\textcircled{0}}$ 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)

 $\ensuremath{\textbf{LOQ}}$ 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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The tests are identified by a five-digit code, their description is available on request.

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Food & Water Testing

ANALYTICAL REPORT

REPOR	T CODE	AF	R-25-NW-00	7054-01	REPORT DATE	01/02/2025
Attention	Horowhenua D Lab Results	Horowhenua District Council Lab Results				
	P 0 Box 642					
	4741 Levin					
	NEW ZEALAN	D				
Phone	(06) 367 2705	hanva gavt n	_		Copy to: McMillan (Davidmo (labresults@horowhenua.gov	@horowhenua.govt.nz), Results vt.nz) Landmark
Email	labresults@horowl		z Carvalhaes		Order code:	EUNZWE-00229115
Contract	-	Levin Lai			Order code.	EUNZWE-00229115
					Purchase Order Number:	: 144482 - landfill
SAMPL	E CODE	812-202	25-000114	65		
Sample		386251-				
Product		Ground w WIL-E2d	vater		Complian Daint nome	Levin E2d
-	g Point code: on Date & Time:)25 11:18		Sampling Point name:	
	s Started on:	23/01/20			Analysis Ending Date:	01/02/2025
Product	• •	Ground w			Sampled Date & Time	22/01/2025 13:09
Sampler((s)	Client no	minated exter	-	Sampled by Eurofins	No
			RESULT	S (UNCERTAINT)	() LOQ	
NW179	Ammonia Nitroge			(1.0.00) mg/		
NU40 41	Ammoniacal nitroger		0.01	(± 0.00) mg/l	0.01	
NW341	BOD5 - Soluble C BOD5	arbonaced	ous <3	mg/l	1	
NW020	Chemical Oxyger	Domand	<3	mg/l	I	
111020	Chemical oxygen der		18	mg/l	15	
NW007	Chloride	, ,		5		
	Chloride (Cl)		41.3	(± 4.13) mg/l	0.02	
NW023	Conductivity					
	Conductivity		44.2	(± 0.9) mS/m	0.1	
NW098	Dissolved Alumin	ium				
NIVA/1 0.0	Aluminium		0.004	mg/l	0.002	
NW103	Dissolved Boron Boron (B)		0.052	mg/l	0.005	
NW110	Dissolved Lead		0.002		0.000	
	Lead (Pb)		<0.0005	mg/l	0.0005	
NW113	Dissolved Manga	nese		-		
	Manganese (Mn)		0.420	mg/l	0.0005	
NW114	Dissolved Mercur	У				
	Mercury (Hg)		<0.0005	mg/l	0.0005	
NW116	Dissolved Nickel		0.0005		0.000-	
	Nickel (Ni)	o o b o ui o lo l	<0.0005	mg/l	0.0005	
ZMF1E	Enumeration of E Escherichia coli	scherichia	a coli by Men 3	nbrane Filtration cfu/100 ml	1	
NW010	Nitrate-N		0	010/100 mi		
	Nitrate-N		<0.01	(± 0.00) mg/l	0.01	

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+64 4 576 5016 www.eurofins.co.nz

Phone

alahah





	Fo	od & Water T	esting			
		RESULTS (UNCERTA	AINTY) I	LOQ		
NW195 рН (Tes рН	ted beyond 15 minute	APHA holding time) 8.3 (± 0.2)		0.1		
LIST OF METHO	DS					
NW007 Chloride	: APHA Online Edition 411	0 B	NW010	Nitrate-N: APHA C	Inline Edition 411	0 B
NW020 Chemica	I Oxygen Demand: APHA	Online Edition 5220 D	NW023	Conductivity: API	A 24th Edition 2	510 B
NW098 Dissolve	d Aluminium: APHA Onli	ne Edition 3125 B mod.	NW103	Dissolved Boron:	APHA Online Ed	ition 3125 B mod.
NW110 Dissolve	d Lead: APHA Online Edit	tion 3125 B mod.	NW113	Dissolved Manga	nese: APHA Onli	ne Edition 3125 B mod.
NW114 Dissolve	d Mercury: APHA Online	Edition 3125 B mod.	NW116	Dissolved Nickel:	APHA Online Ed	ition 3125 B mod.
NW179 Ammoni	a Nitrogen: APHA Online	Edition 4500-NH3 H	NW195	pH (Tested beyond 15 minute APHA holding time): APHA 24th Edition 4500-H B		
NW341 BOD5 - S B	Soluble Carbonaceous: A	PHA Online Edition 5210	ZMF1E	Escherichia coli E Agar-F: SMEWW 9	• • •	>80 /100 ml (0) Ml h Edition
		Signat	ure			
71.	Unt	GK~~	E S	~	A	(And)
Jennifer Mont	Supervisor Eurofins ELS Limited	Gordon McArthur	Senior Labo Eurofins EL	ratory Analyst S Limited	Gabriela Carvalhaes	Business Unit Manager
for	hes	H2	L	_		
Cody Forbes	Technical Specialist Technical Specialist	Hannah Smith	Laboratory S Microbiolog			
EXPLANATORY N Test is not accre			N/A me	ans Not Applicable		

①Test is not accredited

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3 Test is subcontracted within Eurofins group and is not accredited

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S Test is subcontracted outside Eurofins group and is not accredited

(6) Test result is provided by the customer and is not accredited

 ${f O}$ Tested at the sampling point by Eurofins and is not accredited

[®]Tested at the sampling point by Eurofins and is accredited Test 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 MAV means Maximum Allowable Value





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AR-25-NW-007051-01 Page 1 of 3

Food & Water Testing

ANALYTICAL REPORT

REPOR	T CODE	AR	2-25-NW-00	07051-01	REPORT DATE	01/02/2025
Attention	Lab Results P O Box 642 4741 Levin		uncil			
Dhama		NEW ZEALAND				
Phone Email	(06) 367 2705 labresults@horow	henua govt n	7		(labresults@horowhenua.gov	⊉horowhenua.govt.nz), Results t.nz). Landmark
	for your orders:		z Carvalhaes		Order code:	EUNZWE-00229115
Contract	-	Levin Lar				
					Purchase Order Number:	144482 - Iandfill
SAMPLI	E CODE	812-202	25-000114	-62		
Sample		386296-				
Product	-	Ground w WIL-E2s	ater			Levin E2s
	g Point code: on Date & Time:		25 11:13		Sampling Point name:	Levin E2S
	Started on:	23/01/2025			Analysis Ending Date:	01/02/2025
Product	• •	Ground w			Sampled Date & Time	22/01/2025 13:13
Sampler(s)	Client no		ernal sampler	Sampled by Eurofins	No
			RESULI	S (UNCERTAINT)	() LOQ	
NW179	Ammonia Nitroge			(1.0.04)		
	Ammoniacal nitroger		0.09	(± 0.01) mg/l	0.01	
NW341	BOD5 - Soluble C BOD5	arbonaced	ous <3	m g /l	4	
	Chemical Oxyger	Domand	<3	mg/l	1	
110020	Chemical oxygen der		<15	mg/l	15	
NW007	Chloride		120			
	Chloride (Cl)		37.7	(± 3.77) mg/l	0.02	
NW023	Conductivity					
	Conductivity		34.6	(± 0.7) mS/m	0.1	
NW098	Dissolved Alumin	ium				
	Aluminium		0.009	mg/l	0.002	
NW103	Dissolved Boron		0.007		0.005	
NW100	Boron (B) Dissolved Iron		0.027	mg/l	0.005	
1111109	Iron (Fe)		0.103	mg/l	0.005	
NW110	Dissolved Lead		0.100		0.000	
	Lead (Pb)		0.0007	mg/l	0.0005	
NW113	Dissolved Manga	nese				
	Manganese (Mn)		0.265	mg/l	0.0005	
NW114	Dissolved Mercur	У				
	Mercury (Hg)		<0.0005	mg/l	0.0005	
NW116	Dissolved Nickel		0.0005		0.0005	
NW/100	Nickel (Ni)	_	<0.0005	mg/l	0.0005	
	Dissolved Sodium Sodium (Na)	n	29.2	mg/l	0.01	
			- J	₈ ,1	0.01	

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		RESULTS	(UNCERTAINTY)	LOQ
ZMOUX	Enumeration of Esc	herichia coli by Mem	brane 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 1	5 minute APHA hold	ling time)	
	pН	7.6	(± 0.2)	0.1

LIST OF METHODS

LISTO	- METHODS		
NW007	Chloride: APHA Online Edition 4110 B	NW010	Nitrate-N: APHA Online Edition 4110 B
NW020	Chemical Oxygen Demand: APHA Online Edition 5220 D	NW023	Conductivity: APHA 24th Edition 2510 B
NW098	Dissolved Aluminium: APHA Online Edition 3125 B mod.	NW103	Dissolved Boron: APHA Online Edition 3125 B mod.
NW109	Dissolved Iron: APHA Online Edition 3125 B mod.	NW110	Dissolved Lead: 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.	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
NW341	BOD5 - Soluble Carbonaceous: APHA Online Edition 5210 B	ZM0UX	Escherichia coli E (Water) [NZ] <1 >6 000 /100 ml (0) m-FC Agar-F: SMEWW 9222I; APHA 24th Edition

Signature

m

Jennifer Mont Superv

Supervisor Eurofins ELS Limited



es Technical Specialist Technical Specialist



Gordon McArthur Senior Laboratory Analyst Eurofins ELS Limited



an Smith Lat Mic

Laboratory Supervisor Microbiology Altz

Gabriela Carvalhaes

Business Unit Manager

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 $\ensuremath{\textbf{LOQ}}$ means Limit of Quantification and the unit of LOQ is the same as the result unit

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- \checkmark (Satisfactory) means meets the specification

MAV means Maximum Allowable Value





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AR-25-NW-006629-01 Page 1 of 3

Food & Water Testing

ANALYTICAL REPORT

REPOR	RT CODE	AF	R-25-NW-00	6629-01	REPORT DATE	31/01/2025
Attention	Horowhenua District Council Lab Results					
	P 0 Box 642					
	4741 Levin					
	NEW ZEALAN	D				
Phone	(06) 367 2705					horowhenua.govt.nz), Results
Email	labresults@horowl				(labresults@horowhenua.gov	
Contact Contrac	for your orders: t:	Gabriela Levin La	Carvalhaes ndfill		Order code:	EUNZWE-00228811
					Purchase Order Number:	144482 - Iandfill
SAMPL	E CODE	812-202	25-000106	16		
Sample		386299-				
Product		Ground w WIL-F1	vater		Compling Daint name	Levin F1
-	ng Point code: on Date & Time:)25 13:18		Sampling Point name:	
	s Started on:	22/01/20			Analysis Ending Date:	31/01/2025
Product	Туре	Ground w	vater		Sampled Date & Time	21/01/2025 13:17
Sampler	(s)	Client no	minated exte	rnal sampler	Sampled by Eurofins	No
			RESULT	S (UNCERTAINT	r) LOQ	
NW179	Ammonia Nitroge	n				
	Ammoniacal nitroger	n (N)	0.01	(± 0.00) mg/l	0.01	
NW341	BOD5 - Soluble C	arbonace	ous			
	BOD5		<3	mg/l	1	
NW020	Chemical Oxygen					
	Chemical oxygen den	nand (COD)	<15	mg/l	15	
NW007	Chloride			(1 7 60) mg/		
	Chloride (Cl)		76.0	(± 7.60) mg/l	0.02	
NW023	Conductivity		50.2	(± 1.0) mS/m	<u>.</u>	
	Conductivity		50.3	(± 1.0) 110/11	0.1	
1110098	Dissolved Alumin	ium	<0.002	mg/l	0.002	
NW103			NU.UUZ	111g/1	0.002	
111100	Boron (B)		0.031	mg/l	0.005	
NW110	Dissolved Lead		-	5		
	Lead (Pb)		<0.0005	mg/l	0.0005	
NW113	Dissolved Manga	nese				
	Manganese (Mn)		0.0055	mg/l	0.0005	
NW114	Dissolved Mercur	У				
	Mercury (Hg)		<0.0005	mg/l	0.0005	
NW116	Dissolved Nickel					
	Nickel (Ni)		0.0008	mg/l	0.0005	
ZMOUX	Enumeration of E	scherichia	-			
	Escherichia coli		<1	cfu/100 ml	1	
NW010	Nitrate-N		0.10	(± 0.22) mg/l	0.04	
	Nitrate-N		2.16	(± 0.22) mg/l	0.01	

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alahah





		Food &	Water 1	Testing			
		RESU	LTS (UNCERT	AINTY) I	.OQ		
NW195 рН (рН	Fested beyond 15	minute APHA I 7.0	nolding time) (± 0.2)		0.1		
IST OF MET	HODS						
W007 Chlor	i de: APHA Online Ec	lition 4110 B		NW010	Nitrate-N: APH	A Online Edition 411	0 B
IW020 Chem	ical Oxygen Demar	nd: APHA Online E	dition 5220 D	NW023	Conductivity:	APHA 24th Edition 25	510 B
IW098 Disso	Ived Aluminium: AF	PHA Online Edition	3125 B mod.	NW103	Dissolved Bor	on: APHA Online Ed	ition 3125 B mod.
IW110 Disso	Ived Lead: APHA O	nline Edition 3125	B mod.	NW113	Dissolved Mar	iganese: APHA Onlir	ne Edition 3125 B mod.
IW114 Disso	Ived Mercury: APH	A Online Edition 31	125 B mod.	NW116	Dissolved Nicl	kel: APHA Online Edi	ition 3125 B mod.
W179 Amm	onia Nitrogen: APH	A Online Edition 45	500-NH3 H	NW195	pH (Tested be) APHA 24th Edit	yond 15 minute APH tion 4500-H B	IA holding time):
IW341 BODS B	- Soluble Carbona	ceous: APHA Onli	ne Edition 5210	ZM0UX		bli E (Water) [NZ] <1 SMEWW 9222I; APH	• • •
3	11		Signa	ture)	Q	
, pab	scabrol		a	LE /		Jur	hes
Marylou Cabr	al Laboratory Mar Eurofins ELS L		Gabriela Carvalhaes	Business Ur	it Manager	Cody Forbes	Technical Specialist Technical Specialist
Hannah Smi	h Laboratory Sup	ervisor					

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 MAV means Maximum Allowable Value



Page 2 of 3

AR-25-NW-006629-01

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Page 1 of 3 AR-25-NW-006484-01

Food & Water Testing

ANALYTICAL REPORT

REPORT CODE		AR	R-25-NW-006	6484-01	REPORT DATE	30/01/2025
Attention	Horowhenua D Lab Results	istrict Cou	uncil			
	P 0 Box 642					
	4741 Levin					
	NEW ZEALAN	D				
Phone	(06) 367 2705					<pre>whorowhenua.govt.nz), Results</pre>
Email	labresults@horow				(labresults@horowhenua.gov	
Contact for your orders: Contract:		Gabriela Levin Lar	Carvalhaes		Order code:	EUNZWE-00228811
Contrac		Levin La			Purchase Order Number:	144482 - Iandfill
SAMPI	E CODE	812-202	25-0001061	8		
Sample		386261-		.0		
Product		Ground w				
-	g Point code:	WIL-F2			Sampling Point name:	Levin F2
	on Date & Time: Started on:	22/01/20 22/01/20)25 13:20		Analysis Ending Data:	20/01/2025
Product		Ground w			Analysis Ending Date: Sampled Date & Time	30/01/2025 21/01/2025 13:17
Sampler(•••		minated exter	nal sampler	Sampled by Eurofins	No
•	· -					
NW179	Ammonia Nitroge	'n				
	Ammoniacal nitroger		0.01	(± 0.00) mg/l	0.01	
NW341	BOD5 - Soluble C		ous			
	BOD5		<3	mg/l	1	
NW020	Chemical Oxyger	Demand				
	Chemical oxygen der	nand (COD)	<15	mg/l	15	
NW007	Chloride					
	Chloride (Cl)		22.6	(± 2.26) mg/l	0.02	
NW023	Conductivity					
	Conductivity		22.5	(± 0.5) mS/m	0.1	
NW098	Dissolved Alumin	ium				
	Aluminium		0.002	mg/l	0.002	
NW103	Dissolved Boron Boron (B)		0.033	mg/l	0.005	
NW110	Dissolved Lead		0.035	iiig/i	0.005	
144110	Lead (Pb)		<0.0005	mg/l	0.0005	
NW113	Dissolved Manga	nese		0		
	Manganese (Mn)		0.0046	mg/l	0.0005	
NW114	Dissolved Mercur	У				
	Mercury (Hg)		<0.0005	mg/l	0.0005	
NW116	Dissolved Nickel					
	Nickel (Ni)		<0.0005	mg/l	0.0005	
ZMOUX Enumeration of E		scherichia	a coli by Merr			
	Escherichia coli		<1	cfu/100 ml	1	
NW010	Nitrate-N			(+ 0 07)"		
	Nitrate-N		0.65	(± 0.07) mg/l	0.01	

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Phone





		RES	SULTS (UNCERT	AINTY) I	LOQ	
NW195	pH (Tested beyond	15 minute APH	• ·			
	рН	7.2	(± 0.2)		0.1	
LIST OF	F METHODS					
NW007	Chloride: APHA Online	e Edition 4110 B		NW010	Nitrate-N: APH	HA Online Edition 4110 B
NW020	Chemical Oxygen Der	mand: APHA Online	e Edition 5220 D	NW023	Conductivity:	APHA 24th Edition 2510 B
NW098	Dissolved Aluminium	: APHA Online Editi	on 3125 B mod.	NW103	Dissolved Bor	ron: APHA Online Edition 3125 B mod.
NW110	Dissolved Lead: APH	A Online Edition 312	25 B mod.	NW113	Dissolved Mar	nganese: APHA Online Edition 3125 B mod.
NW114	Dissolved Mercury: A	PHA Online Edition	3125 B mod.	NW116	Dissolved Nicl	kel: APHA Online Edition 3125 B mod.
NW179	Ammonia Nitrogen: A	PHA Online Edition	4500-NH3 H	NW195	pH (Tested be) APHA 24th Edit	yond 15 minute APHA holding time): ition 4500-H B
NW341	BOD5 - Soluble Carbo B	onaceous: APHA O	nline Edition 5210	ZM0UX		oli E (Water) [NZ] <1 >6 000 /100 ml (0) SMEWW 9222I; APHA 24th Edition
			Signat	ture		
2.4	mbecabro	/	A	(Dec))	Jorbes
Marylo	ou Cabral Laboratory Eurofins EL	0	Gabriela Carvalhaes	Business Ur	nit Manager	Cody Forbes Technical Specialist Technical Specialist

Hannah Smith Labora

Laboratory Supervisor Microbiology

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AR-25-NW-006630-01 Page 1 of 3

Food & Water Testing

ANALYTICAL REPORT

REPOR	T CODE	AR	25-NW-00	6630-01	REPORT DATE	31/01/2025		
Attention	Horowhenua D Lab Results	District Cou	uncil					
	P 0 Box 642							
	4741 Levin							
	NEW ZEALAN	D						
Phone	(06) 367 2705				Copy to: McMillan (Davidm@horowhenua.govt.nz), Results (labresults@horowhenua.govt.nz), Landmark			
Email	labresults@horow							
Contact	for your orders:	Gabriela Carvalhaes			Order code:	EUNZWE-00228811		
					Purchase Order Number:	144482 - Iandfill		
SAMPLE	ECODE	812-202	25-000106	17				
Sample I	Name	386262-	0					
Product:		Ground w	ater					
	g Point code: on Date & Time:	WIL-F3	25 13:19		Sampling Point name:	Levin F3		
	Started on:	22/01/20			Analysis Ending Date:	31/01/2025		
Product		Ground w			Sampled Date & Time	21/01/2025 13:17		
Sampler(s)	Client no	minated exte	rnal sampler	Sampled by Eurofins	No		
			RESULT	S (UNCERTAINT	() LOQ			
NW179	Ammonia Nitroge	n						
	Ammoniacal nitroger	n (N)	0.06	(± 0.01) mg/l	0.01			
NW341	BOD5 - Soluble C	arbonaced						
	BOD5		<3	mg/l	1			
NW020	Chemical Oxyger		15					
	Chemical oxygen der	nand (COD)	<15	mg/l	15			
NWUU7	Chloride Chloride (Cl)		14.5	(± 1.45) mg/l	0.02			
NW023	Conductivity		14.5	() 3	0.02			
111025	Conductivity		16.0	(± 0.3) mS/m	0.1			
NW098	Dissolved Alumin	ium						
	Aluminium		0.004	mg/l	0.002			
NW103	Dissolved Boron							
	Boron (B)		0.025	mg/l	0.005			
NW109	Dissolved Iron							
	Iron (Fe)		0.143	mg/l	0.005			
NW110	Dissolved Lead		0.000-					
NUA/1 1 0	Lead (Pb)		<0.0005	mg/l	0.0005			
NM113	Dissolved Manga Manganese (Mn)	nese	0.0030	mg/l	0.0005			
NW114	Dissolved Mercui	N /	0.0030	mg/l	0.0005			
111114	Mercury (Hg)	У	<0.0005	mg/l	0.0005			
NW116	Dissolved Nickel		.0.0000	''œ''	0.0000			
	Nickel (Ni)		<0.0005	mg/l	0.0005			
NW120	Dissolved Sodiur	n		-				
	Sodium (Na)		19.2	mg/l	0.01			
	Slimitod				Phono +	64 4 576 5016		

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"dalah





		RESULT	S (UNCERTAINTY)	LOQ
ZMOUX	Enumeration of Esch	erichia coli by Me	mbrane Filtration	
	Escherichia coli	<1	cfu/100 ml	1
NW010	Nitrate-N			
	Nitrate-N	2.22	(± 0.22) mg/l	0.01
NW195	pH (Tested beyond 1	5 minute APHA ho	lding time)	
	pН	7.1	(± 0.2)	0.1

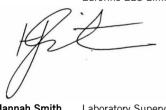
LIST OF METHODS

NW007	Chloride: APHA Online Edition 4110 B	NW010	Nitrate-N: APHA Online Edition 4110 B				
NW020	Chemical Oxygen Demand: APHA Online Edition 5220 D	NW023	Conductivity: APHA 24th Edition 2510 B				
NW098	Dissolved Aluminium: APHA Online Edition 3125 B mod.	NW103	Dissolved Boron: APHA Online Edition 3125 B mod.				
NW109	Dissolved Iron: APHA Online Edition 3125 B mod.	NW110	Dissolved Lead: 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.	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				
NW341	BOD5 - Soluble Carbonaceous: APHA Online Edition 5210 B	ZM0UX	Escherichia coli E (Water) [NZ] <1 >6 000 /100 ml (0) m-FC Agar-F: SMEWW 9222I; APHA 24th Edition				

mbecabro

Marylou Cabral

Laboratory Manager Eurofins ELS Limited



Gabriela Carvalhaes



Business Unit Manager

Signature

Cody Forbes

Technical Specialist Technical Specialist

Hannah Smith

Laboratory Supervisor Microbiology

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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

MAV means Maximum Allowable Value

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AR-25-NW-006633-01 Page 1 of 3

Food & Water Testing

ANALYTICAL REPORT

REPOR	RT CODE	AF	R-25-NW-006	6633-01	REPORT DATE	31/01/2025
Attentior	Horowhenua D Lab Results	istrict Co	uncil			
	P 0 Box 642					
	4741 Levin					
	NEW ZEALAN	D				
Phone	(06) 367 2705		_		Copy to: McMillan (Davidm@ (labresults@horowhenua.gov	Øhorowhenua.govt.nz), Results d nz) Landmark
Email	labresults@horow					
Contact	for your orders:	Levin La	Carvalhaes ndfill		Order code:	EUNZWE-00228811
Contrac					Purchase Order Number:	144482 - landfill
SAMPL	E CODE	812-202	25-0001064	12		
Sample		386252-				
Product		Ground w WIL-G1E			Compliane Daint non	Levin G1D
-	ng Point code: on Date & Time:))25 13:26		Sampling Point name:	
	s Started on:	22/01/20			Analysis Ending Date:	31/01/2025
Product	Туре	Ground w	vater		Sampled Date & Time	21/01/2025 13:15
Sampler	(s)	Client no	minated exter	nal sampler	Sampled by Eurofins	No
			RESULTS	G (UNCERTAINT	r) loq	
NW179	Ammonia Nitroge	en				
	Ammoniacal nitroger	n (N)	0.09	(± 0.01) mg/l	0.01	
NW341	BOD5 - Soluble C	arbonace	ous			
	BOD5		<3	mg/l	1	
NW020	Chemical Oxyger					
NU4007	Chemical oxygen der	nand (COD)	<15	mg/l	15	
NW007	Chloride		20.0	(± 2.82) mg/l	0.00	
NIWOOO	Chloride (Cl)		28.2	(± 2.02) mg/i	0.02	
110025	Conductivity Conductivity		25.1	(± 0.5) mS/m	0.1	
NW098	Dissolved Alumin	ium	20.1	. ,	0.1	
	Aluminium		<0.002	mg/l	0.002	
NW103				-		
-	Boron (B)		0.033	mg/l	0.005	
NW110	Dissolved Lead					
	Lead (Pb)		<0.0005	mg/l	0.0005	
NW113	Dissolved Manga	nese				
	Manganese (Mn)		0.0591	mg/l	0.0005	
NW114	Dissolved Mercu	у				
	Mercury (Hg)		<0.0005	mg/l	0.0005	
NW116	Dissolved Nickel		0.0005		0.0005	
714515	Nickel (Ni)		<0.0005	mg/l	0.0005	
ZMF1E	Enumeration of E Escherichia coli	scherichia	<pre>a coli by Men <1</pre>	tbrane Filtration cfu/100 ml	1	
NW010	Nitrate-N		~1		'	
111010	Nitrate-N		<0.01	(± 0.00) mg/l	0.01	

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	Food &	Water To	esting		
	RESU	LTS (UNCERTA	(INTY) L	OQ	
NW195 pH (Teste	ed beyond 15 minute APHA I	nolding time)			
рН	7.4	(± 0.2)		0.1	
	•				
LIST OF METHOD	5				
NW007 Chloride: A	APHA Online Edition 4110 B		NW010	Nitrate-N: APHA Online Edition 411) B
NW020 Chemical (Oxygen Demand: APHA Online E	dition 5220 D	NW023	Conductivity: APHA 24th Edition 25	510 B
NW098 Dissolved	Aluminium: APHA Online Edition	3125 B mod.	NW103	Dissolved Boron: APHA Online Ed	tion 3125 B mod.
NW110 Dissolved	Lead: APHA Online Edition 3125	B mod.	NW113	Dissolved Manganese: APHA Onlin	ne Edition 3125 B mod.
NW114 Dissolved	Mercury: APHA Online Edition 31	25 B mod.	NW116	Dissolved Nickel: APHA Online Edi	tion 3125 B mod.
NW179 Ammonia	Nitrogen: APHA Online Edition 45	500-NH3 H	NW195	pH (Tested beyond 15 minute APH APHA 24th Edition 4500-H B	A holding time):
NW341 BOD5 - So B	luble Carbonaceous: APHA Onli	ne Edition 5210	ZMF1E	Escherichia coli E (Water) [NZ] <1 Agar-F: SMEWW 9222K; APHA 24t	
		Signat	ure		
mbece	abrod	lac	Îm) (d	(Ang
Marylou Cabral	Laboratory Manager Eurofins ELS Limited	Leo Cleave	Senior Analy Microbiology		Business Unit Manager
Juri	bes				

Technical Specialist

Cody Forbes

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- Tested at the sampling point by Eurofins and is accreditedTest is RLP accredited

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N/A means Not Applicable

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- ✓ (Satisfactory) means meets the specification **MAV** means Maximum Allowable Value

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ANALYTICAL REPORT

REPOR	T CODE	AF	R-25-NW-00	6632-01	REPORT DATE	31/01/2025
Attention	Lab Results P O Box 642 4741 Levin		uncil			
	NEW ZEALAN	D				
Phone	(06) 367 2705	hanva gavt n	_		Copy to: McMillan (Davidm@ (labresults@horowhenua.gov	⊉horowhenua.govt.nz), Results t.nz), Landmark
Email	labresults@horowl		z Carvalhaes		Order code:	EUNZWE-00228811
Contract	•	Levin Lai			Order code.	EUNZWE-00228811
					Purchase Order Number:	144482 - Iandfill
SAMPLI	E CODE	812-202	25-000106	41		
Sample	Name	386259-	0			
Product		Ground w				
-	g Point code:	WIL-G1S)25 13:24		Sampling Point name:	Levin G1S
-	on Date & Time: Started on:	22/01/20			Analysis Ending Date:	31/01/2025
Product		Ground w	vater		Sampled Date & Time	21/01/2025 13:16
Sampler(s)	Client no	minated exte	rnal sampler	Sampled by Eurofins	No
			RESULT	S (UNCERTAINT	() LOQ	
NW179	Ammonia Nitroge	n				
	Ammoniacal nitroger	n (N)	0.27	(± 0.03) mg/l	0.01	
NW341	BOD5 - Soluble C	arbonaced	bus			
	BOD5		<3	mg/l	1	
NW020	Chemical Oxyger	Demand				
	Chemical oxygen der	nand (COD)	43	mg/l	15	
NW007	Chloride			(
	Chloride (Cl)		32.3	(± 3.23) mg/l	0.02	
NW023	Conductivity		05.0	(± 0.5) mS/m		
	Conductivity		25.6	(± 0.5) m3/m	0.1	
NW098	Dissolved Alumin	lium	0.077		0.000	
NW102	Dissolved Boron		0.077	mg/l	0.002	
110103	Boron (B)		0.025	mg/l	0.005	
NW109	Dissolved Iron		0.020	1116/1	0.000	
111105	Iron (Fe)		1.94	mg/l	0.005	
NW110	Dissolved Lead			C		
	Lead (Pb)		<0.0005	mg/l	0.0005	
NW113	Dissolved Manga	nese				
	Manganese (Mn)		0.0426	mg/l	0.0005	
NW114	Dissolved Mercur	у				
	Mercury (Hg)		<0.0005	mg/l	0.0005	
NW116	Dissolved Nickel					
	Nickel (Ni)		0.0009	mg/l	0.0005	
NW120	Dissolved Sodium	n				
	Sodium (Na)		33.9	mg/l	0.01	
						64 4 576 5016

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		RESULT	S (UNCERTAINTY)	LOQ	
ZMOUX	Enumeration of Esch	erichia coli by Me	mbrane Filtration		
	Escherichia coli	<1	cfu/100 ml	1	
NW010	Nitrate-N				
	Nitrate-N	<0.01	mg/l	0.01	
NW195	pH (Tested beyond 1	5 minute APHA ho	lding time)		
	рH	7.0	(± 0.2)	0.1	

LIST OF METHODS

- METHODS		
Chloride: APHA Online Edition 4110 B	NW010	Nitrate-N: APHA Online Edition 4110 B
Chemical Oxygen Demand: APHA Online Edition 5220 D	NW023	Conductivity: APHA 24th Edition 2510 B
Dissolved Aluminium: APHA Online Edition 3125 B mod.	NW103	Dissolved Boron: APHA Online Edition 3125 B mod.
Dissolved Iron: APHA Online Edition 3125 B mod.	NW110	Dissolved Lead: APHA Online Edition 3125 B mod.
Dissolved Manganese: APHA Online Edition 3125 B mod.	NW114	Dissolved Mercury: APHA Online Edition 3125 B mod.
Dissolved Nickel: APHA Online Edition 3125 B mod.	NW120	Dissolved Sodium: APHA Online Edition 3125 B mod.
Ammonia Nitrogen: APHA Online Edition 4500-NH3 H	NW195	pH (Tested beyond 15 minute APHA holding time): APHA 24th Edition 4500-H B
BOD5 - Soluble Carbonaceous: APHA Online Edition 5210 B	ZM0UX	Escherichia coli E (Water) [NZ] <1 >6 000 /100 ml (0) m-FC Agar-F: SMEWW 9222I; APHA 24th Edition
	Chloride: APHA Online Edition 4110 B Chemical Oxygen Demand: APHA Online Edition 5220 D Dissolved Aluminium: APHA Online Edition 3125 B mod. Dissolved Iron: APHA Online Edition 3125 B mod. Dissolved Manganese: APHA Online Edition 3125 B mod. Dissolved Nickel: APHA Online Edition 3125 B mod. Ammonia Nitrogen: APHA Online Edition 4500-NH3 H BOD5 - Soluble Carbonaceous: APHA Online Edition 5210	Chloride: APHA Online Edition 4110 BNW010Chemical Oxygen Demand: APHA Online Edition 5220 DNW023Dissolved Aluminium: APHA Online Edition 3125 B mod.NW103Dissolved Iron: APHA Online Edition 3125 B mod.NW110Dissolved Manganese: APHA Online Edition 3125 B mod.NW114Dissolved Nickel: APHA Online Edition 3125 B mod.NW120Ammonia Nitrogen: APHA Online Edition 4500-NH3 HNW195BOD5 - Soluble Carbonaceous: APHA Online Edition 5210ZM0UX

mbecabros

Marylou Cabral

Laboratory Manager Eurofins ELS Limited



Cody Forbes Technical Specialist Technical Specialist Signature

Jennifer Mont Supervisor Eurofins ELS Limited

Microbiology

Hannah Smith Laboratory Supervisor



Gabriela Carvalhaes

Business Unit Manager

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END OF REPORT



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Page 1 of 3 AR-25-NW-007038-01

Food & Water Testing

ANALYTICAL REPORT

REPOR	T CODE	AF	R-25-NW-007	7038-01	REPORT DATE	01/02/2025
Attention	Lab Results	istrict Cou	uncil			
	P 0 Box 642					
	4741 Levin	_				
Dhama	NEW ZEALAN	D				
Phone Email	(06) 367 2705 labresults@horowl	nenua govt n	7		(labresults@horowhenua.go	@horowhenua.govt.nz), Results vt.nz). Landmark
	for your orders:		2 Carvalhaes		Order code:	EUNZWE-00228811
Contrac	•	Levin La				
					Purchase Order Number	: 144482 - landfill
SAMPL	E CODE	812-202	25-0001064	13		
Sample		386260-				
Product		Ground w WIL-G2	vater		Compling Doint name	: Levin G2s
-	g Point code: on Date & Time:	-)25 13:27		Sampling Point name	
-	s Started on:	22/01/20			Analysis Ending Date:	01/02/2025
Product	• •	Ground w	vater		Sampled Date & Time	21/01/2025 13:16
Sampler((s)	Client no	minated exter	nal sampler	Sampled by Eurofins	No
			RESULTS	G (UNCERTAINT)	() LOQ	
NW179	Ammonia Nitroge	n		(
	Ammoniacal nitroger		0.03	(± 0.00) mg/l	0.01	
NW341	BOD5 - Soluble C	arbonaced				
	BOD5		<3	mg/l	1	
NW020	Chemical Oxygen		22		45	
	Chemical oxygen den Chloride		22	mg/l	15	
144007	Chloride (Cl)		251	(± 25.1) mg/l	0.02	
NW023	Conductivity		201	. , -	0.02	
	Conductivity		126	(± 2.5) mS/m	0.1	
NW098	Dissolved Alumin	ium				
	Aluminium		0.004	mg/l	0.002	
NW103	Dissolved Boron					
	Boron (B)		0.574	mg/l	0.005	
NW110	Dissolved Lead					
	Lead (Pb)		<0.0005	mg/l	0.0005	
NW113	Dissolved Manga	nese	0 300	mg/l	0.0005	
NIW 1 1 A	Manganese (Mn)		0.308	mg/l	0.0005	
1111114	Dissolved Mercur Mercury (Hg)	У	<0.0005	mg/l	0.0005	
NW116	Dissolved Nickel				0.0000	
	Nickel (Ni)		0.0023	mg/l	0.0005	
ZMOUX	Enumeration of E	scherichia				
	Escherichia coli		<1	cfu/100 ml	1	
NW010	Nitrate-N					
	Nitrate-N		<0.01	(± 0.00) mg/l	0.01	

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Phone







			RE	SULTS (UNCERT	AINTY) I	LOQ		
NW195	pH (Test	ted beyond 15 m	inute APH	A holding time)				
	рН	-	7.2	(± 0.2)		0.1		
LIST OF		DS						
NW007	Chloride:	APHA Online Editio	n 4110 B		NW010	Nitrate-N: APH	HA Online Edition 4110	В
NW020	Chemical	Oxygen Demand:	APHA Online	e Edition 5220 D	NW023	Conductivity:	APHA 24th Edition 25	10 B
NW098	Dissolved	I Aluminium: APHA	Online Edit	ion 3125 B mod.	NW103	Dissolved Bo	ron: APHA Online Edit	ion 3125 B mod.
NW110	Dissolved	I Lead: APHA Onlin	e Edition 31	25 B mod.	NW113	Dissolved Manganese: APHA Online Edition 3125 B mod.		
NW114	Dissolved	I Mercury: APHA O	nline Edition	3125 B mod.	NW116	Dissolved Nic	kel: APHA Online Edit	ion 3125 B mod.
NW179	Ammonia	Nitrogen: APHA O	nline Edition	4500-NH3 H	NW195	pH (Tested be APHA 24th Edi	yond 15 minute APH	A holding time):
NW341	BOD5 - S B	oluble Carbonaceo	us: APHA C	Inline Edition 5210	ZM0UX		oli E (Water) [NZ] <1 SMEWW 9222I; APHA	• • •
		1		Signa	iture			
, ·	, mbec	abrol		A	Ø		Jor	hes
Marylo	ou Cabral	Laboratory Manage Eurofins ELS Limi		Gabriela Carvalhaes	Business U	nit Manager	Cody Forbes	Technical Specialist Technical Specialist

Hannah Smith

Laboratory Supervisor Microbiology

EXPLANATORY NOTE

①Test is not accredited

- ②Test is subcontracted within Eurofins group and is accredited
- 3 Test is subcontracted within Eurofins group and is not accredited
- Test is subcontracted outside Eurofins group and is accredited
- STest is subcontracted outside Eurofins group and is not accredited
- **©** Test result is provided by the customer and is not accredited
- ⑦ Tested at the sampling point by Eurofins and is not accredited
- Tested at the sampling point by Eurofins and is accredited
 Test is RLP accredited

0 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 **MAV** means Maximum Allowable Value

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END OF REPORT



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Page 1 of 3 AR-25-NW-007898-01

Food & Water Testing

ANALYTICAL REPORT

REPOR	TCODE	AR	R-25-NW-007	7898-01	REPORT DATE	04/02/2025
Attention	Lab Results	District Cou	uncil			
	P 0 Box 642					
	4741 Levin	_				
	NEW ZEALAN	D				
Phone	(06) 367 2705				Copy to: McMillan (Davidm@ (labresults@horowhenua.govt	horowhenua.govt.nz), Results
Email	labresults@horow					
Contact Contrac	for your orders:	Gabriela Levin Lar	Carvalhaes		Order code:	EUNZWE-00229489
Contrac	ι.				Purchase Order Number:	144482 - Iandfill
CAMDI	E CODE	912 204	25-0001262	26		
Sample		386291-		20		
Product		Ground w				
	g Point code:	WIL-Xd1	-		Sampling Point name:	Levin Xd1
Receptio	on Date & Time:		25 13:15			
-	s Started on:	25/01/20			Analysis Ending Date:	04/02/2025
Product		Ground w			Sampled Date & Time	23/01/2025 13:26
Sampler	(S)	Client no	minated exter	•	Sampled by Eurofins	No
			RESULTS	G (UNCERTAINT)	() LOQ	
NW179	Ammonia Nitroge	en				
	Ammoniacal nitroger	n (N)	0.81	(± 0.08) mg/l	0.01	
NW341	BOD5 - Soluble C	arbonaced	bus			
	BOD5		<3	mg/l	1	
NW020	Chemical Oxyger	n Demand				
	Chemical oxygen der	mand (COD)	30	mg/l	15	
NW007	Chloride					
	Chloride (Cl)		57.5	(± 5.75) mg/l	0.02	
NW023	Conductivity					
	Conductivity		53.3	(± 1.1) mS/m	0.1	
NW098	Dissolved Alumin	nium				
	Aluminium		<0.002	mg/l	0.002	
NW103	Dissolved Boron					
	Boron (B)		0.044	mg/l	0.005	
NW110	Dissolved Lead					
	Lead (Pb)		<0.0005	mg/l	0.0005	
NW113	Dissolved Manga	inese				
	Manganese (Mn)		0.509	mg/l	0.0005	
NW114	Dissolved Mercu	ry				
	Mercury (Hg)		<0.0005	mg/l	0.0005	
NW116	Dissolved Nickel					
	Nickel (Ni)		<0.0005	mg/l	0.0005	
ZMF1E	Enumeration of E	Scherichia	a coli by Mem			
	Escherichia coli		<1	cfu/100 ml	1	
NW010	Nitrate-N					
	Nitrate-N		< 0.01	(± 0.00) mg/l	0.01	

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		Food & Water 1	Festing	J		
		RESULTS (UNCERT	AINTY) I	LOQ		
NW195	pH (Tested beyond 15	5 minute APHA holding time)				
	рН	7.8 (± 0.2)		0.1		
LIST OF	METHODS					
NW007	Chloride: APHA Online Ec	dition 4110 B	NW010	Nitrate-N: APHA Online Edition 4110 B		
NW020	Chemical Oxygen Demar	nd: APHA Online Edition 5220 D	NW023	Conductivity: APHA 24th Edition 2510 B		
NW098	Dissolved Aluminium: AF	PHA Online Edition 3125 B mod.	NW103	Dissolved Boron: APHA Online Edition 3125 B mod.		
NW110	Dissolved Lead: APHA O	nline Edition 3125 B mod.	NW113	Dissolved Manganese: APHA Online Edition 3125 B mod.		
NW114	Dissolved Mercury: APH	A Online Edition 3125 B mod.	NW116	Dissolved Nickel: APHA Online Edition 3125 B mod.		
NW179	Ammonia Nitrogen: APH	A Online Edition 4500-NH3 H	NW195	pH (Tested beyond 15 minute APHA holding time): APHA 24th Edition 4500-H B		
NW341	BOD5 - Soluble Carbona B	ceous: APHA Online Edition 5210	ZMF1E	Escherichia coli E (Water) [NZ] <1 >80 /100 ml (0) Ml Agar-F: SMEWW 9222K; APHA 24th Edition		
	10	Signa	ture			
, •	mbecabrod	Ţn	Unt	- lo an		
Marylo	bu Cabral Laboratory Mar Eurofins ELS L	-	Supervisor E Limited	Eurofins ELS Leo Cleave Senior Analyst Microbiology		
	briela Business Unit Valhaes	Manager				
EXPLAN	ATORY NOTE					
①Test is	not accredited		N/A me	eans Not Applicable		

- 2 Test is subcontracted within Eurofins group and is accredited
- 3 Test is subcontracted within Eurofins group and is not accredited
- Test is subcontracted outside Eurofins group and is accredited
- S Test is subcontracted outside Eurofins group and is not accredited
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- ${f O}$ Tested at the sampling point by Eurofins and is not accredited
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Test is subcontracted within Eurofins group and is RLP accredited

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 MAV means Maximum Allowable Value





Page 2 of 3

AR-25-NW-007898-01

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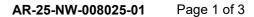
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ANALYTICAL REPORT

REPOR	T CODE	AR	R-25-NW-00	8025-01	REPORT DATE	05/02/2025
Attention	Horowhenua D Lab Results	istrict Cou	uncil			
	P 0 Box 642					
	4741 Levin					
	NEW ZEALAN	D				
Phone	(06) 367 2705		_		Copy to: McMillan (Davidme (labresults@horowhenua.gov	@horowhenua.govt.nz), Results
Email	labresults@horow					
Contact	for your orders: t:	Levin Lar	Carvalhaes ndfill		Order code:	EUNZWE-00229489
•••••••••					Purchase Order Number:	144482 - Iandfill
SAMPL	E CODE	812-202	25-0001264	42		
Sample	Name	386300-	0			
Product		Ground w	vater		• • • • ·	
-	g Point code: on Date & Time:	WIL-Xs1)25 13:24		Sampling Point name:	Levin Xs1
-	s Started on:	25/01/20			Analysis Ending Date:	05/02/2025
Product		Ground w			Sampled Date & Time	23/01/2025 13:26
Sampler	(s)	Client no	minated exter	nal sampler	Sampled by Eurofins	No
			RESULT	S (UNCERTAINT)	() LOQ	
NW179	Ammonia Nitroge	n				
	Ammoniacal nitroger	n (N)	13.3	(± 1.33) mg/l	0.01	
NW341	BOD5 - Soluble C	arbonaced	bus			
	BOD5		<3	mg/l	1	
NW020	Chemical Oxyger	Demand				
	Chemical oxygen der	nand (COD)	99	mg/l	15	
NW007	Chloride			(1.44.2)		
	Chloride (Cl)		112	(± 11.2) mg/l	0.02	
NW023	Conductivity		100	(± 2.8) mS/m		
	Conductivity	•	139	(± 2.0) 110/11	0.1	
110098	Dissolved Alumin Aluminium	lum	0.023	mg/l	0.002	
NW103	Dissolved Boron		0.023	ilig/i	0.002	
111103	Boron (B)		0.418	mg/l	0.005	
NW110	Dissolved Lead		01120		0.000	
	Lead (Pb)		<0.0005	mg/l	0.0005	
NW113	Dissolved Manga	nese				
	Manganese (Mn)		0.975	mg/l	0.0005	
NW114	Dissolved Mercur	У				
	Mercury (Hg)		<0.0005	mg/l	0.0005	
NW116	Dissolved Nickel					
	Nickel (Ni)		0.0024	mg/l	0.0005	
ZMOUX	Enumeration of E	scherichia	-			
	Escherichia coli		<1	cfu/100 ml	1	
NW010	Nitrate-N		-0.1	~~~~/l	0.04	
	Nitrate-N		<0.1	mg/l	0.01	

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W Test is subcontracted within Eurofins group and is RLP accredited

(6) Test result is provided by the customer and is not accredited

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Itest is RLP accredited

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Food & Water Testing

				resung		
			RESULTS (UNCEF	RTAINTY) I	LOQ	
NW195	pH (Tes	ted beyond 15 minute	e APHA holding time)		
	pН	-	6.7 (± 0.2)	0.1	
LIST OF	METHO	DS				
NW007	Chloride:	APHA Online Edition 41	10 B	NW010	Nitrate-N: APHA Online Edition 411	0 B
NW020	Chemical	Oxygen Demand: APH	A Online Edition 5220 D	NW023	Conductivity: APHA 24th Edition 2	510 B
NW098	Dissolved	d Aluminium: APHA Onli	ne Edition 3125 B mod.	NW103	Dissolved Boron: APHA Online Ed	lition 3125 B mod.
NW110	Dissolved	d Lead: APHA Online Edi	tion 3125 B mod.	NW113	Dissolved Manganese: APHA Onli	ne Edition 3125 B mod.
NW114	Dissolved	d Mercury: APHA Online	Edition 3125 B mod.	NW116	Dissolved Nickel: APHA Online Ed	lition 3125 B mod.
NW179	Ammonia	Nitrogen: APHA Online	Edition 4500-NH3 H	NW195	pH (Tested beyond 15 minute API APHA 24th Edition 4500-H B	HA holding time):
NW341	BOD5 - S B	oluble Carbonaceous: A	APHA Online Edition 521	0 ZMOUX	Escherichia coli E (Water) [NZ] <1 m-FC Agar-F: SMEWW 9222I; APH	
			Sig	nature		
, /	mbec	abrod	la	an		(Del
Marylo	ou Cabral	Laboratory Manager Eurofins ELS Limited	Leo Cleave	Senior Anal Microbiolog		Business Unit Manager
 ① Test is ② Test is ③ Test is ④ Test is 	subcontra subcontra		o and is not accredited up and is accredited	Not De Quantif	eans Not Applicable tected means not detected at or abo ication (LOQ) eans Limit of Quantification and the u ult unit	

- $oldsymbol{x}$ (Unsatisfactory) means does not meet the specification
- ✓(Satisfactory) means meets the specification MAV means Maximum Allowable Value





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END OF REPORT







ANALYTICAL REPORT

REPOR	T CODE	AF	R-25-NW-007	7899-01	REPORT DATE	04/02/2025
Attention	Horowhenua D Lab Results	istrict Co	uncil			
	P 0 Box 642					
	4741 Levin					
	NEW ZEALAN	D				
Phone	(06) 367 2705				Copy to: McMillan (Davidm@ (labresults@horowhenua.gov	<pre>@horowhenua.govt.nz), Results dt nz) Landmark</pre>
Email	labresults@horow					
Contact	for your orders: t:	Gabriela Levin Lai	Carvalhaes ndfill		Order code: Purchase Order Number:	EUNZWE-00229489 144482 - landfill
CAMDI		912 20	25-0001262	7	Furchase Order Number:	
	E CODE	386301-		27		
Sample Product		Ground w				
	g Point code:	WIL-Xs2			Sampling Point name:	Levin Xs2
Reception	on Date & Time:		025 13:16			
-	s Started on:	25/01/20			Analysis Ending Date:	04/02/2025
Product	• •	Ground w			Sampled Date & Time	23/01/2025 13:26
Sampler(S)	Client no	minated exter	•	Sampled by Eurofins	No
			RESULTS	G (UNCERTAINT)	() LOQ	
NW179	Ammonia Nitroge			(+0.02) mg/l		
	Ammoniacal nitroger		0.19	(± 0.02) mg/l	0.01	
NW341	BOD5 - Soluble C	arbonace				
	BOD5		<3	mg/l	1	
NW020	Chemical Oxygen Chemical oxygen der		-15		45	
	Chloride		<15	mg/l	15	
	Chloride (Cl)		49.2	(± 4.92) mg/l	0.02	
NW023	Conductivity		73.2		0.02	
140023	Conductivity		28.8	(± 0.6) mS/m	0.1	
NW098	Dissolved Alumin	ium	20.0		0.1	
	Aluminium		0.006	mg/l	0.002	
NW103	Dissolved Boron			J	-	
-	Boron (B)		0.027	mg/l	0.005	
NW110	Dissolved Lead					
	Lead (Pb)		<0.0005	mg/l	0.0005	
NW113	Dissolved Manga	nese				
	Manganese (Mn)		0.0698	mg/l	0.0005	
NW114	Dissolved Mercur	у				
	Mercury (Hg)		<0.0005	mg/l	0.0005	
NW116	Dissolved Nickel					
	Nickel (Ni)		<0.0005	mg/l	0.0005	
ZMOUX	Enumeration of E	scherichia	-			
	Escherichia coli		<1	cfu/100 ml	1	
NW010	Nitrate-N		0.70	(± 0.07) mg/l	0.01	
	Nitrate-N		0.72	(± 0.07) mg/l	0.01	

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Phone





	1	Food &					
			S (UNCERT	AINTY) I	_OQ		
NW195 pH (Tes pH	ted beyond 15 n	6.8	(± 0.2)		0.1		
pri		0.0			0.1		
LIST OF METHO	DS						
NW007 Chloride	: APHA Online Editi	on 4110 B		NW010	Nitrate-N: APH	A Online Edition 41	10 B
NW020 Chemica	l Oxygen Demand	APHA Online Edit	ion 5220 D	NW023	Conductivity: A	PHA 24th Edition 2	2510 B
W098 Dissolve	d Aluminium: APH	A Online Edition 3 ²	125 B mod.	NW103	Dissolved Bord	on: APHA Online E	dition 3125 B mod.
NW110 Dissolve	d Lead: APHA Onli	ne Edition 3125 B	mod.	NW113	Dissolved Man	ganese: APHA Onl	line Edition 3125 B mod.
NW114 Dissolve	d Mercury: APHA	Online Edition 3125	6 B mod.	NW116	Dissolved Nick	el: APHA Online E	dition 3125 B mod.
NW179 Ammoni a	a Nitrogen: APHA	Online Edition 4500)-NH3 H	NW195	pH (Tested bey APHA 24th Editi		HA holding time):
NW341 BOD5 - S B	oluble Carbonace	ous: APHA Online	Edition 5210	ZM0UX		li E (Water) [NZ] < MEWW 9222I; AP	1 >6 000 /100 ml (0) HA 24th Edition
			Signa	ture			
mbac	abrol		M	Unt	_	\mathcal{L}	an
Marylou Cabral	Laboratory Manag Eurofins ELS Lin		ennifer Mont	Supervisor E Limited	Eurofins ELS	Leo Cleave	Senior Analyst Microbiology
Gabriela Carvalhaes	Business Unit Ma	anager					
-	dited cted within Eurofins	s group and is accre		Not De	ans Not Applicab tected means not ication (LOQ)	le t detected at or abo	ove the Limit of

- 3 Test is subcontracted within Eurofins group and is not accredited
- 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 ${f O}$ Tested at the sampling point by Eurofins and is not accredited
- [®]Tested at the sampling point by Eurofins and is accredited Test is RLP accredited
- \mathbf{O} Test is subcontracted within Eurofins group and is RLP accredited
- ation (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 MAV means Maximum Allowable Value





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The tests are identified by a five-digit code, their description is available on request.

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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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END OF REPORT



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Food & Water Testing

ANALYTICAL REPORT

REPORT CODE		AR-24-NW-074409-01			REPORT DATE	30/11/2024
Attention	Horowhenua D Lab Results P O Box 642	District Co	uncil			
	4741 Levin					
	NEW ZEALAN	D				
Phone	(06) 367 2705				Copy to: McMillan (Davidm	@horowhenua.govt.nz), Landmark
Email	labresults@horow	henua.govt.i	nz			m), Wardlaw (Scottw@horowhenua.govt.nz)
Contact	for your orders:	Gabriela	Carvalhaes		Order code:	EUNZWE-00218171
Contrac	t:	Levin Lan	dfill			
					Purchase Order Numbe	er: Landfill
SAMPL	E CODE	812-202	4-00175690			
Sample	Name	378346-0				
Product		Ground w	ater			
-	g Point code:	WIL-HS1	0.40		Sampling Point name:	Levin HS1
	on Date & Time: s Started on:	22/11/202 22/11/202			Analysis Ending Date:	30/11/2024
Product		Ground w			Sampled Date & Time	21/11/2024 07:00
Sampler			ninated exterr	nal sampler	Sampled by Eurofins	21/11/2024 07:00 No
ORGAN		2				
			NLOULIO			
NW00U	•	anal	-0.01	m a //	0.04	
	2,3,4,6-Tetrachloroph	enoi	<0.01	mg/l	0.01	
	2,4-Dichlorophenol		<0.01 <0.2	mg/l	0.01	
	2,6-Dichlorophenol 2-Chlorophenol (o-ch	lorophonol)		mg/l	0.2	
	3,4,5-Trichlorophenol		<0.01	mg/l mg/l	0.01 0.01	
	4-Chloro-3-cresol		<0.01	mg/l	0.01	
	Pentachlorophenol		<0.005	mg/l	0.005	
	Phenol		<0.000	mg/l	0.005	
	Total of 2,4,5 & 2,4,6		<0.02	mg/l	0.02	
	-Trichlorophenol			····	0.02	
NWWG6	Volatile Fatty Acid	s (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	
	Isocaproic acid		<5	mg/l	5	
	Isobutyric 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		mg/l	5	
			RESULTS	(UNCERTAINT)	() LOQ	
NW179	Ammonia Nitroge					
	Ammoniacal nitrogen	(N)	0.17	(± 0.02) mg/l	0.01	
NW341	BOD5 - Soluble Ca	arbonaceo	ous			
	BOD5		2	mg/l	1	

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Food & Water Testing

		RESULTS	(UNCERTAINT)	Y) LOQ		
NW020	Chemical Oxygen Demand					
	Chemical oxygen demand (COD)	40	mg/l	15		
NW007	Chloride					
	Chloride (Cl)	20.9	(± 2.09) mg/l	0.02		
NW023	Conductivity					
	Conductivity	21.8	(± 0.4) mS/m	0.1		
NW098	Dissolved Aluminium					
	Aluminium	0.014	mg/l	0.002		
NW583	Dissolved Arsenic		0	0.002		
	Arsenic (As)	0.002	mg/l	0.001		
NW103	Dissolved Boron	0.002		0.001		
	Boron (B)	0.055	mg/l	0.005		
NW104		0.000	mg/i	0.005		
1444104	Cadmium (Cd)	<0.0002	mg/l	0.0002		
NW105		<0.0002	Шġл	0.0002		
NW105	Dissolved Calcium	10 F	mal	0.05		
	Calcium (Ca)	10.5	mg/l	0.05		
NW106		<0.004		0.001		
	Chromium (Cr)	<0.001	mg/l	0.001		
NW108		0.0000				
	Copper (Cu)	0.0009	mg/l	0.0005		
NW109	Dissolved Iron					
	Iron (Fe)	0.153	mg/l	0.005		
NW110	Dissolved Lead					
	Lead (Pb)	<0.0005	mg/l	0.0005		
NW112	Dissolved Magnesium					
	Magnesium (Mg)	7.30	mg/l	0.01		
NW113	Dissolved Manganese					
	Manganese (Mn)	0.0677	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)	3.01	mg/l	0.01		
NW193	Dissolved Reactive Phosphe	orus				
	Phosphorus (soluble reactive)	0.119	mg/l	0.005		
NW120	Dissolved Sodium					
	Sodium (Na)	19.9	mg/l	0.01		
NW125	Dissolved Zinc					
	Zinc (Zn)	<0.002	mg/l	0.002		
ZM2GA	Enumeration of Escherichia	coli by Memb	orane Filtration			
	Escherichia coli	100	cfu/100 ml	100		
NW010	Nitrate-N					
	Nitrate-N	0.27	(± 0.03) mg/l	0.01		
NW195	pH (Tested beyond 15 minut	e APHA holdi	ng time)			
	рН	7.6	(± 0.2)	0.1		
NW011	Sulphate					
	Sulphate	18.9	(± 1.89) mg/l	0.02		
Furofins F	LS Limited			Phone	+64 4 576 5016	
85 Port Ro				www.eurofins.co.nz	antolia	CCREDITED
Seaview						
Lower Hut					lac	
Wellington NEW ZEA					The Co	Multilling Rent NG LABORATOR
					[2ah]	"G LABOR



		RESUL	TS (UNCERTAINTY)	LOQ
NW206	Suspended Solids			
	Suspended Solids	10	mg/l	3
NW003	Total Alkalinity			
	Alkalinity total	47	mg CaCO3/I	1
NW030	Total Hardness			
	Hardness	56	mg CaCO3/I	1
NW210	Total Non-Purgeable Orga	nic Carbon		
	Total Organic Carbon	6.6	mg/l	0.1

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 92221; APHA 24th Edition

mbecabros

Marylou Cabral Laboratory Manager Eurofins ELS Limited



Ganesh Ilancko Supervisor Eurofins ELS Limited

Signature

mA

Supervisor Eurofins ELS **Jennifer Mont** Limited



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Business Unit Manager -Wellington

Duiha C. Lagopon

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Hannah Smith

Laboratory Supervisor Microbiology

EXPLANATORY NOTE

Eurofins ELS Limited 85 Port Road Seaview Lower Hutt Wellington 5010 NEW ZEALAND



+64 4 576 5016



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Food & Water Testing

Test is not accredited

- ② Test is subcontracted within Eurofins group and is accredited
- $\ensuremath{\mathfrak{I}}$ Test is subcontracted within Eurofins group and is not accredited

 ${f igoplus}$ Test is subcontracted outside Eurofins group and is accredited

 $\$ Test is subcontracted outside Eurofins group and is not accredited

(6) Test result is provided by the customer and is not accredited

 ${\mathfrak O}$ Tested at the sampling point by Eurofins and is not accredited

[®]Tested at the sampling point by Eurofins and is accredited

Test is RLP accredited

1 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

MAV means Maximum Allowable Value

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END OF REPORT







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Food & Water Testing

ANALYTICAL REPORT

REPORT CODE		AR-24-NW-080867-01			REPORT DATE	26/12/2024
Attention	Horowhenua D Lab Results	istrict Cou	ncil			
	P 0 Box 642					
	4741 Levin					
	NEW ZEALAN	D				
Phone	(06) 367 2705					@horowhenua.govt.nz), Results
Email	labresults@horowl	henua.govt.nz			(labresults@horowhenua.go	
	or your orders:	Gabriela C			Order code:	EUNZWE-00222678
Contract:		Levin Lan	atili		Purchase Order Number	144482 - landfill
	0005	010.000	4 001005	<u> </u>		
SAMPLE			4-001895	60		
Sample N Product:	ame	381169-0 Ground wa				
	Point code:	WIL-HS1			Sampling Point name:	Levin HS1
	Date & Time:	13/12/202	24 18:14			
	Started on:	14/12/202			Analysis Ending Date:	25/12/2024
Product T		Ground wa	ater		Sampled Date & Time	12/12/2024 08:00
Sampler(s)		Client non	ninated exte	rnal sampler	Sampled by Eurofins	No
ORGANICS	6		RESULT	S (UNCERTAINT)	() LOQ	
NWWG6 V	olatile Fatty Acid	ds (VFA)				
Þ	cetic acid		<5	mg/l	5	
E	Butyric acid		<5	mg/l	5	
H	leptanoic acid		<5	mg/l	5	
ŀ	lexanoic acid		<5	mg/l	5	
I	socaproic acid		<5	mg/l	5	
I	sobutyric acid		<5	mg/l	5	
I	sovaleric acid		<5	mg/l	5	
F	ropionic acid		<5	mg/l	5	
١	aleric acid		<5	mg/l	5	
	olatile fatty acids as	s acetic	<5	mg/l	5	
2	cid		RESULT	S (UNCERTAINT)	() LOQ	
NW179 A	mmonia Nitroge	en				
	mmoniacal nitroger		0.15	(± 0.02) mg/l	0.01	
	OD5 - Soluble C					
	80D5		<3	mg/l	1	
	hemical Oxygen	Demand		-		
	hemical oxygen den		28	mg/l	15	
NW007 C		2		-	-	
	hloride (CI)		21.4	(± 2.14) mg/l	0.02	
	onductivity					
	conductivity		21.5	(± 0.4) mS/m	0.1	
	issolved Alumin	ium				
	luminium		0.005	mg/l	0.002	
NW583 C	issolved Arseni	С		-		
	rsenic (As)	-	0.003	mg/l	0.001	
				5		

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		RESULTS	(UNCERTAINTY)	LOQ	
NW103	Dissolved Boron				
	Boron (B)	0.031	mg/l	0.005	
NW104	Dissolved Cadmium				
	Cadmium (Cd)	<0.0002	mg/l	0.0002	
NW105	Dissolved Calcium				
	Calcium (Ca)	9.01	mg/l	0.05	
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)	0.096	mg/l	0.005	
NW110	Dissolved Lead				
	Lead (Pb)	<0.0005	mg/l	0.0005	
NW112	Dissolved Magnesium				
	Magnesium (Mg)	4.56	mg/l	0.01	
NW113	Dissolved Manganese				
	Manganese (Mn)	0.0086	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)	2.88	mg/l	0.01	
NW193	Dissolved Reactive Phospl	horus			
	Phosphorus (soluble reactive)	0.124	mg/l	0.005	
NW120	Dissolved Sodium				
	Sodium (Na)	18.7	mg/l	0.01	
NW125	Dissolved Zinc				
	Zinc (Zn)	<0.002	mg/l	0.002	
ZMOUX	Enumeration of Escherichi	a coli by Meml	brane Filtration		
	Escherichia coli	600	cfu/100 ml	1	
NW010	Nitrate-N				
	Nitrate-N	0.08	(± 0.01) mg/l	0.01	
NW195	pH (Tested beyond 15 minu	ute APHA holdi			
	рН	7.3	(± 0.2)	0.1	
NW011	Sulphate				
	Sulphate	17.2	(± 1.72) mg/l	0.02	
NW206	Suspended Solids				
	Suspended Solids	<6	mg/l	3	
NW003	Total Alkalinity				
	Alkalinity total	50	mg CaCO3/I	1	
NW030	Total Hardness				
	Hardness	41	mg CaCO3/I	1	
NW210	Total Non-Purgeable Organ	nic Carbon			
	Total Organic Carbon	6.2	mg/l	0.1	





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.
ZM0UX	Escherichia coli E (Water) [NZ] <1 >6 000 /100 ml (0) m-FC Agar-F: SMEWW 9222I; APHA 24th Edition		

mbecabrol

Marylou Cabral

Laboratory Manager Eurofins ELS Limited

Gordon McArthur

Senior Laboratory Analyst Eurofins ELS Limited



Cody Forbes

Technical Specialist Technical Specialist

EXPLANATORY NOTE

Eurofins ELS Limited 85 Port Road Seaview Lower Hutt Wellington 5010 NEW ZEALAND

Signature

Jennifer Mont Supervisor Eurofins ELS Limited

Ganesh Ilancko Supervisor Eurofins ELS Limited

LS Vi

C. Lagon ina

Divina Cunanan Lagazon

Supervisor Eurofins ELS Limited

Vineel Chandra Laboratory Supervisor Microbiology



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Food & Water Testing

①Test is not accredited

- ⁽²⁾ Test is subcontracted within Eurofins group and is accredited
- 3 Test is subcontracted within Eurofins group and is not accredited
- 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
- Tested at the sampling point by Eurofins and is not accredited
- [®]Tested at the sampling point by Eurofins and is accredited

Test 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

x (Unsatisfactory) means does not meet the specification

 \checkmark (Satisfactory) means meets the specification

MAV means Maximum Allowable Value

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The tests are identified by a five-digit code, their description is available on request.

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END OF REPORT







Page 1 of 4 AR-25-NW-005948-01

Food & Water Testing

ANALYTICAL REPORT

REPORT CODE		AR-25-NW-005948-01			REPORT DATE	29/01/2025		
Attention	Horowhenua [Lab Results	District Co	uncil					
	P 0 Box 642							
	4741 Levin							
	NEW ZEALAN	חו						
Phone	(06) 367 2705	ID			Conv to. McMillon (Davidme	@horowhenua.govt.nz), Results		
Email	labresults@horow	henua govt n	7		(labresults@horowhenua.gov			
	for your orders:		Carvalhaes		Order code:	EUNZWE-00227605		
Contract	-	Levin La			Order code.	LUNZWL-00227003		
SAMPLE	ECODE	812-202	25-0000693	7				
Sample I	Name	386302-	0					
Product:		Levin SH	1					
Sampling	g Point code:	WIL-HS1			Sampling Point name:	Levin HS1		
	on Date & Time:)25 18:35		. .			
-	Started on:	16/01/20			Analysis Ending Date:	29/01/2025		
-	Date & Time	14/01/20	025 00:00		Sampler(s)	Customer		
ORGANIC			RESULTS	(UNCERTAINT)	() LOQ			
NWWG6	Volatile Fatty Aci	ds (VFA)	F		_			
	Acetic acid		<5	mg/l	5			
	Butyric acid		<5	mg/l	5			
	Heptanoic acid		<5	mg/l	5			
	Hexanoic acid		<5	mg/l	5			
	Isocaproic acid		<5	mg/l	5			
	Isobutyric 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 a acid	s acetic	<5	mg/l	5			
			RESULTS	(UNCERTAINT)	() LOQ			
NW179	Ammonia Nitroge	ən						
	Ammoniacal nitrogen	n (N)	0.54	(± 0.05) mg/l	0.01			
NW341	BOD5 - Soluble C	arbonace	ous					
	BOD5		<3	mg/l	1			
NW020	Chemical Oxyger	n Demand						
	Chemical oxygen der		33	mg/l	15			
NW007	Chloride							
	Chloride (Cl)		24.2	(± 2.42) mg/l	0.02			
NW023	Conductivity							
	Conductivity		24.5	(± 0.5) mS/m	0.1			
NW098	Dissolved Alumir	nium						
	Aluminium		0.003	mg/l	0.002			
NW583	Dissolved Arseni	ic.		<u>o</u> r				
	Arsenic (As)		0.002	mg/l	0.001			
NW/102			0.002		0.001			
1404102	Dissolved Boron Boron (B)		0.050	mg/l	0.005			
				··· <i>œ</i> ·				
	LS Limited					-64 4 576 5016	CCREDITED	
5 Port Roa	au				www.eurofins.co.nz	and the second s	PCOLEO	

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		RESULT	S (UNCERTAINTY)	LOQ	
NW104	Dissolved Cadmium				
	Cadmium (Cd)	<0.0002	mg/l	0.0002	
NW105	Dissolved Calcium				
	Calcium (Ca)	13.0	mg/l	0.05	
NW106	Dissolved Chromium				
	Chromium (Cr)	< 0.001	mg/l	0.001	
W108	Dissolved Copper				
	Copper (Cu)	0.0030	mg/l	0.0005	
NW109	Dissolved Iron				
	Iron (Fe)	0.046	mg/l	0.005	
W110	Dissolved Lead				
	Lead (Pb)	<0.0005	mg/l	0.0005	
W112	Dissolved Magnesium				
	Magnesium (Mg)	8.22	mg/l	0.01	
W113	Dissolved Manganese		-		
	Manganese (Mn)	0.205	mg/l	0.0005	
W114	Dissolved Mercury		5		
	Mercury (Hg)	<0.0005	mg/l	0.0005	
W116	Dissolved Nickel		0		
	Nickel (Ni)	0.0005	mg/l	0.0005	
W117				0.0000	
	Potassium (K)	4.40	mg/l	0.01	
W193	Dissolved Reactive Phosph			0.01	
	Phosphorus (soluble reactive)	0.142	mg/l	0.005	
W120	Dissolved Sodium	011.12		0.000	
	Sodium (Na)	23.9	mg/l	0.01	
W125	Dissolved Zinc	20.5	1116/1	0.01	
11123	Zinc (Zn)	<0.002	mg/l	0.002	
				0.002	
AUDUN	Enumeration of Escherichia Escherichia coli	100 100 100	cfu/100 ml	1	
	Nitrate-N	100		I	
144010	Nitrate-N	0.02	(± 0.00) mg/l	0.01	
				0.01	
111133	pH (Tested beyond 15 minu	7.3	(± 0.2)	0.1	
		7.5	x - /	0.1	
	Sulphate	11.6	(± 1.16) mg/l	0.02	
INNOOC	Sulphate	0.11	(0.02	
₩ 206	Suspended Solids	17	m a /l	2	
	Suspended Solids	17	mg/l	3	
1003	Total Alkalinity	<u>()</u>			
	Alkalinity total	63	mg CaCO3/I	1	
10030	Total Hardness	66	0.000		
	Hardness	66	mg CaCO3/I	1	
NW210	Total Non-Purgeable Organ	ic Carbon			
	Total Organic Carbon	10.9	mg/l	0.1	

LIST OF METHODS

NW003 Total Alkalinity: APHA Online Edition 2320 B

NW007 Chloride: APHA Online Edition 4110 B

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Food & Water Testing

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.
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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.
ZM0UX	Escherichia coli E (Water) [NZ] <1 >6 000 /100 ml (0) m-FC Agar-F: SMEWW 9222I; APHA 24th Edition		



Marylou Cabral

Laboratory Manager Eurofins ELS Limited

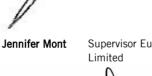


Gabriela Carvalhaes

Business Unit Manager



Vineel Chandra



Signature

Supervisor Eurofins ELS

Laboratory Supervisor Microbiology

Ganesh Ilancko Supervisor Eurofins ELS Limited

Cody Forbes

Technical Specialist Technical Specialist

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- Tested at the sampling point by Eurofins and is not accredited
- [®]Tested at the sampling point by Eurofins and is accredited
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- × (Unsatisfactory) means does not meet the specification
- ✓ (Satisfactory) means meets the specification
- MAV means Maximum Allowable Value







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Food & Water Testing

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END OF REPORT



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Food & Water Testing

ANALYTICAL REPORT

REPORT CODE		AR-24	4-NW-074410-01	REPORT DATE	30/11/2024
Attention	Horowhenua E Lab Results P O Box 642	District Counc	cil		
	4741 Levin				
	NEW ZEALAN	D			
Phone	(06) 367 2705			Copy to: McMillan (David	dm@horowhenua.govt.nz), Landmark
Email	labresults@horow	henua.govt.nz			.com), Wardlaw (Scottw@horowhenua.govt.nz)
Contact	for your orders:	Gabriela Car	valhaes	Order code:	EUNZWE-00218171
Contrac	-	Levin Landfill	I		
				Purchase Order Num	iber: Landfill
SAMPL	E CODE	812-2024-0	0175693		
Sample	Name	378347-0			
Product		Ground wate	er		
-	g Point code:	WIL-HS1A		Sampling Point nam	e: Levin HS1A
-	on Date & Time:	22/11/2024	9:40		
-	s Started on:	22/11/2024		Analysis Ending Date	
Product	••	Ground wate	er ated external sample	Sampled Date & Time er Sampled by Eurofins	
Sampler					
ORGAN			RESULTS (UNCER	TAINTY) LOQ	
NW00U	Chlorophenols				
	2,3,4,6-Tetrachloroph		0.01 mg/l	0.01	
	2,4-Dichlorophenol		0.01 mg/l	0.01	
	2,6-Dichlorophenol	<0.	0	0.2	
	2-Chlorophenol (o-ch		-	0.01	
	3,4,5-Trichlorophenol		0.01 mg/l	0.01	
	4-Chloro-3-cresol		0.01 mg/l	0.01	
	Pentachlorophenol		.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	
NWWG6	Volatile Fatty Acid	ls (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	
	Isocaproic acid	<5	mg/l	5	
	Isobutyric acid	<5	mg/l	5	
	Isovaleric acid	<5	8	5	
	Propionic acid	<5	0	5	
	Valeric acid	<5	5	5	
	Volatile fatty acids as			5	
			RESULTS (UNCER	TAINTY) LOQ	
NW179	Ammonia Nitroge	n			
	Ammoniacal nitrogen	(N) 0.6	67 (± 0.07)) mg/l 0.01	
NW341	BOD5 - Soluble Ca	arbonaceous			
	BOD5	<6	i mg/l	1	
Irofins F	LS Limited			Phone	

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Food & Water Testing

		RESULT	S (UNCERTAINT)	() LOQ			
NW020	Chemical Oxygen Demand						
	Chemical oxygen demand (COI		mg/l	15			
NW007							
-	Chloride (Cl)	19.4	(± 1.94) mg/l	0.02			
NW023	Conductivity			0.02			
	Conductivity	22.4	(± 0.4) mS/m	0.1			
NW098	Dissolved Aluminium		. ,	0.1			
111050	Aluminium	0.011	mg/l	0.002			
NI\A/E 02		0.011	ing/i	0.002			
NW583	Dissolved Arsenic	0.000		0.004			
	Arsenic (As)	0.002	mg/l	0.001			
NW103	Dissolved Boron						
	Boron (B)	0.045	mg/l	0.005			
NW104	Dissolved Cadmium						
	Cadmium (Cd)	<0.0002	mg/l	0.0002			
NW105	Dissolved Calcium						
	Calcium (Ca)	13.5	mg/l	0.05			
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)	1.44	mg/l	0.005			
NW110	Dissolved Lead		0	0.000			
	Lead (Pb)	<0.0005	mg/l	0.0005			
NW112		-0.0000	ing/i	0.0003			
	Dissolved Magnesium Magnesium (Mg)	6.95	ma/l	0.04			
		0.95	mg/l	0.01			
NW113	Dissolved Manganese						
	Manganese (Mn)	0.641	mg/l	0.0005			
NW114	Dissolved Mercury						
	Mercury (Hg)	<0.0005	mg/l	0.0005			
NW116	Dissolved Nickel						
	Nickel (Ni)	0.0009	mg/l	0.0005			
NW117	Dissolved Potassium						
	Potassium (K)	5.89	mg/l	0.01			
NW193	Dissolved Reactive Phospl	horus					
	Phosphorus (soluble reactive)	0.023	mg/l	0.005			
NW120	Dissolved Sodium						
	Sodium (Na)	18.3	mg/l	0.01			
NW125			0				
	Zinc (Zn)	0.006	mg/l	0.002			
7M2GA	Enumeration of Escherichi		•	0.002			
LIVIZGA	Escherichia coli	100 a con by wer	cfu/100 ml	100			
		100		100			
NW010		0.00	(± 0.00) mg/l	0.01			
	Nitrate-N	0.02		0.01			
NW195	pH (Tested beyond 15 minu						
	рН	6.9	(± 0.2)	0.1			
NW011	Sulphate						
	Sulphate	10.5	(± 1.05) mg/l	0.02			
urofins E	LS Limited			Phone	+64 4 576 5016	6	
5 Port Ro				www.eurofins.co.r	ız	1000 Martin	PCCREDITEO
eaview							
ower Hut	ł					Lac-MDA	

Wellington 5010

NEW ZEALAND



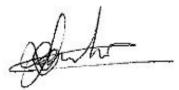
		RESU	LTS (UNCERTAINTY)	LOQ
NW206	Suspended Solids			
	Suspended Solids	44	mg/l	3
NW003	Total Alkalinity			
	Alkalinity total	64	mg CaCO3/I	1
NW030	Total Hardness			
	Hardness	62	mg CaCO3/I	1
NW210	Total Non-Purgeable Org	anic Carbon		
	Total Organic Carbon	7.6	mg/l	0.1

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.
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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

mbecabros

Marylou Cabral Laboratory Manager Eurofins ELS Limited



Ganesh Ilancko Supervisor Eurofins ELS Limited

Signature

mA

Supervisor Eurofins ELS **Jennifer Mont** Limited



Gabriela Carvalhaes Wellington

Business Unit Manager -

Duiha C. Lagopon

Supervisor Eurofins ELS Divina Cunanan Limited Lagazon

Hannah Smith

Laboratory Supervisor Microbiology

EXPLANATORY NOTE

Eurofins ELS Limited 85 Port Road Seaview Lower Hutt Wellington 5010 NEW ZEALAND



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AR-24-NW-074410-01 Page 4 of 4



Food & Water Testing

①Test is not accredited

- ② Test is subcontracted within Eurofins group and is accredited
- $\ensuremath{\mathfrak{I}}$ Test is subcontracted within Eurofins group and is not accredited
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- ⑤Test is subcontracted outside Eurofins group and is not accredited
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- ${f \overline{\mathcal{O}}}$ Tested at the sampling point by Eurofins and is not accredited
- [®]Tested at the sampling point by Eurofins and is accredited

Test is RLP accredited

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
- \checkmark (Satisfactory) means meets the specification
- MAV means Maximum Allowable Value

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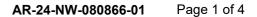
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END OF REPORT









ANALYTICAL REPORT

REPORT CODE		AR-24-NW-080866-01			REPORT DATE	26/12/2024	
Attention	Horowhenua D	istrict Cou	incil				
	Lab Results						
	P 0 Box 642						
	4741 Levin						
	NEW ZEALAN	D					
Phone	(06) 367 2705					@horowhenua.govt.nz), Results	
Email	labresults@horowh	nenua.govt.nz	2		(labresults@horowhenua.gov	/t.nz), Landmark	
	or your orders:	Gabriela (Order code:	EUNZWE-00222678	
Contract:		Levin Lan	Idfill		Burahasa Ordar Numbar	144482 - Iandfill	
					Purchase Order Number:	144482 - 181101111	
SAMPLE			24-00189	559			
Sample N Product:	ame	381170-0 Ground w					
	Point code:	WIL-HS1			Sampling Point name:	Levin HS1A	
	Date & Time:		24 18:03		Sampling Fount halfie.		
-	Started on:	14/12/202			Analysis Ending Date:	25/12/2024	
Product T		Ground w	ater		Sampled Date & Time	12/12/2024 07:45	
Sampler(s)	l de la companya de l	Client nor	ninated ext	ernal sampler	Sampled by Eurofins	No	
ORGANICS	6		RESUL	TS (UNCERTAINTY) LOQ		
NWWG6 V	olatile Fatty Acid	ls (VFA)					
	cetic acid	. ,	<5	mg/l	5		
E	Butyric acid		<5	mg/l	5		
ŀ	leptanoic acid		<5	mg/l	5		
ŀ	lexanoic acid		<5	mg/l	5		
I	socaproic acid		<5	mg/l	5		
I	sobutyric acid		<5	mg/l	5		
I	sovaleric acid		<5	mg/l	5		
F	Propionic acid		<5	mg/l	5		
١	aleric acid		<5	mg/l	5		
	/olatile fatty acids as icid	acetic	<5	mg/l	5		
-			RESUL	TS (UNCERTAINTY) LOQ		
NW179 A	mmonia Nitroge	n					
	Ammoniacal nitrogen		5.24	(± 0.52) mg/l	0.01		
NW341 E	OD5 - Soluble C	arbonaceo	us				
E	30D5		<3	mg/l	1		
NW020 C	hemical Oxygen	Demand					
	Chemical oxygen den		18	mg/l	15		
NW007 C	hloride						
	Chloride (Cl)		21.4	(± 2.14) mg/l	0.02		
NW023 C	onductivity						
	Conductivity		21.5	(± 0.4) mS/m	0.1		
	issolved Alumin	ium					
	luminium		0.006	mg/l	0.002		
NW583 C	issolved Arsenio						
	Arsenic (As)		0.002	mg/l	0.001		
				5			

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ACC-MRA



		RESULTS	(UNCERTAINTY)	LOQ	
NW103	Dissolved Boron				
	Boron (B)	0.033	mg/l	0.005	
NW104	Dissolved Cadmium				
	Cadmium (Cd)	<0.0002	mg/l	0.0002	
NW105	Dissolved Calcium				
	Calcium (Ca)	9.22	mg/l	0.05	
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)	0.085	mg/l	0.005	
NW110	Dissolved Lead				
	Lead (Pb)	<0.0005	mg/l	0.0005	
NW112	Dissolved Magnesium				
	Magnesium (Mg)	5.08	mg/l	0.01	
NW113	Dissolved Manganese				
	Manganese (Mn)	0.0093	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)	3.08	mg/l	0.01	
NW193	Dissolved Reactive Phospl	horus			
	Phosphorus (soluble reactive)	0.112	mg/l	0.005	
NW120	Dissolved Sodium				
	Sodium (Na)	19.3	mg/l	0.01	
NW125	Dissolved Zinc				
	Zinc (Zn)	<0.002	mg/l	0.002	
ZMOUX	Enumeration of Escherichi	a coli by Mem	brane Filtration		
	Escherichia coli	100	cfu/100 ml	1	
NW010	Nitrate-N				
	Nitrate-N	0.06	(± 0.01) mg/l	0.01	
NW195	pH (Tested beyond 15 minu				
	pH	7.4	(± 0.2)	0.1	
NW011	•				
	Sulphate	16.7	(± 1.67) mg/l	0.02	
NW206	Suspended Solids				
	Suspended Solids	10	mg/l	3	
NW003	Total Alkalinity				
	Alkalinity total	52	mg CaCO3/I	1	
NW030	Total Hardness				
	Hardness	44	mg CaCO3/I	1	
NW210	Total Non-Purgeable Organ				
	Total Organic Carbon	6.1	mg/l	0.1	





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.
ZM0UX	Escherichia coli E (Water) [NZ] <1 >6 000 /100 ml (0)		

mbecab

Marylou Cabral

Laboratory Manager Eurofins ELS Limited

m-FC Agar-F: SMEWW 9222I; APHA 24th Edition

Gordon McArthur

Senior Laboratory Analyst Eurofins ELS Limited



Cody Forbes

Technical Specialist Technical Specialist

EXPLANATORY NOTE

Eurofins ELS Limited 85 Port Road Seaview Lower Hutt Wellington 5010 NEW ZEALAND

from

Signature

Jennifer Mont Supervisor Eurofins ELS Limited

Ganesh Ilancko Supervisor Eurofins ELS Limited

S Vir

Divita C. Lagojon

Divina Cunanan Lagazon

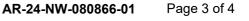
Supervisor Eurofins ELS Limited

Vineel Chandra

Laboratory Supervisor Microbiology

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AR-24-NW-080866-01 Page 4 of 4



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 \checkmark (Satisfactory) means meets the specification

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END OF REPORT







AR-25-NW-005950-01 Page 1 of 4

Food & Water Testing

ANALYTICAL REPORT

REPORT	CODE	AR-25-NW-0	05950-01	REPORT DATE	29/01/2025
Attention	Horowhenua Distr Lab Results	ict Council			
	P 0 Box 642				
	4741 Levin				
	NEW ZEALAND				
Phone	(06) 367 2705				Phorowhenua.govt.nz), Results
Email	labresults@horowhenu	ia.govt.nz		(labresults@horowhenua.gov	t.nz), Landmark
Contact for Contract:		abriela Carvalhaes evin Landfill		Order code:	EUNZWE-00227605
SAMPLE	CODE 8	12-2025-00006	940		
Sample N		86303-0			
Product:		evin HS1A		• ·· - ·	
		/IL-HS1A		Sampling Point name:	Levin HS1A
		5/01/2025 18:35 5/01/2025		Analysis Ending Date:	29/01/2025
-		4/01/2025 00:00		Sampler(s)	Customer
ORGANIC					Gustomer
			TS (UNCERTAINT)) LOQ	
	/olatile Fatty Acids (\ Acetic acid	VFA) <5	mg/l	5	
		<5 <5	-	5	
	Butyric acid		mg/l	5	
	Heptanoic acid Hexanoic acid	<5	mg/l	5	
		<5	mg/l	5	
	Isocaproic acid	<5	mg/l	5	
	Isobutyric 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 ace acid	etic <5	mg/l	5	
		RESUL	TS (UNCERTAINT)) LOQ	
NW179 A	Ammonia Nitrogen				
	Ammoniacal nitrogen (N)	0.24	(± 0.02) mg/l	0.01	
NW341 E	BOD5 - Soluble Carb	onaceous			
	BOD5	<3	mg/l	1	
NW020 0	Chemical Oxygen De	mand			
	Chemical oxygen demand		mg/l	15	
NW007 0					
	Chloride (Cl)	22.6	(± 2.26) mg/l	0.02	
	Conductivity	-			
	Conductivity	24.5	(± 0.5) mS/m	0.1	
	Dissolved Aluminium		- ·	0.1	
	Aluminium	0.007	mg/l	0.002	
		0.007	1118/1	0.002	
	Dissolved Arsenic	0.000	~~~ <u>~</u> /	0.001	
	Arsenic (As)	0.002	mg/l	0.001	
	Dissolved Boron	c			
	Boron (B)	0.051	mg/l	0.005	

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	RESULTS (UNCERTAINTY) LOQ				
NW104	Dissolved Cadmium				
	Cadmium (Cd)	<0.0002	mg/l	0.0002	
NW105	Dissolved Calcium				
	Calcium (Ca)	12.4	mg/l	0.05	
NW106	Dissolved Chromium		-		
	Chromium (Cr)	< 0.001	mg/l	0.001	
NW108	Dissolved Copper		0	01001	
111100	Copper (Cu)	0.0034	mg/l	0.0005	
NW109		0.0001		0.0000	
1103	Iron (Fe)	0.041	mg/l	0.005	
NW110		0.041	iiig/i	0.005	
	Lead (Pb)	<0.0005	mall	0.0005	
NUM 1 1 O		<0.0005	mg/l	0.0005	
NW112	Dissolved Magnesium	7.07			
	Magnesium (Mg)	7.97	mg/l	0.01	
NW113	Dissolved Manganese				
	Manganese (Mn)	0.144	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)	4.24	mg/l	0.01	
NW193	Dissolved Reactive Phosp	horus			
	Phosphorus (soluble reactive)	0.099	mg/l	0.005	
NW120	Dissolved Sodium				
	Sodium (Na)	23.6	mg/l	0.01	
NW125					
	Zinc (Zn)	0.004	mg/l	0.002	
ZMOUX	Enumeration of Escherichi				
	Escherichia coli	1400	cfu/100 ml	1	
	Nitrate-N	1.00	0.0/100 111		
111010	Nitrate-N	<0.01	(± 0.00) mg/l	0.01	
				0.01	
1111123	pH (Tested beyond 15 minu		(± 0.2)	0.4	
NU4/01 1	рН	7.6	(- 0)	0.1	
NWUII	Sulphate	10.0	(± 1.06) mg/l	~ ~ ~ ~	
	Sulphate	10.6	(± 1.00) mg/i	0.02	
NW206	Suspended Solids				
	Suspended Solids	54	mg/l	3	
NW003	Total Alkalinity				
	Alkalinity total	63	mg CaCO3/I	1	
NW030	Total Hardness				
	Hardness	64	mg CaCO3/I	1	
NW210	Total Non-Purgeable Organ	nic Carbon			
	Total Organic Carbon	10.4	mg/l	0.1	

LIST OF METHODS

NW003 Total Alkalinity: APHA Online Edition 2320 B

NW007 Chloride: APHA Online Edition 4110 B

Phone

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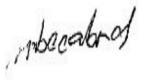




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Food & Water Testing

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.
ZM0UX	Escherichia coli E (Water) [NZ] <1 >6 000 /100 ml (0) m-FC Agar-F: SMEWW 9222I; APHA 24th Edition		



Marylou Cabral

Laboratory Manager Eurofins ELS Limited



Gabriela Carvalhaes

Business Unit Manager



- Vineel Chandra
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Supervisor Eurofins ELS

Laboratory Supervisor

Microbiology



Ganesh Ilancko Supervisor Eurofins ELS Limited

Cody Forbes

Technical Specialist Technical Specialist

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Signature

Jennifer Mont Supervisor Eur Limited

🛟 eurofins

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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 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



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VG LABOR



AR-24-NW-074408-01 Page 1 of 4

Food & Water Testing

ANALYTICAL REPORT

REPORT CODE		AR-24-NW-074408-01			REPORT DATE	30/11/2024
Attention	Horowhenua Di Lab Results P O Box 642	istrict Co	uncil			
	4741 Levin					
	NEW ZEALAND	C				
Phone	(06) 367 2705				Copy to: McMillan (Davidmo	@horowhenua.govt.nz), Landmark
Email	labresults@horowh	enua.govt.i	nz			n), Wardlaw (Scottw@horowhenua.govt.nz)
Contact f	or your orders:	Gabriela (Carvalhaes		Order code:	EUNZWE-00218171
Contract:	-	Levin Lan	dfill			
					Purchase Order Numbe	r: Landfill
SAMPLE	CODE	812-202	4-00175689			
Sample N	lame	378358-0				
Product:		Ground w	vater			
		WIL-HS2			Sampling Point name:	Levin HS2
		22/11/202			Analysia Englise Data	20/44/2024
-		22/11/202			Analysis Ending Date:	30/11/2024
Product 1 Sampler(s		Ground w	ater ninated exterr	al sampler	Sampled Date & Time Sampled by Eurofins	21/11/2024 07:30 No
				-		ino
ORGANIC			RESULIS	(UNCERTAINT)	() LOQ	
	Chlorophenols					
	2,3,4,6-Tetrachlorophe	enol	<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-chlo	orophenol)		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	
NWWG6 \	/olatile Fatty Acids	s (VFA)				
1	Acetic acid		<5	mg/l	5	
I	Butyric acid		<5	mg/l	5	
	Heptanoic acid		<5	mg/l	5	
	Hexanoic acid		<5	mg/l	5	
	lsocaproic acid		<5	mg/l	5	
	lsobutyric acid		<5	mg/l	5	
	lsovaleric acid		<5	mg/l	5	
	Propionic acid		<5	mg/l	5	
	Valeric acid		<5	mg/l	5	
	Volatile fatty acids as a	acetic acid		mg/l	5	
			RESULTS	(UNCERTAINT)	() LOQ	
NW179	Ammonia Nitrogen					
	Ammoniacal nitrogen ((N)	0.18	(± 0.02) mg/l	0.01	
NW341 E	3OD5 - Soluble Ca	rbonaceo	us			
	BOD5		2	mg/l	1	

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TESTING LABORATO

Food & Water Testing

		RESULTS	(UNCERTAINTY) LOQ		
NW020	Chemical Oxygen Demand					
	Chemical oxygen demand (COD	0) 34	mg/l	15		
NW007	Chloride					
	Chloride (Cl)	22.6	(± 2.26) mg/l	0.02		
NW023	Conductivity					
	Conductivity	22.3	(± 0.4) mS/m	0.1		
NW098	Dissolved Aluminium					
	Aluminium	0.016	mg/l	0.002		
NW583	Dissolved Arsenic					
	Arsenic (As)	0.002	mg/l	0.001		
NW103	Dissolved Boron					
	Boron (B)	0.057	mg/l	0.005		
NW104	Dissolved Cadmium					
	Cadmium (Cd)	<0.0002	mg/l	0.0002		
NW105	Dissolved Calcium					
	Calcium (Ca)	10.6	mg/l	0.05		
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)	0.206	mg/l	0.005		
NW110	Dissolved Lead					
	Lead (Pb)	<0.0005	mg/l	0.0005		
NW112	Dissolved Magnesium					
	Magnesium (Mg)	7.26	mg/l	0.01		
NW113	Dissolved Manganese					
	Manganese (Mn)	0.0806	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)	2.96	mg/l	0.01		
NW193	Dissolved Reactive Phosph	norus				
	Phosphorus (soluble reactive)	0.141	mg/l	0.005		
NW120	Dissolved Sodium					
	Sodium (Na)	19.8	mg/l	0.01		
NW125	Dissolved Zinc					
	Zinc (Zn)	<0.002	mg/l	0.002		
ZM2GA	Enumeration of Escherichia	a coli by Meml	brane Filtration			
	Escherichia coli	4200	cfu/100 ml	100		
NW010	Nitrate-N					
	Nitrate-N	0.27	(± 0.03) mg/l	0.01		
NW195	pH (Tested beyond 15 minu	ite APHA holdi	ing time)			
	рН	7.6	(± 0.2)	0.1		
NW011	Sulphate					
	Sulphate	19.1	(± 1.91) mg/l	0.02		
urofine F	LS Limited			Phone	+64 4 576 5016	
5 Port Ro				www.eurofins.co.nz	"alahahaha	IL PCCREDITED
Seaview						2
ower Hut					Hac-M	

Wellington 5010 NEW ZEALAND



		RESULTS	(UNCERTAINTY)	LOQ
NW206	Suspended Solids			
	Suspended Solids	8	mg/l	3
NW003	Total Alkalinity			
	Alkalinity total	49	mg CaCO3/I	1
NW030	Total Hardness			
	Hardness	56	mg CaCO3/I	1
NW210	Total Non-Purgeable Orga	nic Carbon		
	Total Organic Carbon	6.9	mg/l	0.1

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

mbecabros

Marylou Cabral Laboratory Manager Eurofins ELS Limited



Ganesh Ilancko Supervisor Eurofins ELS Limited

Signature

mA

Supervisor Eurofins ELS **Jennifer Mont** Limited



Gabriela Carvalhaes

Business Unit Manager -Wellington

Duiha C. Lagopon

Supervisor Eurofins ELS Divina Cunanan Limited



Hannah Smith

Laboratory Supervisor Microbiology

EXPLANATORY NOTE

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Food & Water Testing

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 ${f 4}$ Test is subcontracted outside Eurofins group and is accredited

 $\$ Test is subcontracted outside Eurofins group and is not accredited

() Test result is provided by the customer and is not accredited

 ${f \overline{\mathcal{O}}}$ Tested at the sampling point by Eurofins and is not accredited

[®]Tested at the sampling point by Eurofins and is accredited

Test is RLP accredited

1 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

 \checkmark (Satisfactory) means meets the specification

MAV means Maximum Allowable Value

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Food & Water Testing

ANALYTICAL REPORT

REPORT	CODE	AR	24-NW-0	80419-01	REPORT DATE	23/12/2024
Attention	Horowhenua E Lab Results P O Box 642	District Cou	ıncil			
	4741 Levin					
	NEW ZEALAN	D				
Phone	(06) 367 2705	D			Conv.to. McMillan (Davidm	@horowhenua.govt.nz), Results
Email	labresults@horow	henua.govt.n	Z		(labresults@horowhenua.go	
Contact for	or your orders:		Carvalhaes		Order code:	EUNZWE-00222678
Contract:	,	Levin Lar				
					Purchase Order Number	144482 - landfill
SAMPLE	CODE	812-202	24-00189	558		
Sample N	ame	381156-	0			
Product:		Ground w				
	Point code:	WIL-HS2			Sampling Point name:	Levin HS2
	Date & Time: Started on:	13/12/20)24 18:03 24		Analysis Ending Date:	23/12/2024
Product T		Ground w			Sampled Date & Time	12/12/2024 08:20
Sampler(s)				ernal sampler	Sampled by Eurofins	No
ORGANICS		0.101/110		TS (UNCERTAINT		
			NL30L			
	olatile Fatty Acie	as (VFA)	.5		-	
	Acetic acid		<5 <5	mg/l	5	
	Butyric acid Heptanoic acid		<5 <5	mg/l mg/l	5 5	
	lexanoic acid		<5 <5	mg/l	5	
	socaproic acid		<5 <5	mg/l	5	
	sobutyric acid		<5 <5	mg/l	5	
	sovaleric acid		<5	mg/l	5	
	Propionic acid		<5	mg/l	5	
	/aleric acid		<5	mg/l	5	
١	/olatile fatty acids a	s acetic	<5	mg/l	5	
	ncid			_		
			RESUL	TS (UNCERTAINT)	() LOQ	
NW179 A	Ammonia Nitroge	en				
ŀ	Ammoniacal nitroger	n (N)	0.63	(± 0.06) mg/l	0.01	
NW341 E	BOD5 - Soluble C	arbonaced	ous			
E	30D5		<3	mg/l	1	
NW020 C	hemical Oxyger	n Demand				
(Chemical oxygen der	mand (COD)	16	mg/l	15	
NW007 C	hloride					
(Chloride (Cl)		21.7	(± 2.17) mg/l	0.02	
NW023 C	Conductivity					
(Conductivity		21.9	(± 0.4) mS/m	0.1	
NW098 E	issolved Alumir	nium				
ŀ	Aluminium		0.005	mg/l	0.002	
NW583 C)issolved Arseni	с				
ŀ	Arsenic (As)		0.002	mg/l	0.001	

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		RESULTS	(UNCERTAINTY)	LOQ		
NW103	Dissolved Boron					
	Boron (B)	0.037	mg/l	0.005		
NW104	Dissolved Cadmium					
	Cadmium (Cd)	<0.0002	mg/l	0.0002		
NW105	Dissolved Calcium					
	Calcium (Ca)	10.4	mg/l	0.05		
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)	0.116	mg/l	0.005		
NW110	Dissolved Lead					
	Lead (Pb)	<0.0005	mg/l	0.0005		
NW112	Dissolved Magnesium					
	Magnesium (Mg)	5.84	mg/l	0.01		
NW113	Dissolved Manganese		5			
	Manganese (Mn)	0.0122	mg/l	0.0005		
NW114	Dissolved Mercury		5			
	Mercury (Hg)	<0.0005	mg/l	0.0005		
NW116	Dissolved Nickel		5			
	Nickel (Ni)	<0.0005	mg/l	0.0005		
NW117	Dissolved Potassium			0.0000		
	Potassium (K)	3.25	mg/l	0.01		
NW193	Dissolved Reactive Phosph			0.01		
111155	Phosphorus (soluble reactive)	0.127	mg/l	0.005		
NW120		0.127		0.000		
111120	Sodium (Na)	20.4	mg/l	0.01		
NW125	Dissolved Zinc	20.1		0.01		
111123	Zinc (Zn)	<0.002	mg/l	0.002		
	Enumeration of Escherichi			0.002		
210007	Escherichia coli	900	cfu/100 ml	1		
	Nitrate-N	500		I		
140010	Nitrate-N	0.11	(± 0.01) mg/l	0.01		
NW/105	pH (Tested beyond 15 minu			0.01		
1400195	pH (rested beyond 15 mint	6.5	(± 0.2)	0.1		
		0.5		0.1		
	Sulphate Sulphate	16.5	(± 1.65) mg/l	0.02		
NWOOG		10.5	(_ ···-) ····ð,·	0.02		
	Suspended Solids Suspended Solids	<6	ma/l	2		
		<0	mg/l	3		
110003	Total Alkalinity	Б 1	mg CoCO2/I	4		
	Alkalinity total	51	mg CaCO3/I	1		
080000	Total Hardness	FO	ma 0.0002/l	4		
	Hardness	50	mg CaCO3/I	1		
NW210	Total Non-Purgeable Organ			0.4		
	Total Organic Carbon	5.6	mg/l	0.1		





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.

ZMOUX Escherichia coli E (Water) [NZ] <1 >6 000 /100 ml (0) m-FC Agar-F: SMEWW 9222l; APHA 24th Edition

Signature

mbecab

Marylou Cabral

Laboratory Manager Eurofins ELS Limited

Gordon McArthur

Senior Laboratory Analyst Eurofins ELS Limited



Cody Forbes

Technical Specialist Technical Specialist

EXPLANATORY NOTE

Eurofins ELS Limited 85 Port Road Seaview Lower Hutt Wellington 5010 NEW ZEALAND



t Supervisor Eurofins ELS Limited



Ganesh Ilancko Supervisor Eurofins ELS Limited

ils Vi

Limited

Supervisor Eurofins ELS

C. Lagoron

Vineel Chandra

Divina Cunanan

Lagazon

Laboratory Supervisor Microbiology





AR-24-NW-080419-01 Page 4 of 4



Food & Water Testing

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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

 \checkmark (Satisfactory) means meets the specification

MAV means Maximum Allowable Value

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Food & Water Testing

ANALYTICAL REPORT

AF	R-25-NW-00	5947-01	REPORT DATE	29/01/2025
enua District Co	uncil			
sults				
642				
evin				
ALAND				
2705				horowhenua.govt.nz), Results
@horowhenua.govt.n			(labresults@horowhenua.gov	
ders: Gabriela Levin La	Carvalhaes ndfill		Order code:	EUNZWE-00227605
812-202	25-000069	36		
386265-				
Levin HS				
e: WIL-HS2			Sampling Point name:	Levin HS2
ime: 15/01/20)25 18:35 25		Analysis Ending Date:	29/01/2025
	25 00:00		Sampler(s)	Customer
1+/01/20			,	oustonici
	RESULI	S (UNCERTAINTY) LOQ	
ty Acids (VFA)	<5	~~~ <u>~</u> /l	-	
		mg/l	5	
id	<5	mg/l	5	
id d	<5	mg/l	5	
d	<5	mg/l	5	
id	<5	mg/l	5	
id	<5	mg/l	5	
d	<5	mg/l	5	
d	<5	mg/l	5	
	<5	mg/l	5	
acids as acetic	<5	mg/l	5	
	RESULT	S (UNCERTAINTY) LOQ	
Nitrogen		(
nitrogen (N)	0.58	(± 0.06) mg/l	0.01	
uble Carbonace	ous			
	<3	mg/l	1	
Oxygen Demand				
gen demand (COD)	28	mg/l	15	
	25.3	(± 2.53) mg/l	0.02	
ty				
-	25.8	(± 0.5) mS/m	0.1	
Aluminium				
	0.004	mg/l	0.002	
Arsenic		-		
	0.002	mg/l	0.001	
Boron		<u>o</u> '		
	0.052	mø/l	0.005	
	0.002			64 4 576 5016
		0.002	0.002 mg/l	0.002 mg/l 0.001 ron 0.052 mg/l 0.005

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		RESULT	S (UNCERTAINTY)	LOQ	
NW104	Dissolved Cadmium				
	Cadmium (Cd)	<0.0002	mg/l	0.0002	
NW105	Dissolved Calcium				
	Calcium (Ca)	13.6	mg/l	0.05	
NW106	Dissolved Chromium				
	Chromium (Cr)	<0.001	mg/l	0.001	
NW108	Dissolved Copper				
	Copper (Cu)	0.0031	mg/l	0.0005	
NW109	Dissolved Iron				
	Iron (Fe)	0.057	mg/l	0.005	
NW110	Dissolved Lead				
	Lead (Pb)	<0.0005	mg/l	0.0005	
NW112	Dissolved Magnesium				
	Magnesium (Mg)	8.21	mg/l	0.01	
NW113	Dissolved Manganese				
	Manganese (Mn)	0.191	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)	4.38	mg/l	0.01	
NW193	Dissolved Reactive Phosp	horus			
	Phosphorus (soluble reactive)	0.125	mg/l	0.005	
NW120	Dissolved Sodium				
	Sodium (Na)	23.9	mg/l	0.01	
NW125	Dissolved Zinc				
	Zinc (Zn)	<0.002	mg/l	0.002	
zмоих	Enumeration of Escherichi	ia coli by Men	nbrane Filtration		
	Escherichia coli	300	cfu/100 ml	1	
NW010	Nitrate-N				
	Nitrate-N	0.02	(± 0.00) mg/l	0.01	
NW195	pH (Tested beyond 15 min	ute APHA hol	ding time)		
	рН	7.4	(± 0.2)	0.1	
NW011	Sulphate				
	Sulphate	11.3	(± 1.13) mg/l	0.02	
NW206	Suspended Solids				
	Suspended Solids	16	mg/l	3	
NW003	Total Alkalinity				
	Alkalinity total	68	mg CaCO3/I	1	
NW030	Total Hardness				
	Hardness	68	mg CaCO3/I	1	
	Total Non-Purgeable Organ	nic Carbon			

LIST OF METHODS

NW003 Total Alkalinity: APHA Online Edition 2320 B

NW007 Chloride: APHA Online Edition 4110 B

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Food & Water Testing

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.
ZM0UX	Escherichia coli E (Water) [NZ] <1 >6 000 /100 ml (0) m-FC Agar-F: SMEWW 9222I; APHA 24th Edition		

mbecabro

Marylou Cabral

Laboratory Manager Eurofins ELS Limited



Gabriela

Business Unit Manager



Carvalhaes

- EXPLANATORY NOTE
- ①Test is not accredited
- ②Test is subcontracted within Eurofins group and is accredited
- $\ensuremath{\mathfrak{T}}$ Test is subcontracted within Eurofins group and is not accredited
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- $\ensuremath{\textcircled{\text{S}}}$ Test is subcontracted outside Eurofins group and is not accredited
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- Tested at the sampling point by Eurofins and is not accredited
- [®]Tested at the sampling point by Eurofins and is accredited
- Test is RLP accredited
- Test is subcontracted within Eurofins group and is RLP accredited

Signature

Jennifer Mont Supervisor Eurofins ELS Limited

Vineel Chandra

Laboratory Supervisor Microbiology



Ganesh Ilancko Supervisor Eurofins ELS Limited

Cody Forbes

Technical Specialist Technical Specialist

- N/A means Not Applicable
- **Not Detected** means not detected at or above the Limit of Quantification (LOQ)
- $\ensuremath{\textbf{LOQ}}$ means Limit of Quantification and the unit of LOQ is the same as the result unit
- ✗ (Unsatisfactory) means does not meet the specification
- \checkmark (Satisfactory) means meets the specification
- MAV means Maximum Allowable Value





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END OF REPORT



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Food & Water Testing

ANALYTICAL REPORT

REPORT CODE AR		AR-24-NW	-074406-01	REPORT DATE	30/11/2024
Attention	Horowhenua Dis Lab Results P O Box 642	trict Council			
	4741 Levin				
	NEW ZEALAND				
Phone	(06) 367 2705			Copy to: McMillan (Davidmo	@horowhenua.govt.nz), Landmark
Email	labresults@horowhe	nua.govt.nz		(Phil.Landmark@stantec.com	m), Wardlaw (Scottw@horowhenua.govt.nz)
		Gabriela Carvalha	es	Order code:	EUNZWE-00218171
Contract:	L	evin Landfill.		Purchase Order Numbe	r: Landfill
SAMPLE		12-2024-00175	682		
Sample N		78359-0			
Product:		Ground water			
		VIL-HS3		Sampling Point name:	Levin HS3
Receptio	n Date & Time: 2	2/11/2024 9:40			
•		2/11/2024		Analysis Ending Date:	30/11/2024
Product 1	• •	Ground water		Sampled Date & Time	21/11/2024 07:40
Sampler(s) C	Client nominated e	external sampler	Sampled by Eurofins	No
ORGANIC	CS	RESU	ILTS (UNCERTAINT)	() LOQ	
NW00U (Chlorophenols				
	2,3,4,6-Tetrachlorophen	iol <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-chlor	ophenol) <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	
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	
	Isocaproic acid	<5	mg/l	5	
	Isobutyric 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 ac	cetic acid <5	mg/l	5	
		RESL	ILTS (UNCERTAINT)	() LOQ	
NW179	Ammonia Nitrogen				
	Ammoniacal nitrogen (N	l) 0.19	(± 0.02) mg/l	0.01	
NW341	BOD5 - Soluble Cart	oonaceous			
	BOD5	2	mg/l	1	

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Food & Water Testing

NW020			(UNCERTAINTY)	LOQ			
1111020	Chemical Oxygen Demand						
	Chemical oxygen demand (COD) 27	mg/l	15			
	Chloride						
	Chloride (CI)	21.7	(± 2.17) mg/l	0.02			
NW023	Conductivity						
	Conductivity	22.5	(± 0.5) mS/m	0.1			
	Dissolved Aluminium						
	Aluminium	0.028	mg/l	0.002			
NW583	Dissolved Arsenic		-				
	Arsenic (As)	0.002	mg/l	0.001			
	Dissolved Boron		0				
	Boron (B)	0.057	mg/l	0.005			
	Dissolved Cadmium		3	0.000			
	Cadmium (Cd)	<0.0002	mg/l	0.0002			
	Dissolved Calcium	0.0002		0.0002			
	Calcium (Ca)	10.6	mg/l	0.05			
		10.0	ilig/i	0.03			
	Dissolved Chromium Chromium (Cr)	<0.001	mg/l	0.001			
	. ,	<0.001	ilig/i	0.001			
	Dissolved Copper	0.0010	m a /l	0.0005			
	Copper (Cu)	0.0010	mg/l	0.0005			
	Dissolved Iron	0.000	"				
	Iron (Fe)	0.208	mg/l	0.005			
	Dissolved Lead						
	Lead (Pb)	<0.0005	mg/l	0.0005			
	Dissolved Magnesium						
	Magnesium (Mg)	7.24	mg/l	0.01			
NW113	Dissolved Manganese						
	Manganese (Mn)	0.0837	mg/l	0.0005			
	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)	2.96	mg/l	0.01			
NW193	Dissolved Reactive Phosph	norus					
	Phosphorus (soluble reactive)	0.137	mg/l	0.005			
NW120	Dissolved Sodium						
	Sodium (Na)	19.9	mg/l	0.01			
NW125	Dissolved Zinc						
	Zinc (Zn)	0.002	mg/l	0.002			
ZM2GA	Enumeration of Escherichia	a coli by Memb	rane Filtration				
	Escherichia coli	100	cfu/100 ml	100			
NW010	Nitrate-N						
	Nitrate-N	0.27	(± 0.03) mg/l	0.01			
	pH (Tested beyond 15 minu			0.01			
	pH (rested beyond 15 mind pH	7.6	(± 0.2)	0.1			
			. ,	0.1			
	Sulphate	18.4	(± 1.84) mg/l	0.02			
	Sulphate	10.4	(=	0.02			
						^	
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		RESULTS (UNCERTAINTY)		
NW206	Suspended Solids			
	Suspended Solids	11	mg/l	3
NW003	Total Alkalinity			
	Alkalinity total	51	mg CaCO3/I	1
NW030	Total Hardness			
	Hardness	56	mg CaCO3/I	1
NW210	Total Non-Purgeable Org	anic Carbon		
	Total Organic Carbon	6.4	mg/l	0.1

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

mbecabros

Marylou Cabral Laboratory Manager Eurofins ELS Limited



Ganesh Ilancko Supervisor Eurofins ELS Limited

Signature

mA

Supervisor Eurofins ELS **Jennifer Mont** Limited



Gabriela Carvalhaes

Business Unit Manager -Wellington

Duiha C. Lagopon

Supervisor Eurofins ELS Divina Cunanan Limited Lagazon

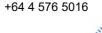
Hannah Smith

Laboratory Supervisor Microbiology

EXPLANATORY NOTE

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Test is not accredited

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 ${f 4}$ Test is subcontracted outside Eurofins group and is accredited

⑤Test is subcontracted outside Eurofins group and is not accredited

(6) Test result is provided by the customer and is not accredited

 ${f \overline{O}}$ Tested at the sampling point by Eurofins and is not accredited

[®]Tested at the sampling point by Eurofins and is accredited

Test is RLP accredited

1 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

 \checkmark (Satisfactory) means meets the specification

MAV means Maximum Allowable Value

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ANALYTICAL REPORT

REPORT CODE		AR-24-	NW-080868-01	REPORT DATE	26/12/2024		
Attention Horowhenua Di Lab Results		District Council					
	P O Box 642						
	4741 Levin						
	NEW ZEALAN	D					
Phone	(06) 367 2705				@horowhenua.govt.nz), Results		
Email	labresults@horow	henua.govt.nz		(labresults@horowhenua.gov	/t.nz), Landmark		
	or your orders:	Gabriela Carva	lhaes	Order code:	EUNZWE-00222678		
Contract:		Levin Landfill		Durchass Order Number	144492 Londfill		
				Purchase Order Number:	144482 - Iandfill		
SAMPLE	CODE	812-2024-0	0189561				
Sample N	ame	381157-0					
Product:	- • • •	Ground water					
	Point code:	WIL-HS3	10.11	Sampling Point name:	Levin HS3		
	n Date & Time: Started on:	13/12/2024 1 14/12/2024	10:14	Analysis Ending Date:	25/12/2024		
Product T		Ground water		Sampled Date & Time	12/12/2024 08:35		
Sampler(s)			ed external sampler	Sampled by Eurofins	No		
ORGANIC			RESULTS (UNCERTAINT	• •			
	Olatile Fatty Acid			-			
	Acetic acid	<5 <5	mg/l	5			
	Butyric acid Heptanoic acid	<5	mg/l mg/l	5			
	Hexanoic acid	<5	-	5 5			
	socaproic acid	<5	mg/l mg/l	5			
	sobutyric acid	<5	mg/l	5			
	sovaleric acid	<5	mg/l	5			
	Propionic acid	<5	mg/l	5			
	/aleric acid	<5	mg/l	5			
	/olatile fatty acids a		mg/l	5			
	acid			5			
		F	RESULTS (UNCERTAINT	Y) LOQ			
NW179 A	Ammonia Nitroge	en					
I	Ammoniacal nitroger	n (N) 0.15	5 (± 0.02) mg/l	0.01			
NW341 E	3OD5 - Soluble C	arbonaceous					
E	30D5	<3	mg/l	1			
NW020 0	Chemical Oxyger	n Demand					
(Chemical oxygen der	mand (COD) 26	mg/l	15			
NW007 C	Chloride						
(Chloride (Cl)	22.1	(± 2.21) mg/l	0.02			
NW023 C	Conductivity						
	Conductivity	22.1	(± 0.4) mS/m	0.1			
) issolved Alumir						
	Aluminium	0.00)4 mg/l	0.002			
	Dissolved Arseni		5				
	Arsenic (As)	0.00)2 mg/l	0.001			
,		0.00	····∂· ·	0.001			

Eurofins ELS Limited 85 Port Road Seaview Lower Hutt Wellington 5010 NEW ZEALAND Phone +64 4 576 5016 www.eurofins.co.nz

Hac-MRA





		RESULTS	(UNCERTAINTY)	LOQ	
NW103	Dissolved Boron				
	Boron (B)	0.031	mg/l	0.005	
NW104	Dissolved Cadmium				
	Cadmium (Cd)	<0.0002	mg/l	0.0002	
NW105	Dissolved Calcium				
	Calcium (Ca)	9.41	mg/l	0.05	
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)	0.147	mg/l	0.005	
NW110	Dissolved Lead				
	Lead (Pb)	<0.0005	mg/l	0.0005	
NW112	Dissolved Magnesium				
	Magnesium (Mg)	4.70	mg/l	0.01	
NW113	Dissolved Manganese				
	Manganese (Mn)	0.0165	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)	2.93	mg/l	0.01	
NW193	Dissolved Reactive Phospl	horus			
	Phosphorus (soluble reactive)	0.143	mg/l	0.005	
NW120					
	Sodium (Na)	18.7	mg/l	0.01	
NW125			U U		
	Zinc (Zn)	<0.002	mg/l	0.002	
zмоих	Enumeration of Escherichi				
	Escherichia coli	>6000	cfu/100 ml	1	
NW010	Nitrate-N			·	
	Nitrate-N	0.16	(± 0.02) mg/l	0.01	
NW195	pH (Tested beyond 15 minu		ina time)	0.01	
	рН	7.2	(± 0.2)	0.1	
NW011	Sulphate				
	Sulphate	16.4	(± 1.64) mg/l	0.02	
NW206	Suspended Solids			0.02	
	Suspended Solids	<6	mg/l	3	
NWOOR	Total Alkalinity			5	
	Alkalinity total	52	mg CaCO3/I	1	
NWU3U	Total Hardness	<u>.</u>		I	
1111030	Hardness	43	mg CaCO3/I	1	
NW210	Total Non-Purgeable Organ			I	
1111210	Total Organic Carbon	5.9	mg/l	0.1	
	iotal Olganic Galboll	5.9	111g/1	0.1	

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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.
7140111			

ZMOUX Escherichia coli E (Water) [NZ] <1 >6 000 /100 ml (0) m-FC Agar-F: SMEWW 9222I; APHA 24th Edition

Jennifer Mont

Limited

Supervisor Eurofins ELS

Signature

C. Lagon ina

Limited

Divina Cunanan

Lagazon

Marylou Cabral

mbecab

Laboratory Manager Eurofins ELS Limited

Gordon McArthur

Senior Laboratory Analyst Eurofins ELS Limited



Cody Forbes

Technical Specialist

Technical Specialist

EXPLANATORY NOTE

Eurofins ELS Limited 85 Port Road Seaview Lower Hutt Wellington 5010 NEW ZEALAND



Ganesh Ilancko Supervisor Eurofins ELS Limited

Vineel Chandra

Laboratory Supervisor Microbiology

Supervisor Eurofins ELS





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Food & Water Testing

Test is not accredited

- ② Test is subcontracted within Eurofins group and is accredited
- $\ensuremath{\mathfrak{I}}$ Test is subcontracted within Eurofins group and is not accredited

 ${f 4}$ Test is subcontracted outside Eurofins group and is accredited

⑤Test is subcontracted outside Eurofins group and is not accredited

(6) Test result is provided by the customer and is not accredited

 ${f \overline{O}}$ Tested at the sampling point by Eurofins and is not accredited

[®]Tested at the sampling point by Eurofins and is accredited

Test is RLP accredited

1 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

 \checkmark (Satisfactory) means meets the specification

MAV means Maximum Allowable Value

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. This document can only be reproduced in full.

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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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END OF REPORT







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Food & Water Testing

ANALYTICAL REPORT

REPORT CODE		AF	AR-25-NW-005621-01		REPORT DATE	28/01/2025	
Attention	Horowhenua [Lab Results	District Cou	uncil				
	P 0 Box 642						
	4741 Levin						
	NEW ZEALAN	D					
Phone	(06) 367 2705	-			Copy to: McMillan (Davidm@	⊉horowhenua.govt.nz), Results	
Email	labresults@horow	henua.govt.n	Z		(labresults@horowhenua.gov		
Contact f	or your orders:		Carvalhaes		Order code:	EUNZWE-00227605	
Contract	:	Levin La	ndfill				
SAMPLE	CODE	812-202	25-0000694	-1			
Sample N	lame	386286-	0				
Product:		Levin HS	3				
Sampling	point code:	WIL-HS3			Sampling Point name:	Levin HS3	
	n Date & Time:		25 18:35				
-	Started on:	16/01/20			Analysis Ending Date:	28/01/2025	
•	Date & Time	14/01/20	025 00:00		Sampler(s)	Customer	
ORGANIC	S		RESULTS	(UNCERTAINT)	() LOQ		
	Volatile Fatty Aci	ds (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		
	Isocaproic acid		<5	mg/l	5		
	Isobutyric 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 a acid	s acetic	<5	mg/l	5		
			RESULTS	(UNCERTAINT)	() LOQ		
NW179	Ammonia Nitroge	en					
	Ammoniacal nitroger	n (N)	1.75	(± 0.18) mg/l	0.01		
NW341	BOD5 - Soluble C	arbonaced	bus				
	BOD5		<3	mg/l	1		
NW020	Chemical Oxyger	n Demand					
	Chemical oxygen der		25	mg/l	15		
NW007	Chloride						
	Chloride (Cl)		25.2	(± 2.52) mg/l	0.02		
NW023	Conductivity						
	Conductivity		26.1	(± 0.5) mS/m	0.1		
	Dissolved Alumir	nium					
	Aluminium		0.004	mg/l	0.002		
	Dissolved Arseni	с		-			
	Arsenic (As)	-	0.002	mg/l	0.001		
	Dissolved Boron			<i>o</i> r	0.001		
	Boron (B)		0.053	mg/l	0.005		
				-		64 4 576 5046	
urotine El	S Limited				Phone +	-64 4 576 5016	

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	Dissolved Cadmium				
NW105					
NW105	Cadmium (Cd)	<0.0002	mg/l	0.0002	
	Dissolved Calcium				
	Calcium (Ca)	14.5	mg/l	0.05	
NW106	Dissolved Chromium				
	Chromium (Cr)	< 0.001	mg/l	0.001	
NW108	Dissolved Copper				
	Copper (Cu)	0.0025	mg/l	0.0005	
NW109	Dissolved Iron				
	Iron (Fe)	0.062	mg/l	0.005	
NW110	Dissolved Lead				
	Lead (Pb)	<0.0005	mg/l	0.0005	
NW112	Dissolved Magnesium				
	Magnesium (Mg)	8.58	mg/l	0.01	
NW113	Dissolved Manganese				
	Manganese (Mn)	0.246	mg/l	0.0005	
W114	Dissolved Mercury				
	Mercury (Hg)	<0.0005	mg/l	0.0005	
NW116	Dissolved Nickel		-		
	Nickel (Ni)	<0.0005	mg/l	0.0005	
W117	Dissolved Potassium				
	Potassium (K)	4.56	mg/l	0.01	
VW193	Dissolved Reactive Phosph	orus			
	Phosphorus (soluble reactive)	0.137	mg/l	0.005	
W120	Dissolved Sodium				
	Sodium (Na)	25.0	mg/l	0.01	
W125	Dissolved Zinc		-		
	Zinc (Zn)	<0.002	mg/l	0.002	
ZMOUX	Enumeration of Escherichia				
	Escherichia coli	200	cfu/100 ml	1	
NW010	Nitrate-N				
	Nitrate-N	0.03	(± 0.00) mg/l	0.01	
NW195	pH (Tested beyond 15 minut		lina time)		
	рН	7.6	(± 0.2)	0.1	
NW011	Sulphate				
	Sulphate	10.7	(± 1.07) mg/l	0.02	
NW206	Suspended Solids				
	Suspended Solids	8	mg/l	3	
NW003	Total Alkalinity	-	<i>.</i>	-	
	Alkalinity total	69	mg CaCO3/I	1	
NW030	Total Hardness				
	Hardness	72	mg CaCO3/I	1	
NW210	Total Non-Purgeable Organi				
	Total Organic Carbon	9.7	mg/l	0.1	

LIST OF METHODS

NW003 Total Alkalinity: APHA Online Edition 2320 B

NW007 Chloride: APHA Online Edition 4110 B

Phone

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Food & Water Testing

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.
ZM0UX	Escherichia coli E (Water) [NZ] <1 >6 000 /100 ml (0) m-FC Agar-F: SMEWW 9222I; APHA 24th Edition		

mbecabro

Marylou Cabral

Laboratory Manager Eurofins ELS Limited



Gabriela

Business Unit Manager



Carvalhaes

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
- ${\ensuremath{\textcircled{}}}$ Test is subcontracted outside Eurofins group and is accredited
- $\ensuremath{\mathfrak{S}}$ Test is subcontracted outside Eurofins group and is not accredited
- **I** Test result is provided by the customer and is not accredited
- O Tested at the sampling point by Eurofins and is not accredited
- [®]Tested at the sampling point by Eurofins and is accredited
- Test is RLP accredited
- Test is subcontracted within Eurofins group and is RLP accredited

Signature

Jennifer Mont Supervisor Eurofins ELS Limited

Vineel Chandra

Laboratory Supervisor Microbiology

Ganesh Ilancko Supervisor Eurofins ELS Limited

Cody Forbes

Technical Specialist Technical Specialist

- N/A means Not Applicable
- **Not Detected** means not detected at or above the Limit of Quantification (LOQ)
- $\ensuremath{\textbf{LOQ}}$ means Limit of Quantification and the unit of LOQ is the same as the result unit
- ✗ (Unsatisfactory) means does not meet the specification
- \checkmark (Satisfactory) means meets the specification
- MAV means Maximum Allowable Value







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Food & Water Testing

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The tests are identified by a five-digit code, their description is available on request.

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END OF REPORT



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Food & Water Testing

ANALYTICAL REPORT

REPORT CODE		AR-24-NW-07	5066-01	REPORT DATE	03/12/2024		
Attention	Horowhenua [Lab Results	District Council					
	P O Box 642						
	4741 Levin						
Dhama		ND					
Phone Email	(06) 367 2705 labresults@horow	vhenua govt nz		Copy to: McMillan (Davidm@horowhenua.govt.nz), Landmark (Phil.Landmark@stantec.com), Wardlaw (Scottw@horowhenua.govt.nz			
-	or your orders:	Gabriela Carvalhaes		Order code:	EUNZWE-00218171		
Contract:	n your orders.	Levin Landfill		Order code.	201210210171		
				Purchase Order Number:	Landfill		
SAMPLE	CODE	812-2024-0017567	5				
Sample N	ame	378357-0					
Product:		Ground water					
	Point code:	WIL-LP		Sampling Point name:	Levin Leachate Pond		
•	Date & Time:	22/11/2024 9:40			00/40/0004		
-	Started on:	22/11/2024		Analysis Ending Date:	03/12/2024		
Product T		Ground water	rnal camplor	Sampled Date & Time Sampled by Eurofins	21/11/2024 08:30 No		
Sampler(s		Client nominated exte	-		110		
ORGANIC			S (UNCERTAINT)	r) loq			
	olatile Fatty Acid	. ,					
	cetic acid	<5	mg/l	5			
	Butyric acid	<5	mg/l	5			
	leptanoic acid	<5	mg/l	5			
	lexanoic acid	<5 <5	mg/l	5			
	socaproic acid	<5 <5	mg/l	5			
	sobutyric acid sovaleric acid	<5 <5	mg/l	5			
	Propionic acid	<5 <5	mg/l	5			
	aleric acid	<5 <5	mg/l mg/l	5 5			
	/olatile fatty acids as		mg/l	5			
, v			S (UNCERTAINT				
NW179 A	mmonia Nitroge			<u>,</u>			
	mmoniacal nitroger		(± 132) mg/l	0.01			
	OD5 - Soluble C		. , -	0.01			
	SOD5 - Soluble C	102	mg/l	1			
	hemical Oxygen						
-	Chemical oxygen de		mg/l	15			
NW007 C				10			
	Chloride (Cl)	1310	(± 131) mg/l	0.02			
	conductivity	1010	· · · · · · · · · · · ·	0.02			
	Conductivity	1530	(± 30.7) mS/m	0.1			
	-		(<u> </u>	0.1			
	issolved Alumin		m a /l	0.000			
	luminium	0.785	mg/l	0.002			
	issolved Arsenie			.			
	Arsenic (As)	0.244	mg/l	0.001			
NW103 D	issolved Boron						

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		RESULTS (l	JNCERTAINTY)	LOQ	
NW103	Dissolved Boron				
	Boron (B)	6.09	mg/l	0.005	
NW104	Dissolved Cadmium				
	Cadmium (Cd)	<0.0002	mg/l	0.0002	
NW105	Dissolved Calcium				
	Calcium (Ca)	84.7	mg/l	0.05	
NW106	Dissolved Chromium				
	Chromium (Cr)	0.718	mg/l	0.001	
NW108	Dissolved Copper				
	Copper (Cu)	0.0049	mg/l	0.0005	
NW109	Dissolved Iron		-		
	Iron (Fe)	7.17	mg/l	0.005	
NW110	Dissolved Lead		Ū		
	Lead (Pb)	<0.0005	mg/l	0.0005	
NW112	Dissolved Magnesium		0	0.0000	
	Magnesium (Mg)	49.4	mg/l	0.01	
NW113	Dissolved Manganese		5	0.01	
	Manganese (Mn)	1.19	mg/l	0.0005	
NW114			·	0.0000	
	Mercury (Hg)	<0.0005	mg/l	0.0005	
NW116	Dissolved Nickel	0.0000	iiig/i	0.0000	
	Nickel (Ni)	0.112	mg/l	0.0005	
NW117	Dissolved Potassium	0.112		0.0003	
	Potassium (K)	709	mg/l	0.01	
NW193	Dissolved Reactive Phosph		ing/i	0.01	
1444155	Phosphorus (soluble reactive)	14.9	mg/l	0.005	
NW120		14.9	ing/i	0.005	
	Dissolved Sodium Sodium (Na)	1080	mg/l	0.01	
NW125		1000	ing/i	0.01	
1100125	Dissolved Zinc	0.046	ma/l	0.000	
714004	Zinc (Zn)		mg/l	0.002	
ZIVIZGA	Enumeration of Escherichia Escherichia coli	<100 <s s="" s<="" th=""><th>cfu/100 ml</th><th>100</th><th></th></s>	cfu/100 ml	100	
		~100		100	
NVVU1U	Nitrate-N	-0.1	mall	6 6 <i>i</i>	
	Nitrate-N	<0.1	mg/l	0.01	
NW195	pH (Tested beyond 15 minut		j time) (± 0.2)	o /	
	рН	7.7	(± 0.2)	0.1	
NW011	Sulphate		(± 4.14) mg/l		
	Sulphate	41.4	(± 4.14) mg/i	0.02	
NW206	Suspended Solids	074			
	Suspended Solids	274	mg/l	3	
NW003	Total Alkalinity		0.005		
	Alkalinity total	6990	mg CaCO3/I	1	
NW030	Total Hardness				
	Hardness	415	mg CaCO3/I	1	
NW210	Total Non-Purgeable Organi				
	Total Organic Carbon	780	mg/l	0.1	





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.
7M2GA	Escharichia coli E (Water) [N7] <100 >6 000 000 /100 ml		

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

Signature

 $\circledast\ensuremath{\texttt{8}}$ Tested at the sampling point by Eurofins and is accredited

Test is RLP accredited

- $\boldsymbol{\texttt{O}}$ Test is subcontracted within Eurofins group and is RLP accredited
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AR-25-NW-000364-01 Page 1 of 4

Food & Water Testing

ANALYTICAL REPORT

REPORT CODE		AR-25-NW-000364-01		REPORT DATE	04/01/2025	
Attention	Horowhenua [Lab Results	District Council				
	P O Box 642					
	4741 Levin					
	NEW ZEALAN	D				
Phone	(06) 367 2705			Copy to: McMillan (Davidm@	∮horowhenua.govt.nz), Results	
Email	labresults@horow	henua.govt.nz		(labresults@horowhenua.gov	t.nz), Landmark	
Contact fo Contract:	or your orders:	Gabriela Carvalhaes Levin Landfill		Order code:	EUNZWE-00222678	
				Purchase Order Number:	144482 - Iandfill	
SAMPLE	CODE	812-2024-00189	9553			
Sample N	ame	381155-0				
Product:		Ground water				
	Point code:	WIL-LP		Sampling Point name:	Levin Leachate Pond	
-	n Date & Time:	13/12/2024 17:25 14/12/2024)	Analysis Ending Data	04/01/2025	
Product T	Started on:			Analysis Ending Date:	04/01/2025	
Sampler(s)	••	Ground water Client nominated ex	ternal sampler	Sampled Date & Time Sampled by Eurofins	12/12/2024 21:10 No	
-			•		INU	
ORGANICS			LTS (UNCERTAINT	r) LOQ		
	olatile Fatty Aci					
	Acetic acid	<5	mg/l	5		
	Butyric acid	<5	mg/l	5		
	Heptanoic acid	9.6	mg/l	5		
	Hexanoic acid	<5	mg/l	5		
	socaproic acid	<5	mg/l	5		
	sobutyric acid	<5	mg/l	5		
	sovaleric acid	<5	mg/l	5		
	Propionic acid /aleric acid	<5 <5	mg/l	5		
			mg/l	5		
	/olatile fatty acids a acid	s acetic 4.4	mg/l	5		
		RESU	LTS (UNCERTAINT	r) LOQ		
NW179 A	Ammonia Nitroge	en				
	Ammoniacal nitroger		(± 118) mg/l	0.01		
NW341 E	3OD5 - Soluble C	arbonaceous				
E	30D5	57	mg/l	1		
NW020 0	Chemical Oxyger	n Demand				
	Chemical oxygen der		mg/l	15		
NW007 C	Chloride					
	Chloride (CI)	1180	(± 118) mg/l	0.02		
	Conductivity					
	Conductivity	152	(± 3.0) mS/m	0.1		
	Dissolved Alumir					
	Aluminium	0.751	mg/l	0.002		
	Dissolved Arseni		0			
	Arsenic (As)	0.248	mg/l	0.001		
1		0.240		0.001		

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Food & Water Testing

		RESULTS	(UNCERTAINTY)	LOQ	
NW103	Dissolved Boron				
	Boron (B)	3.39	mg/l	0.005	
NW104	Dissolved Cadmium				
	Cadmium (Cd)	<0.0002	mg/l	0.0002	
NW105	Dissolved Calcium	75 1			
	Calcium (Ca)	75.1	mg/l	0.05	
INW106	Dissolved Chromium Chromium (Cr)	0.544	mg/l	0.001	
	Dissolved Copper	0.544	mg/l	0.001	
111100	Copper (Cu)	0.0040	mg/l	0.0005	
NW109	Dissolved Iron		U		
	Iron (Fe)	7.08	mg/l	0.005	
NW110	Dissolved Lead				
	Lead (Pb)	0.0015	mg/l	0.0005	
NW112	Dissolved Magnesium				
	Magnesium (Mg)	48.3	mg/l	0.01	
NW113	Dissolved Manganese				
NN4/4 4 -	Manganese (Mn)	1.12	mg/l	0.0005	
NW114	Dissolved Mercury	-0.0005	~~~/l	0.0005	
NW116	Mercury (Hg) Dissolved Nickel	<0.0005	mg/l	0.0005	
NW116	Nickel (Ni)	0.123	mg/l	0.0005	
NW117	Dissolved Potassium	0.120		0.0000	
	Potassium (K)	549	mg/l	0.01	
NW193	Dissolved Reactive Phosph				
	Phosphorus (soluble reactive)	13.6	mg/l	0.005	
NW120	Dissolved Sodium				
	Sodium (Na)	815	mg/l	0.01	
NW125	Dissolved Zinc				
	Zinc (Zn)	0.043	mg/l	0.002	
ZMOUX	Enumeration of Escherichi				
NIWO10	Escherichia coli	>600	cfu/100 ml	1	
UTOAAN	Nitrate-N Nitrate-N	<0.1	mg/l	0.01	
NW105	pH (Tested beyond 15 minu			0.01	
144130	pH (rested beyond 15 mint	7.7	(± 0.2)	0.1	
NW011	Sulphate				
	Sulphate	56.7	(± 5.67) mg/l	0.02	
NW206	Suspended Solids				
	Suspended Solids	48	mg/l	3	
NW003	Total Alkalinity				
	Alkalinity total	6960	mg CaCO3/I	1	
NW030	Total Hardness				
	Hardness	387	mg CaCO3/I	1	
NW210	Total Non-Purgeable Organ		~~~/l	0.4	
	Total Organic Carbon	667	mg/l	0.1	





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.
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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.
ZM0UX	Escherichia coli E (Water) [NZ] <1 >6 000 /100 ml (0)		

mbecab

Marylou Cabral

Laboratory Manager Eurofins ELS Limited

m-FC Agar-F: SMEWW 9222I; APHA 24th Edition

Gordon McArthur Senior Laboratory Analyst Eurofins ELS Limited



Vineel Chandra

EXPLANATORY NOTE

Laboratory Supervisor Microbiology

Signature

Jennifer Mont Supervisor Eurofins ELS Limited

Ganesh Ilancko Supervisor Eurofins ELS Limited

Cody Forbes

Technical Specialist Technical Specialist

C. Lagoron

Limited

Gabriela Carvalhaes

iha

Divina Cunanan

Lagazon

Business Unit Manager

Supervisor Eurofins ELS

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⑤Test is subcontracted outside Eurofins group and is not accredited

(6) Test result is provided by the customer and is not 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

 \checkmark (Satisfactory) means meets the specification

MAV means Maximum Allowable Value

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Food & Water Testing

ANALYTICAL REPORT

REPORT CODE		AR-25-NW-00	5949-01	REPORT DATE	29/01/2025
Attention	Horowhenua Distr Lab Results	ict Council			
	P 0 Box 642				
	4741 Levin				
	NEW ZEALAND				
Phone	(06) 367 2705			Copy to: McMillan (Davidm@	Interpretended to the second s
Email	labresults@horowhenu	a.govt.nz		(labresults@horowhenua.gov	
Contact fo	or your orders: Ga	briela Carvalhaes		Order code:	EUNZWE-00227605
Contract:	-	vin Landfill			
SAMPLE	CODE 81	L2-2025-000069	39		
Sample N		36264-0			
Product:		vin Leachate Pond		• · · · ·	
		WIL-LP 15/01/2025 18:35		Sampling Point name:	Levin Leachate Pond
		6/01/2025 18:35 6/01/2025		Analysis Ending Date:	29/01/2025
-		k/01/2025 00:00		Sampler(s)	Customer
ORGANICS			S (UNCERTAINTY		Gustomer
			3 UNCERTAINTY) LOQ	
	/olatile Fatty Acids (\ Acetic acid	/FA) <5	mall	-	
			mg/l	5	
	Butyric acid	<5	mg/l	5	
	Heptanoic acid Hexanoic acid	<5 <5	mg/l	5	
			mg/l	5	
	socaproic acid	<5	mg/l	5	
	sobutyric acid	<5	mg/l	5	
	sovaleric acid	<5	mg/l	5	
	Propionic acid	<5	mg/l	5	
	/aleric acid	<5	mg/l	5	
	/olatile fatty acids as ace acid	tic <5	mg/l	5	
		RESULT	S (UNCERTAINTY) LOQ	
NW179 A	Ammonia Nitrogen				
A	Ammoniacal nitrogen (N)	1240	(± 124) mg/l	0.01	
NW341 E	3OD5 - Soluble Carbo	onaceous			
E	30D5	87	mg/l	1	
NW020 C	Chemical Oxygen De	mand			
	Chemical oxygen demand		mg/l	15	
NW007 C					
	Chloride (Cl)	1090	(± 109) mg/l	0.02	
	Conductivity				
	Conductivity	1560	(± 31.1) mS/m	0.1	
	Dissolved Aluminium		·	0.1	
	Aluminium	0.641	mg/l	0.002	
		0.041	111 <u>8</u> /1	0.002	
	Dissolved Arsenic	0.075	mall	0.001	
	Arsenic (As)	0.275	mg/l	0.001	
	Dissolved Boron	F 07	"		
E	Boron (B)	5.27	mg/l	0.005	

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Food & Water Testing

	RESULTS (UNCERTAINTY) LOQ				
NW104	Dissolved Cadmium				
	Cadmium (Cd)	<0.0002	mg/l	0.0002	
NW105	Dissolved Calcium				
	Calcium (Ca)	80.4	mg/l	0.05	
NW106	Dissolved Chromium				
	Chromium (Cr)	0.628	mg/l	0.001	
NW108	Dissolved Copper				
	Copper (Cu)	0.0293	mg/l	0.0005	
NW109	Dissolved Iron		U		
	Iron (Fe)	8.01	mg/l	0.005	
NW110	Dissolved Lead	0.01		0.000	
111110	Lead (Pb)	0.0017	mg/l	0.0005	
NW112		0.0017	1118/1	0.0000	
	Dissolved Magnesium Magnesium (Mg)	44.4	mg/l	0.04	
NI\4/1 1 O		44.4	mg/l	0.01	
NW113	Dissolved Manganese	1.05		0.000-	
	Manganese (Mn)	1.05	mg/l	0.0005	
NW114	Dissolved Mercury				
	Mercury (Hg)	<0.0005	mg/l	0.0005	
NW116	Dissolved Nickel				
	Nickel (Ni)	0.110	mg/l	0.0005	
NW117					
	Potassium (K)	560	mg/l	0.01	
NW193	Dissolved Reactive Phosp	horus			
	Phosphorus (soluble reactive)	14.5	mg/l	0.005	
NW120	Dissolved Sodium				
	Sodium (Na)	818	mg/l	0.01	
NW125	Dissolved Zinc				
	Zinc (Zn)	0.046	mg/l	0.002	
ZMOUX	Enumeration of Escherichi	ia coli by Me	mbrane Filtration		
	Escherichia coli	300	cfu/100 ml	1	
NW010	Nitrate-N				
	Nitrate-N	<0.1	mg/l	0.01	
NW195	pH (Tested beyond 15 min			0.01	
111133	pH	7.9	(± 0.2)	0.1	
		1.5	· · /	0.1	
	Sulphate	55.8	(± 5.58) mg/l	0.02	
NIMOOC	Sulphate	00.0	(= 0.00)g/i	0.02	
1111206	Suspended Solids	0.2		ĉ	
	Suspended Solids	83	mg/l	3	
NW003	Total Alkalinity	7100	0.000		
	Alkalinity total	7130	mg CaCO3/I	1	
NW030	Total Hardness				
	Hardness	384	mg CaCO3/I	1	
NW210	Total Non-Purgeable Organ				
	Total Organic Carbon	726	mg/l	0.1	

LIST OF METHODS

NW003 Total Alkalinity: APHA Online Edition 2320 B

NW007 Chloride: APHA Online Edition 4110 B

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Food & Water Testing

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.
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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.
ZM0UX	Escherichia coli E (Water) [NZ] <1 >6 000 /100 ml (0) m-FC Agar-F: SMEWW 9222I; APHA 24th Edition		



Marylou Cabral

Laboratory Manager Eurofins ELS Limited



Gabriela

Business Unit Manager



Carvalhaes

EXPLANATORY NOTE

- Test is not accredited
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- Test is subcontracted outside Eurofins group and is accredited
- STest is subcontracted outside Eurofins group and is not accredited
- **(6)** Test result is provided by the customer and is not accredited
- ${f O}$ Tested at the sampling point by Eurofins and is not accredited
- [®]Tested at the sampling point by Eurofins and is accredited
- Itest is RLP accredited
- $\boldsymbol{\textcircled{0}}$ Test is subcontracted within Eurofins group and is RLP accredited

Mont

Signature

Jennifer Mont Supervisor Eurofins ELS Limited

Vineel Chandra

Laboratory Supervisor Microbiology

Shahr

Ganesh Ilancko Supervisor Eurofins ELS Limited

Cody Forbes

Technical Specialist Technical Specialist

- N/A means Not Applicable
- **Not Detected** means not detected at or above the Limit of Quantification (LOQ)
- $\ensuremath{\textbf{LOQ}}$ means Limit of Quantification and the unit of LOQ is the same as the result unit
- $oldsymbol{x}$ (Unsatisfactory) means does not meet the specification
- \checkmark (Satisfactory) means meets the specification
- MAV means Maximum Allowable Value







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END OF REPORT







Page 1 of 4 AR-24-NW-074407-01

Food & Water Testing

ANALYTICAL REPORT

REPORT CODE		AR-24-NW-074407-01 RE			REPORT DATE	30/11/2024
Attention	Horowhenua Di Lab Results P O Box 642	strict Cou	ncil			
	4741 Levin					
	NEW ZEALAND)				
Phone	(06) 367 2705					n@horowhenua.govt.nz), Landmark
Email	labresults@horowh	enua.govt.nz	Z		(Phil.Landmark@stantec.co	om), Wardlaw (Scottw@horowhenua.govt.nz)
		Gabriela C			Order code:	EUNZWE-00218171
Contrac	t:	Levin Land	lfill		Durahasa Ordar Numb	er: Landfill
					Purchase Order Numb	
SAMPL	E CODE	812-2024	-0017568	6		
Sample		378356-0				
Product		Ground wa	ater			
-	J	WIL-TD1	0.40		Sampling Point name:	Levin TD1
-		22/11/2024 22/11/2024			Analysis Ending Date:	30/11/2024
Product		Ground wa			Sampled Date & Time	21/11/2024 07:55
Sampler	• •			ernal sampler	Sampled by Eurofins	No
ORGAN				S (UNCERTAINT		
			RECOL			
1444000	Chlorophenols 2,3,4,6-Tetrachlorophe	nol	<0.01	mg/l	0.01	
	2,4-Dichlorophenol		<0.01 <0.01	mg/l	0.01	
	2,6-Dichlorophenol		<0.01	mg/l	0.2	
	2-Chlorophenol (o-chlo			mg/l	0.2	
	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		<0.02	mg/l	0.02	
	-Trichlorophenol				0.02	
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	
	Isocaproic acid		<5	mg/l	5	
	Isobutyric 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 a	acetic acid	<5	mg/l	5	
			RESULT	S (UNCERTAINT	Y) LOQ	
NW179	Ammonia Nitrogen					
	Ammoniacal nitrogen (10.3	(± 1.03) mg/l	0.01	
NW341	BOD5 - Soluble Car	rbonaceou	IS			
	BOD5		<6	mg/l	1	
				-		
Eurofine E					Phone	+64 4 576 5016

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Food & Water Testing

		RESULTS	(UNCERTAINT	Y) LOQ			
NW020	Chemical Oxygen Demand						
	Chemical oxygen demand (COE) 83	mg/l	15			
NW007	Chloride						
	Chloride (Cl)	77.3	(± 7.73) mg/l	0.02			
NW023							
	Conductivity	90.1	(± 1.8) mS/m	0.1			
NW098	Dissolved Aluminium			0.1			
111050	Aluminium	0.007	mg/l	0.002			
NW583		0.007	mg/r	0.002			
1005	Dissolved Arsenic Arsenic (As)	0.002	ma/l	0.004			
114/4 0 2		0.002	mg/l	0.001			
W103	Dissolved Boron	0.004					
	Boron (B)	0.281	mg/l	0.005			
W104							
	Cadmium (Cd)	<0.0002	mg/l	0.0002			
NW105	Diocontoa Calonani						
	Calcium (Ca)	54.1	mg/l	0.05			
W106	Dissolved Chromium						
	Chromium (Cr)	0.001	mg/l	0.001			
VW108	Dissolved Copper						
	Copper (Cu)	<0.0005	mg/l	0.0005			
W109	Dissolved Iron						
	Iron (Fe)	0.891	mg/l	0.005			
NW110	Dissolved Lead						
	Lead (Pb)	<0.0005	mg/l	0.0005			
W112	Dissolved Magnesium		-				
	Magnesium (Mg)	26.0	mg/l	0.01			
NW113	Dissolved Manganese	2010		0.01			
	Manganese (Mn)	0.710	mg/l	0.0005			
NW114		0.110	mg/i	0.0003			
	Dissolved Mercury Mercury (Hg)	<0.0005	mg/l	0.0005			
		<0.0005	mg/l	0.0005			
100110	Dissolved Nickel	0.0040					
	Nickel (Ni)	0.0016	mg/l	0.0005			
W117	Dissolved Potassium						
	Potassium (K)	20.0	mg/l	0.01			
W193	•						
	Phosphorus (soluble reactive)	0.033	mg/l	0.005			
W120	Dissolved Sodium						
	Sodium (Na)	61.3	mg/l	0.01			
W125	Dissolved Zinc						
	Zinc (Zn)	<0.002	mg/l	0.002			
ZM2GA	Enumeration of Escherichi	a coli by Mem	brane Filtration				
	Escherichia coli	100	cfu/100 ml	100			
1W010	Nitrate-N						
	Nitrate-N	0.02	(± 0.00) mg/l	0.01			
W195	pH (Tested beyond 15 minu	ite APHA hold	ina time)				
	pH	8.0	(± 0.2)	0.1			
NW011	•						
	Sulphate	1.40	(± 0.14) mg/l	0.02			
<i>c</i> –		UTU	· · · · · · · · · · · · ·			<u>^</u>	
	LS Limited			Phone	+64 4 576 501	0	CCREDITE
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ellington						HILLY'S	

Wellington 5010

NEW ZEALAND



Food & Water Testing

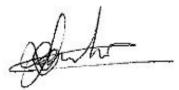
		RESUL	TS (UNCERTAINTY)	LOQ
NW206	Suspended Solids			
	Suspended Solids	20	mg/l	3
NW003	Total Alkalinity			
	Alkalinity total	353	mg CaCO3/I	1
NW030	Total Hardness			
	Hardness	242	mg CaCO3/I	1
NW210	Total Non-Purgeable Organic Carbon			
	Total Organic Carbon	23.6	mg/l	0.1

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 92221; APHA 24th Edition

mbecabros

Marylou Cabral Laboratory Manager Eurofins ELS Limited



Ganesh Ilancko Supervisor Eurofins ELS Limited

Signature

mA

Supervisor Eurofins ELS **Jennifer Mont** Limited



Gabriela Carvalhaes

Business Unit Manager -Wellington

Duiha C. Lagopon

Divina Cunanan Lagazon

Supervisor Eurofins ELS Limited

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EXPLANATORY NOTE

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- 3 Test is subcontracted within Eurofins group and is not accredited
- Test is subcontracted outside Eurofins group and is accredited
- S Test is subcontracted outside Eurofins group and is not accredited
- **6** Test result is provided by the customer and is not accredited
- Tested at the sampling point by Eurofins and is not accredited
- **®** 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

 \checkmark (Satisfactory) means meets the specification

MAV means Maximum Allowable Value

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END OF REPORT









Food & Water Testing

ANALYTICAL REPORT

REPORT CODE		AR-24-	NW-080865-01	REPORT DATE	26/12/2024
Attention Horowhenua E Lab Results		District Council			
	P 0 Box 642				
	4741 Levin				
	NEW ZEALAN	D			
Phone	(06) 367 2705	D		Copy to McMillan (Davidm@	@horowhenua.govt.nz), Results
Email	labresults@horow	henua.govt.nz		(labresults@horowhenua.gov	
	or your orders:	Gabriela Carva	lhaes	Order code:	EUNZWE-00222678
Contract:	-	Levin Landfill			
				Purchase Order Number:	144482 - Iandfill
SAMPLE	CODE	812-2024-00	0189555		
Sample N	ame	381154-0			
Product:		Ground water			
	Point code:	WIL-TD1		Sampling Point name:	Levin TD1
	n Date & Time:	13/12/2024 1	.7:31	• • • - ·· -	
-	Started on:	14/12/2024		Analysis Ending Date:	25/12/2024
Product T	••	Ground water		Sampled Date & Time	12/12/2024 08:55
Sampler(s)			ed external sampler	Sampled by Eurofins	No
ORGANIC	8	F	ESULTS (UNCERTAINT	Y) LOQ	
	olatile Fatty Aci				
	Acetic acid	<5	mg/l	5	
	Butyric acid	<5	mg/l	5	
	Heptanoic acid	<5	mg/l	5	
	Hexanoic acid	<5	mg/l	5	
	socaproic acid	<5	mg/l	5	
	sobutyric acid	<5	mg/l	5	
	sovaleric acid	<5	mg/l	5	
	Propionic acid	<5	mg/l	5	
	/aleric acid	<5	mg/l	5	
	/olatile fatty acids a acid	s acetic <5	mg/l	5	
		R	ESULTS (UNCERTAINT	Y) LOQ	
NW179 A	Ammonia Nitroge	en			
/	Ammoniacal nitrogei	n (N) 7.40) (± 0.74) mg/l	0.01	
NW341 E	3OD5 - Soluble C	arbonaceous			
I	30D5	<3	mg/l	1	
NW020 0	Chemical Oxyger	n Demand			
	Chemical oxygen der		mg/l	15	
NW007 0	Chloride				
	Chloride (CI)	77.8	(± 7.78) mg/l	0.02	
	Conductivity				
	Conductivity	84.9	(± 1.7) mS/m	0.1	
	Dissolved Alumir				
	Aluminium	0.00	8 mg/l	0.002	
	Dissolved Arseni		<u>.</u>		
	Arsenic (As)	0.00	2 mg/l	0.001	
,		0.00	- 1116/1	0.001	

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Food & Water Testing

		RESULTS	(UNCERTAINTY)	LOQ	
NW103	Dissolved Boron				
	Boron (B)	0.162	mg/l	0.005	
NW104	Dissolved Cadmium				
	Cadmium (Cd)	<0.0002	mg/l	0.0002	
NW105	Dissolved Calcium				
	Calcium (Ca)	45.6	mg/l	0.05	
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)	2.04	mg/l	0.005	
NW110	Dissolved Lead				
	Lead (Pb)	<0.0005	mg/l	0.0005	
NW112	Dissolved Magnesium				
	Magnesium (Mg)	16.8	mg/l	0.01	
NW113	Dissolved Manganese				
	Manganese (Mn)	0.529	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)	21.4	mg/l	0.01	
NW193	Dissolved Reactive Phospl	horus			
	Phosphorus (soluble reactive)	0.014	mg/l	0.005	
NW120	Dissolved Sodium				
	Sodium (Na)	56.9	mg/l	0.01	
NW125	Dissolved Zinc				
	Zinc (Zn)	<0.002	mg/l	0.002	
ZMOUX	Enumeration of Escherichi	a coli by Memb	orane Filtration		
	Escherichia coli	1200	cfu/100 ml	1	
NW010	Nitrate-N				
	Nitrate-N	0.09	(± 0.01) mg/l	0.01	
NW195	pH (Tested beyond 15 minu	ute APHA holdi			
	рH	7.2	(± 0.2)	0.1	
NW011	Sulphate				
	Sulphate	1.52	(± 0.15) mg/l	0.02	
NW206	Suspended Solids				
	Suspended Solids	9	mg/l	3	
NW003	Total Alkalinity				
	Alkalinity total	316	mg CaCO3/I	1	
NW030	Total Hardness				
	Hardness	183	mg CaCO3/I	1	
NW210	Total Non-Purgeable Orgar	nic Carbon			
	Total Organic Carbon	24.0	mg/l	0.1	





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.
ZM0UX	Escherichia coli E (Water) [NZ] <1 >6 000 /100 ml (0)		

mbecabrol

Marylou Cabral

Laboratory Manager Eurofins ELS Limited

m-FC Agar-F: SMEWW 9222I; APHA 24th Edition

Gordon McArthur

Senior Laboratory Analyst Eurofins ELS Limited



Cody Forbes

Technical Specialist Technical Specialist

EXPLANATORY NOTE

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Jennifer Mont

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Ganesh Ilancko Supervis Limited

Supervisor Eurofins ELS Limited

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Supervisor Eurofins ELS Limited

Vineel Chandra

Laboratory Supervisor Microbiology

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AR-24-NW-080865-01 Page 4 of 4



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END OF REPORT







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Food & Water Testing

ANALYTICAL REPORT

REPORT	CODE	AR-25-NV	V-005620-01	REPORT DATE	28/01/2025	
Attention	Horowhenua Dist Lab Results	rict Council				
	P 0 Box 642					
	4741 Levin					
	NEW ZEALAND					
Phone	(06) 367 2705			Copy to: McMillan (Davidm@	horowhenua.govt.nz), Results	
Email	labresults@horowhen	ua.govt.nz		(labresults@horowhenua.gov	t.nz), Landmark	
Contact for	or your orders:	abriela Carvalha	es	Order code:	EUNZWE-00227605	
Contract:	L	evin Landfill				
SAMPLE	CODE 8	312-2025-000	06938			
Sample N		386263-0				
Product:	_	evin TD 1				
		VIL-TD1 .5/01/2025 18:	35	Sampling Point name:	Levin TD1	
		.5/01/2025 18: 6/01/2025	55	Analysis Ending Date:	28/01/2025	
-		.4/01/2025 00:	00	Sampler(s)	Customer	
ORGANICS			ULTS (UNCERTAIN			
	/olatile Fatty Acids					
	Acetic acid	<5	mg/l	5		
	Butyric acid	<5	mg/l	5		
	Heptanoic acid	<5	mg/l	5		
	Hexanoic acid	<5	mg/l	5		
	socaproic acid	<5	mg/l	5		
	sobutyric acid	<5	mg/l	5		
	sovaleric acid	<5	mg/l	5		
	Propionic acid	<5	mg/l	5		
	/aleric acid	<5	mg/l	5		
	/olatile fatty acids as ac	cetic <5	mg/l	5		
č	acid	RES	ULTS (UNCERTAIN	ITY) LOQ		
NW179 A	Ammonia Nitrogen					
	Ammoniacal nitrogen (N	l) 21.7	(± 2.17) mg/	0.01		
NW341 E	BOD5 - Soluble Carl	bonaceous				
	BOD5	<3	mg/l	1		
	Chemical Oxygen D	emand	0			
	Chemical oxygen demar		mg/l	15		
NW007 C			0			
	Chloride (CI)	87.7	(± 8.77) mg/	1 0.02		
	Conductivity	0,		0.02		
	Conductivity	124	(± 2.5) mS/n	n 0.1		
	Dissolved Aluminiu			0.1		
	Aluminium	0.004	mg/l	0.002		
	Dissolved Arsenic	0.004		0.002		
	Arsenic (As)	0.002	mg/l	0.001		
	Dissolved Boron	0.002	111 <u>8</u> /1	0.001		
	Boron (B)	0.333	mg/l	0.005		
		0.333	iiig/i	0.005		

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Food & Water Testing

		RESULTS	G (UNCERTAINTY)	LOQ	
W104	Dissolved Cadmium				
	Cadmium (Cd)	<0.0002	mg/l	0.0002	
W105	Dissolved Calcium				
	Calcium (Ca)	86.0	mg/l	0.05	
W106	Dissolved Chromium				
	Chromium (Cr)	0.001	mg/l	0.001	
W108	Dissolved Copper				
	Copper (Cu)	0.0022	mg/l	0.0005	
W109	Dissolved Iron				
	Iron (Fe)	0.082	mg/l	0.005	
W110	Dissolved Lead				
	Lead (Pb)	<0.0005	mg/l	0.0005	
W112	Dissolved Magnesium				
	Magnesium (Mg)	33.1	mg/l	0.01	
W113	Dissolved Manganese				
	Manganese (Mn)	0.689	mg/l	0.0005	
W114	Dissolved Mercury				
	Mercury (Hg)	<0.0005	mg/l	0.0005	
W116	Dissolved Nickel				
	Nickel (Ni)	0.0025	mg/l	0.0005	
W117	Dissolved Potassium				
	Potassium (K)	25.7	mg/l	0.01	
W193	Dissolved Reactive Phospl	norus			
	Phosphorus (soluble reactive)	0.103	mg/l	0.005	
W120	Dissolved Sodium				
	Sodium (Na)	75.6	mg/l	0.01	
W125	Dissolved Zinc				
	Zinc (Zn)	<0.002	mg/l	0.002	
MOUX	Enumeration of Escherichi	a coli by Men	brane Filtration		
	Escherichia coli	56	cfu/100 ml	1	
W010	Nitrate-N				
	Nitrate-N	0.03	(± 0.00) mg/l	0.01	
W195	pH (Tested beyond 15 minu				
	рН	8.0	(± 0.2)	0.1	
W011	Sulphate				
	Sulphate	1.33	(± 0.13) mg/l	0.02	
W206	Suspended Solids				
	Suspended Solids	186	mg/l	3	
W003	Total Alkalinity				
	Alkalinity total	511	mg CaCO3/I	1	
W030	Total Hardness				
	Hardness	351	mg CaCO3/I	1	
W210	Total Non-Purgeable Organ				
	Total Organic Carbon	37.4	mg/l	0.1	

LIST OF METHODS

NW003 Total Alkalinity: APHA Online Edition 2320 B

NW007 Chloride: APHA Online Edition 4110 B

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Food & Water Testing

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.
ZM0UX	Escherichia coli E (Water) [NZ] <1 >6 000 /100 ml (0) m-FC Agar-F: SMEWW 9222I; APHA 24th Edition		

Signature

mbecabro

Marylou Cabral

Laboratory Manager Eurofins ELS Limited



Gabriela Carvalhaes

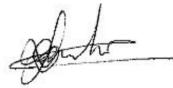
Business Unit Manager



Vineel Chandra

Supervisor Eurofins ELS Jennifer Mont Limited

Laboratory Supervisor Microbiology



Ganesh Ilancko Supervisor Eurofins ELS Limited

Cody Forbes

Technical Specialist Technical Specialist

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
- Test is subcontracted outside Eurofins group and is accredited
- S Test is subcontracted outside Eurofins group and is not accredited
- [®]Test result is provided by the customer and is not accredited
- Tested at the sampling point by Eurofins and is not accredited
- [®]Tested at the sampling point by Eurofins and is accredited
- Test is RLP accredited
- 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
- MAV means Maximum Allowable Value





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Food & Water Testing

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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.

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END OF REPORT





Levin Landfill January 2025 Quarterly Groundwater, Surface Water and Leachate Monitoring Report Appendix C Sampling Schedule

Appendix C 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)

			Table A	(Conditio	on 3, ATH DP 6	-2002003 010)	3983.02, t	formerly								Table B	Conditio	n 3, ATH	-2002003	3983.02 <i>,</i> 1	formerly	DP 6010)								Table	C (Condit		H-200200 6010))3983.02	, formerly
Repo	orts Due	Sampling Month		[Deep Aqu	ifer Bore	S									Shallo	w Aquife	r Bores									Irrigatio	on Bores			Hokio Sti	eam ^{(4), (8}	;)		Leachate
Annua	I 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	B Aug-23	Jul-23	I	I + SW	I	I.	С	С	I.	1	I	I + SW	I	I	I	I + SW	I + SW	I	I + SW	C + SW	1	I + SW	1	С	С	I	1	I	I + SW	nth / rpr	nth / rpr	nth / npr	nth / npr	nth / npr	nth / npr
	Nov-23	Oct-23	1	I + SW	I	1	С	С	I	1	I	I + SW	1	I	1	I + SW	I + SW	1	I + SW	C + SW	1	I + SW	1	С	С	I	I	1	I + SW	Mo Con	Con J	Mo Con	Con Vo	Con S	Con
	Feb-24	Jan-24	I	I + SW	I	I	С	С	I	1	I	I + SW	I	I	I	I + SW	I + SW	I	I + SW	C + SW	1	I + SW	1	С	С	I	I	I	I + SW	7	1	I.	I.	1	1
	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	nue	С	С	С	С	C + A
Sep-24	Aug-24		1	I + SW	I	I	I	С	I	1	I	I + SW	I	I	I	I + SW	I + SW	1	I + SW	C + SW	1	I + SW	1	1	1	1	I	1	I + SW	onti	I	I	1	1	1
-	Nov-24	Oct-24	I	I + SW	I	I	I	С	I	1	I	I + SW	I	I	I	I + SW	I + SW	I	I + SW	C + SW	1	I + SW	1	I	I	I	I	I	I + SW	disc	С	С	С	С	С
	Feb-25	Jan-25	I	I + SW	I	I	I	С	I	1	I	I + SW	I	I	I	I + SW	I + SW	I	I + SW	C + SW	1	I + SW	1	I	I	I	I	I	I + SW	o be c adv	1	I	I	1	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	S1 to HRC	С	С	С	С	C + A
Sep-25	6 Aug-25	Jul-25	1	I + SW	I	1	I	1	I	1	I	I + SW	I	I	I	I + SW	I + SW	I	I + SW	I + SW	1	I + SW	1	1	1	I	I	1	I + SW	at H.	1	1	1	1	1
	Nov-25	Oct-25	1	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	ling. v	С	С	С	С	С
	Feb-26	Jan-26	1	I + SW	I	I	I	I	I	I I	I	I + SW	1	1	I	I + SW	I + SW	I.	I + SW	I + SW	I	I + SW	1	I	I	I	I	I	I + SW	du	1	1	I	1	1
	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	S	C	С	С	С	C + A

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

See table below (5)

(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.

- 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. (7)
- (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'

Comprehensive list (see below) С

Indicator list (see below)

Α 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.

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.

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 significant 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 locations (HS1A, HS2 and HS3) shall return to the base case intensive monitoring until conditions J and K are again being fulfilled.

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)

рН							
electrical conductivity (EC)							
alkalinity total hardness							
COD and scBOD ₅							
NO3-N, NH4-N, DRP and SO ₄							
Al, As, Cd, Cr, Cu, Fe, Mg, Mn, Ni, Pb, Zn and Hg							
B, Ca, Cl, K and Na							
Total organic carbon, total phenols, volatile acids							
E. coli							

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

Characterising	pН
parameters	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
Riological ⁺	E coli

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

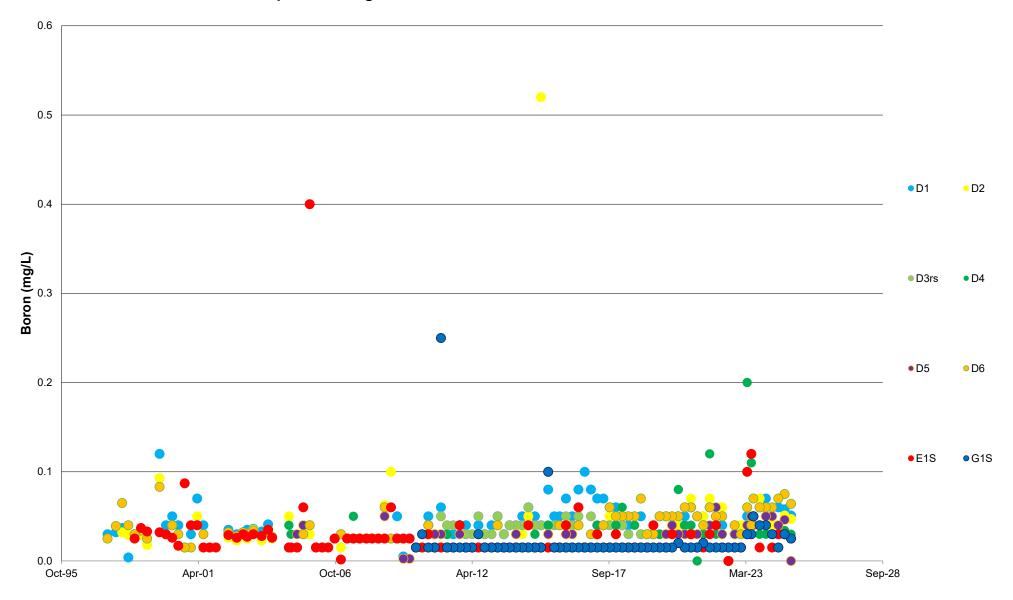
⁺ E. coli added from December 2019, with first sampling from April 2020 onwards

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

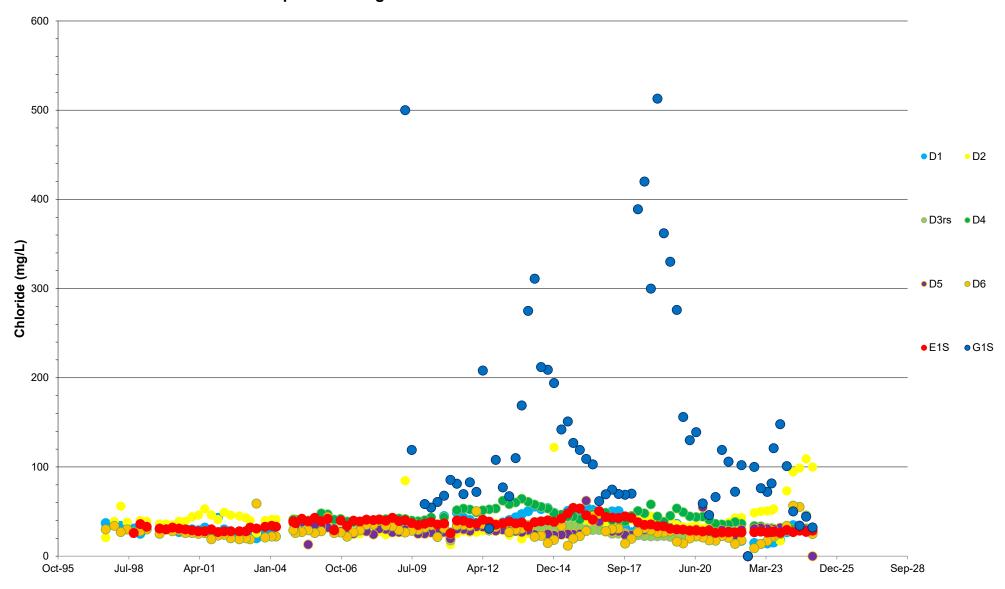
Levin Landfill January 2025 Quarterly Groundwater, Surface Water and Leachate Monitoring Report Appendix D Historical Results Graphs

Appendix D Historical Results Graphs

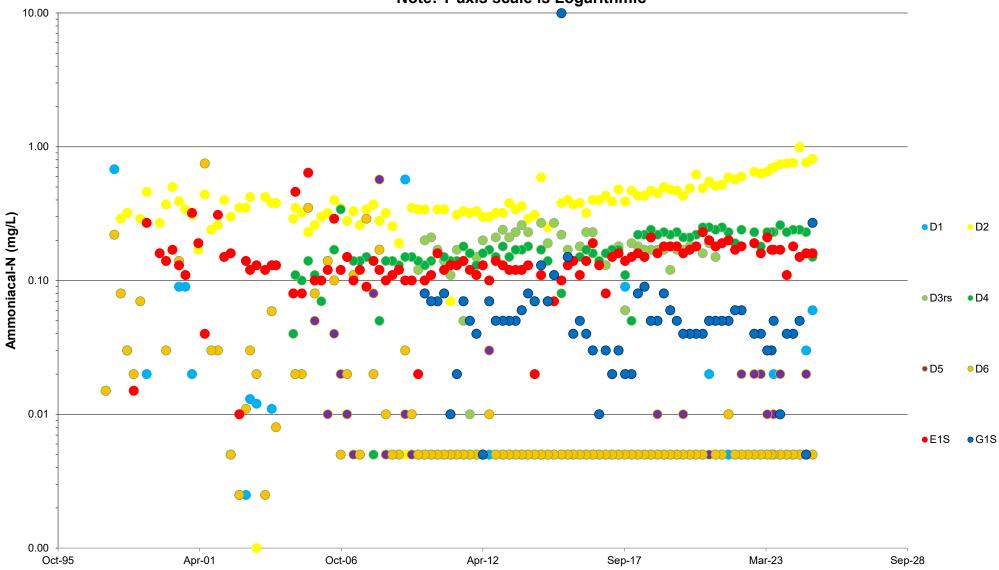




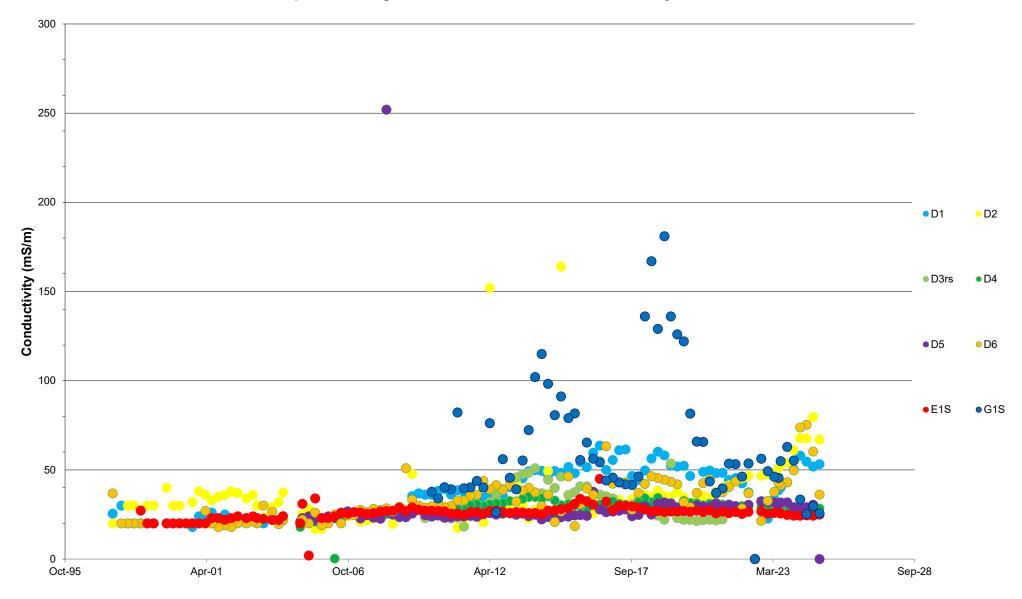
Sand Aquifer Downgradient of New Landfill - Boron Concentrations



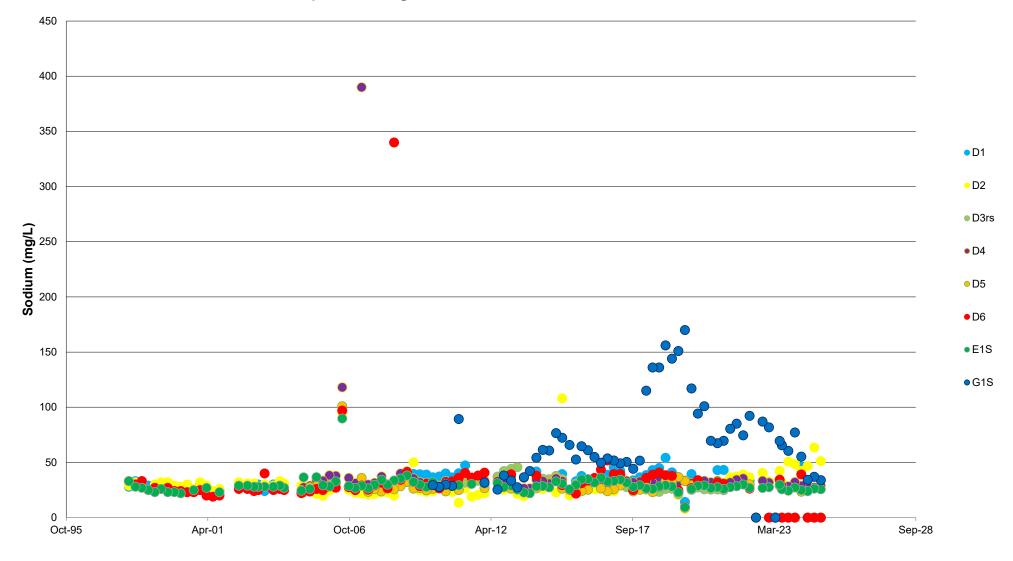
Sand Aquifer Downgradient of New Landfill - Chloride Concentrations



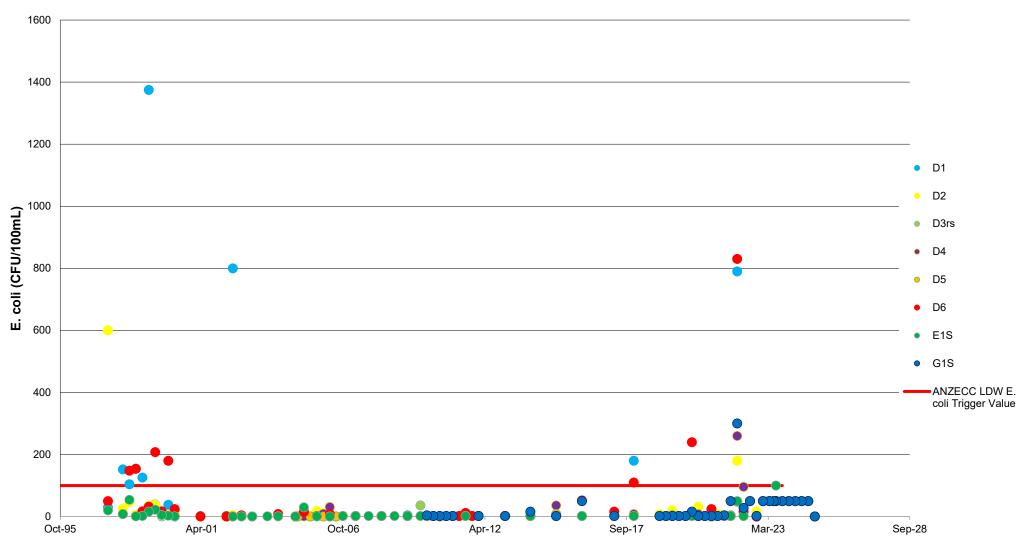
Sand Aquifer Downgradient of New Landfill - Ammoniacal-Nitrogen Concentrations Note: Y-axis scale is Logarithmic



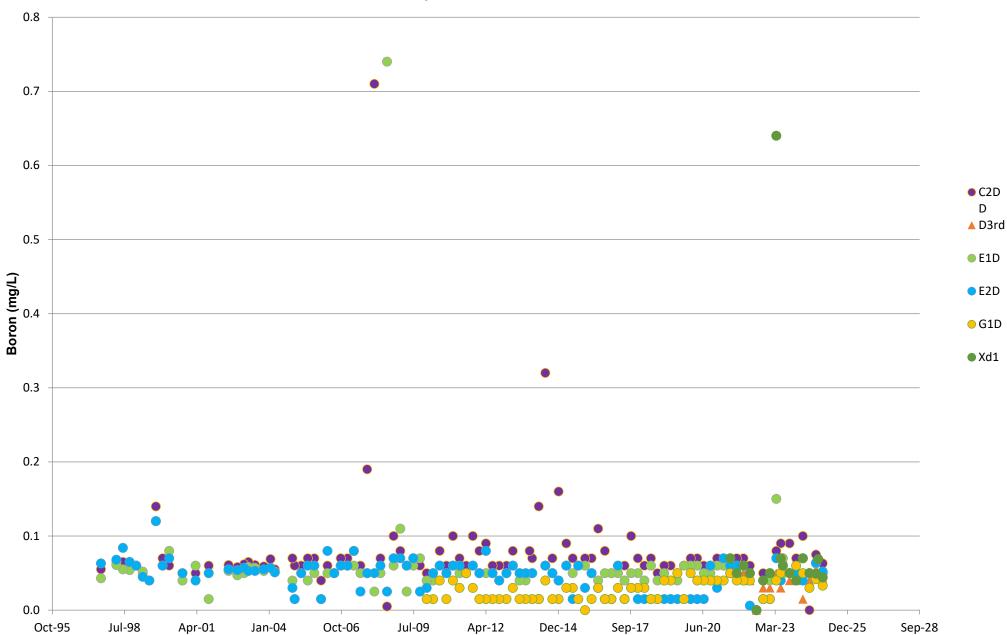
Sand Aquifer Downgradient of New Landfill - Conductivity Levels



Sand Aquifer Downgradient of New Landfill - Sodium Concentrations

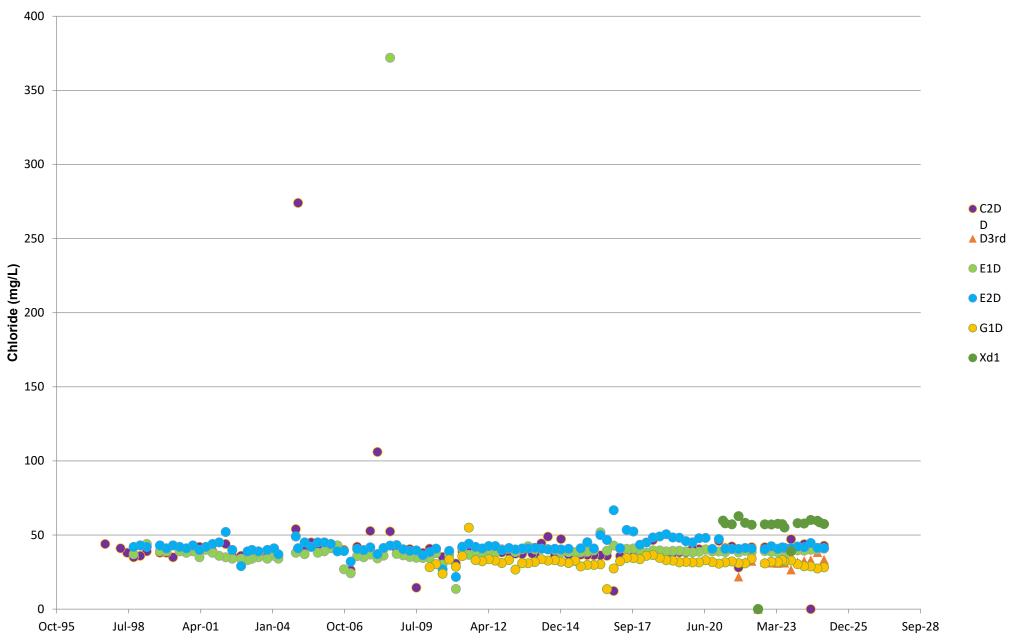


Sand Aquifer Downgradient of New Landfill - E. coli

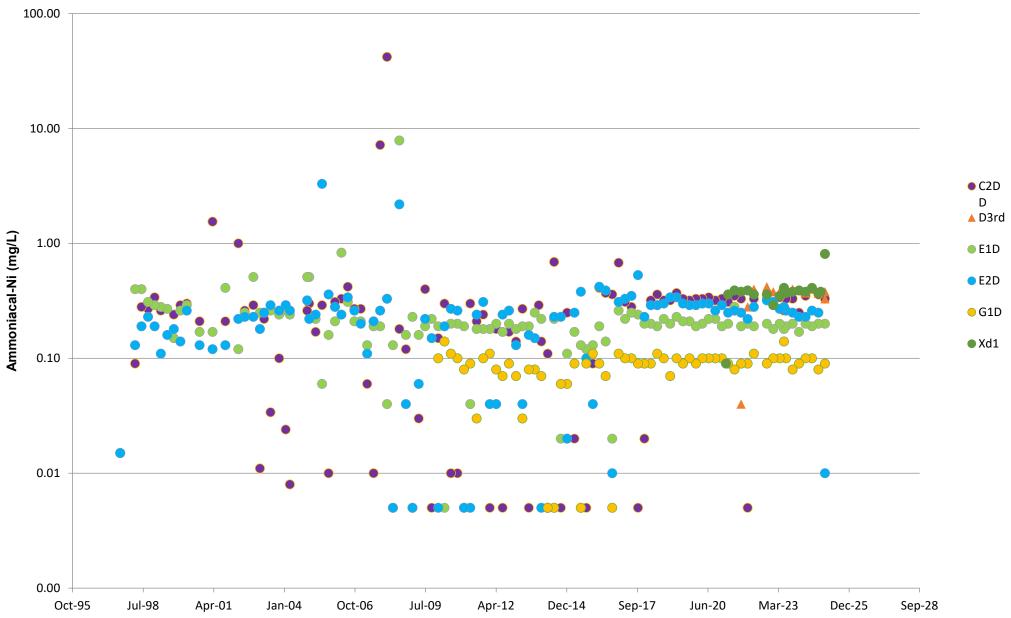


Gravel Aquifer - Boron Concentrations

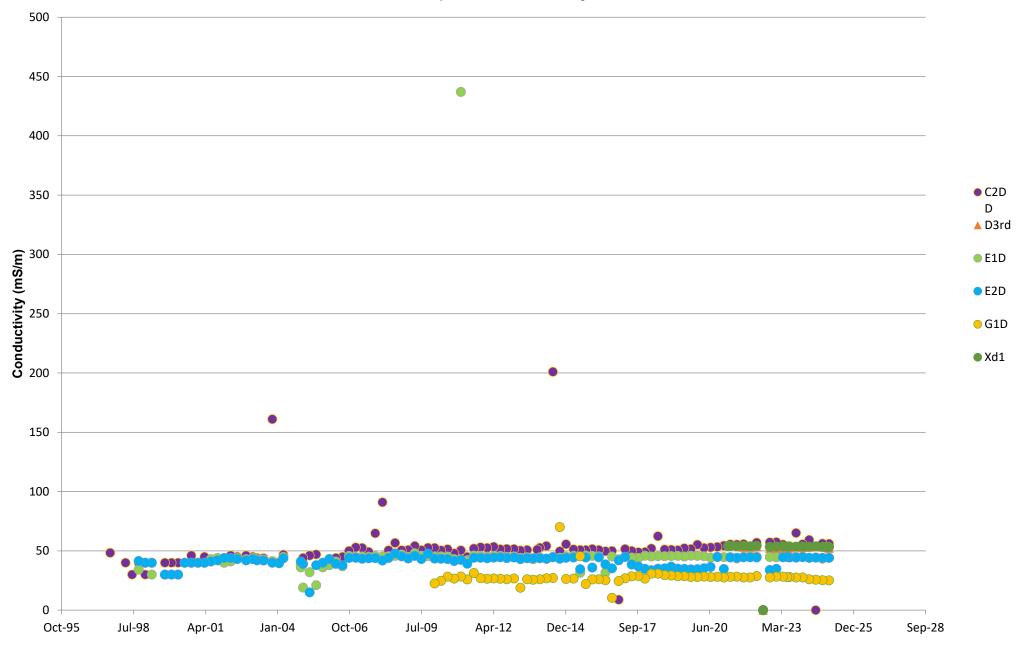




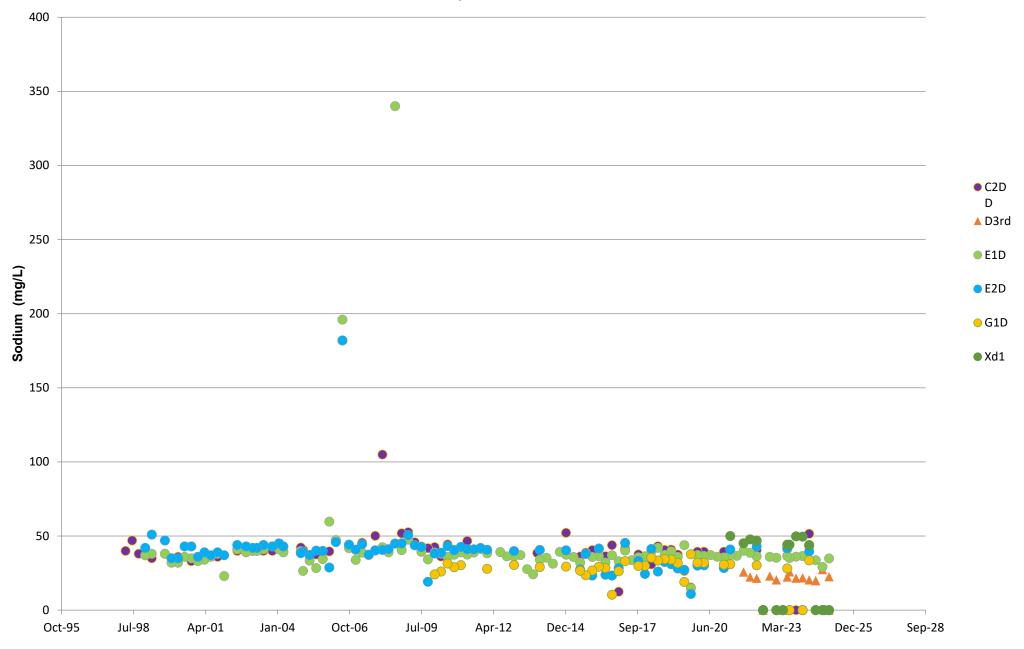
Gravel Aquifer - Ammoniacal-Nitrogen Concentrations Note: Y-axis scale is Logarithmic

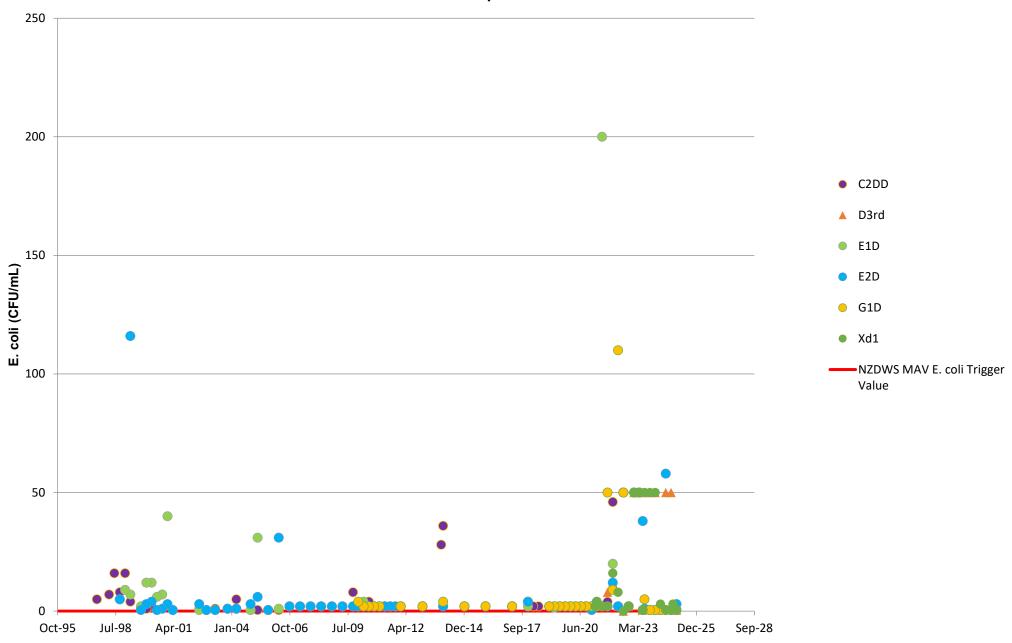


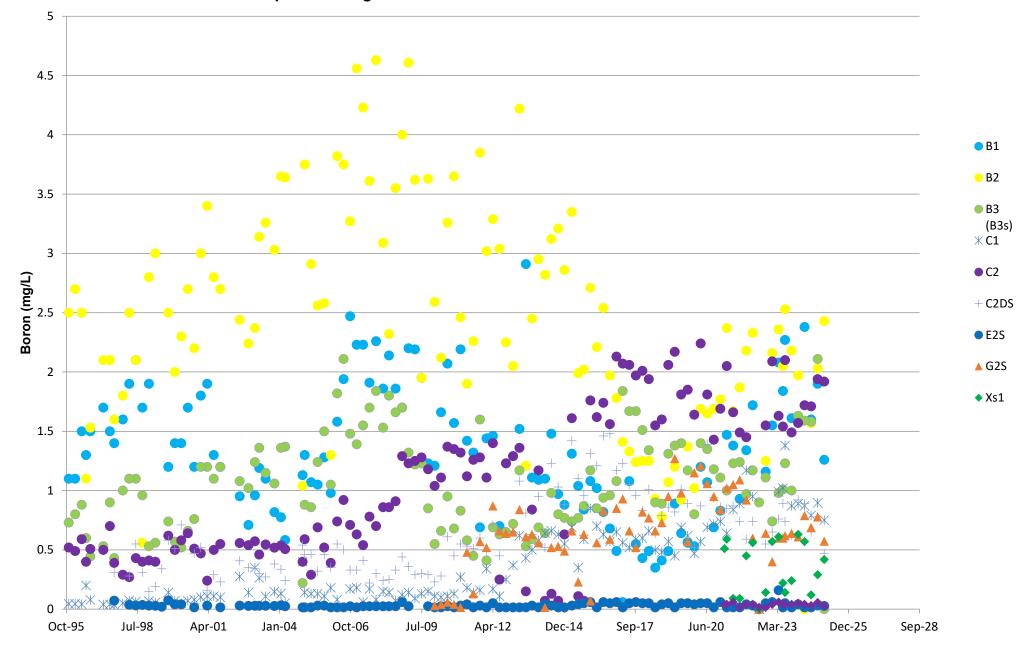
Gravel Aquifer - Conductivity Levels



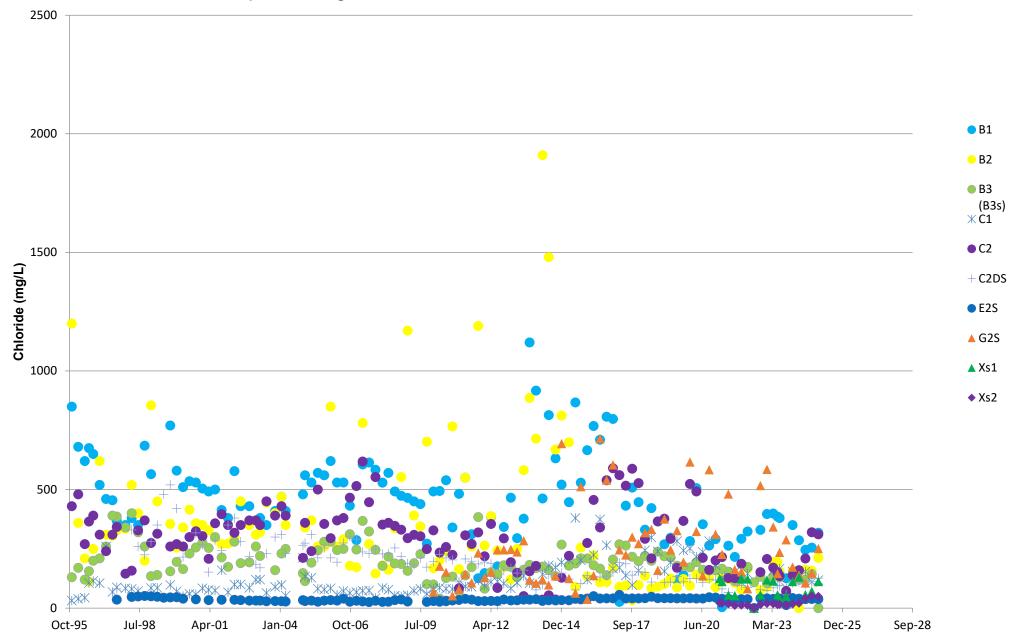
Gravel Aquifer - Sodium Levels



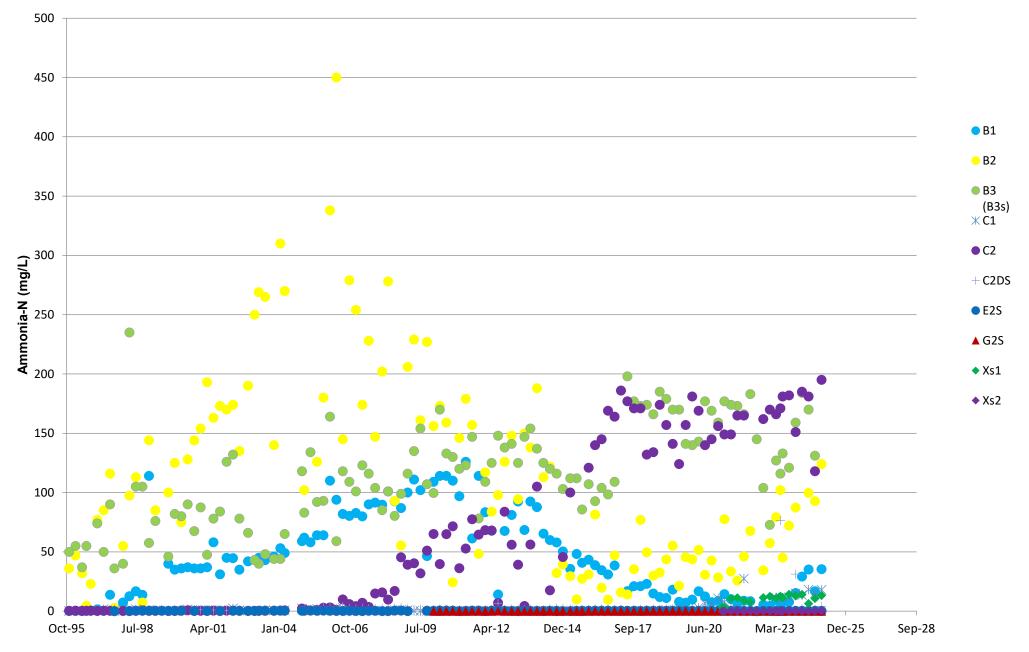




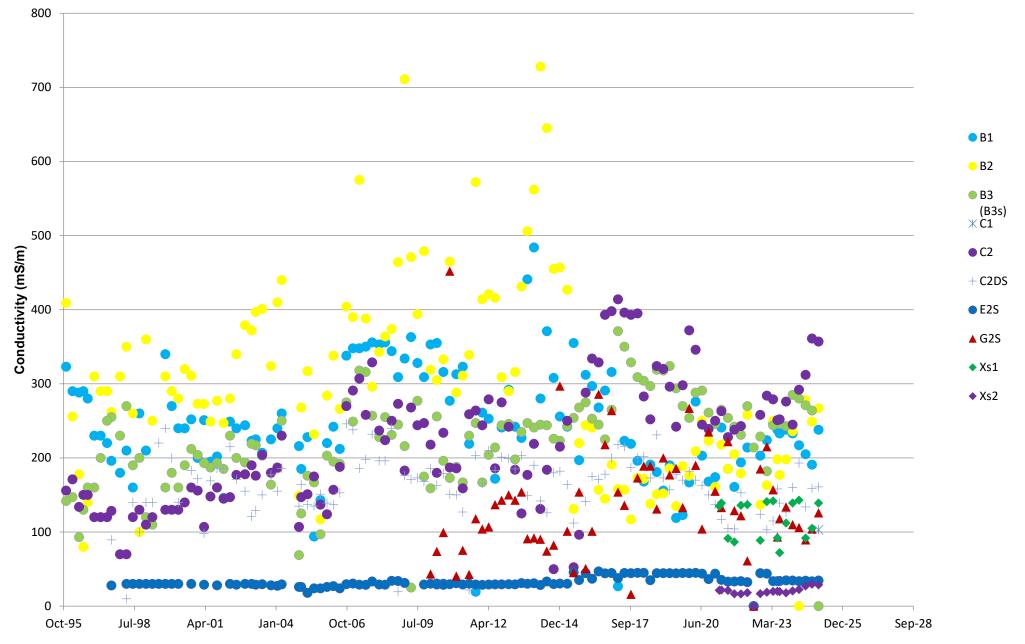
Sand Aquifer Downgradient of Old Landfill - Boron Concentrations



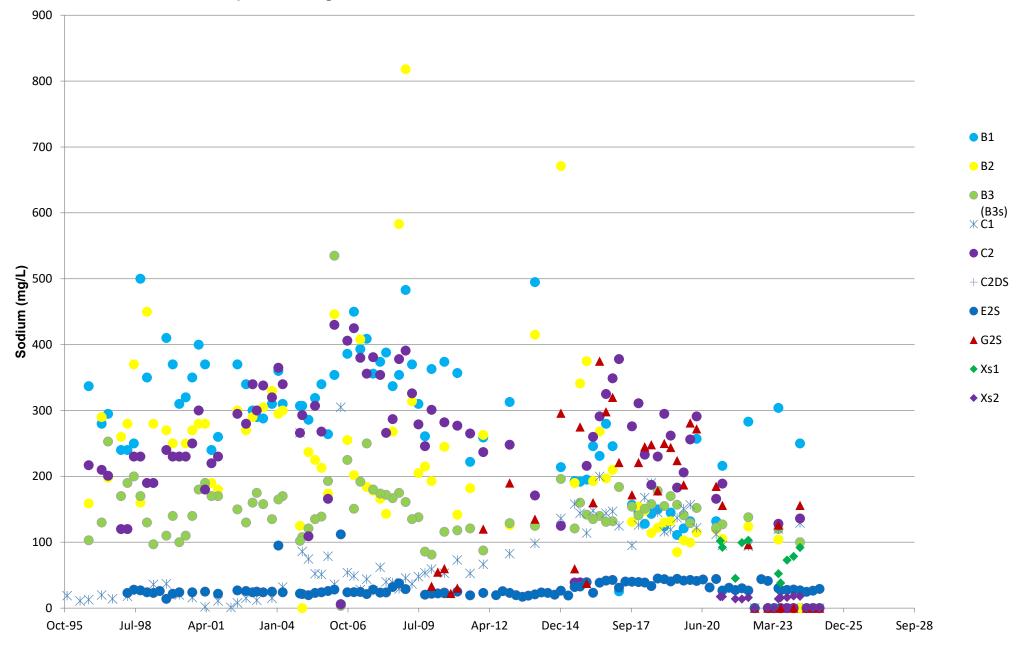
Sand Aquifer Downgradient of Old Landfill - Chloride Concentrations



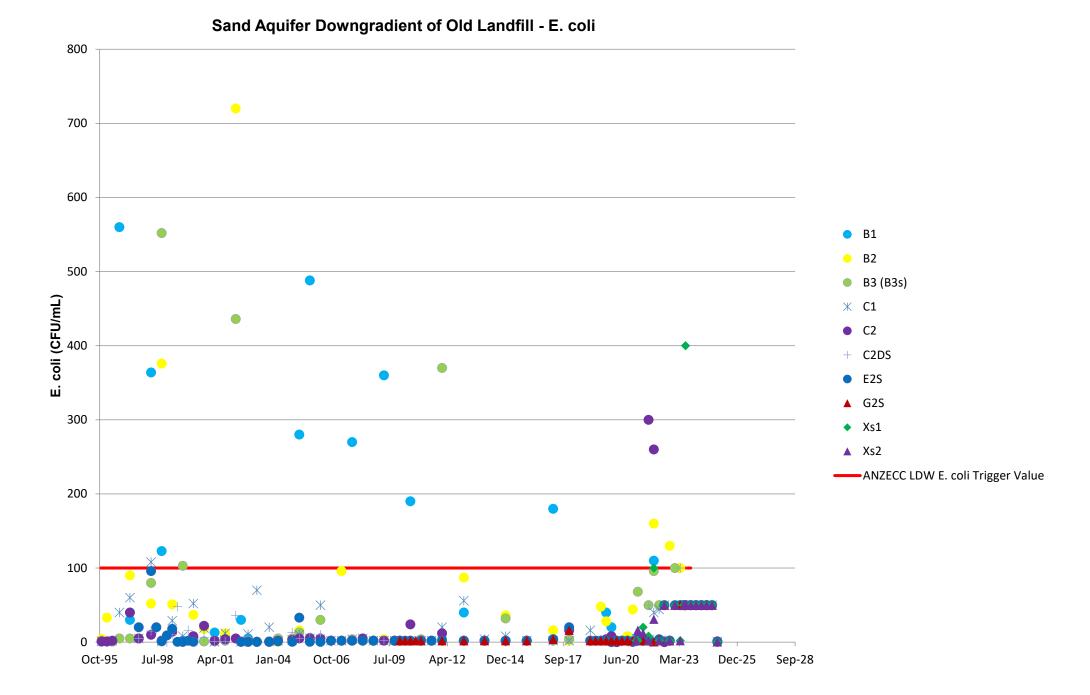
Sand Aquifer Downgradient of Old Landfill - Ammonia-N Concentrations

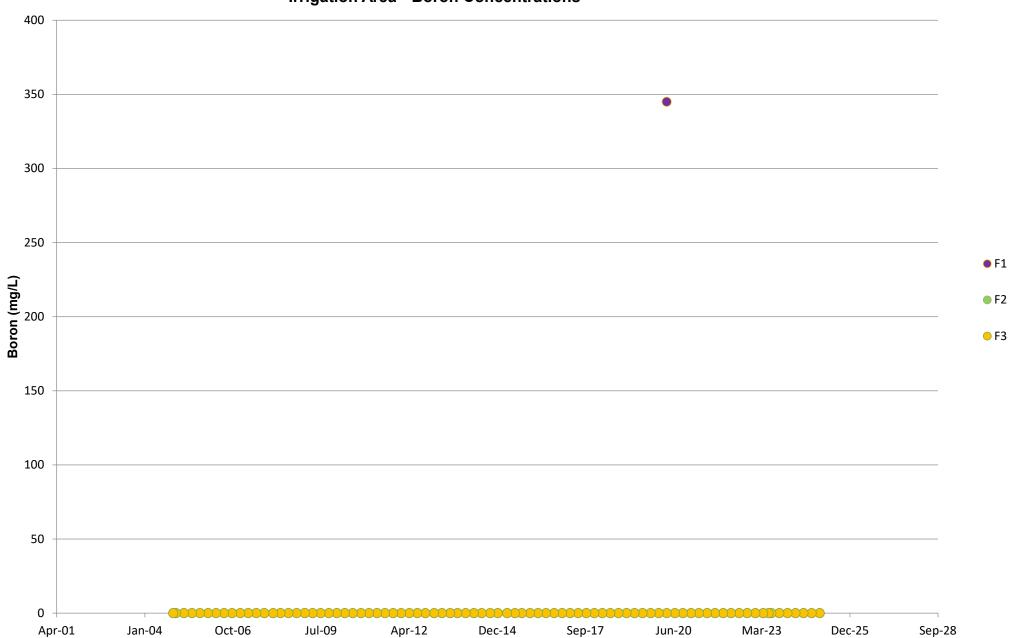


Sand Aquifer Downgradient of Old Landfill - Conductivity Levels

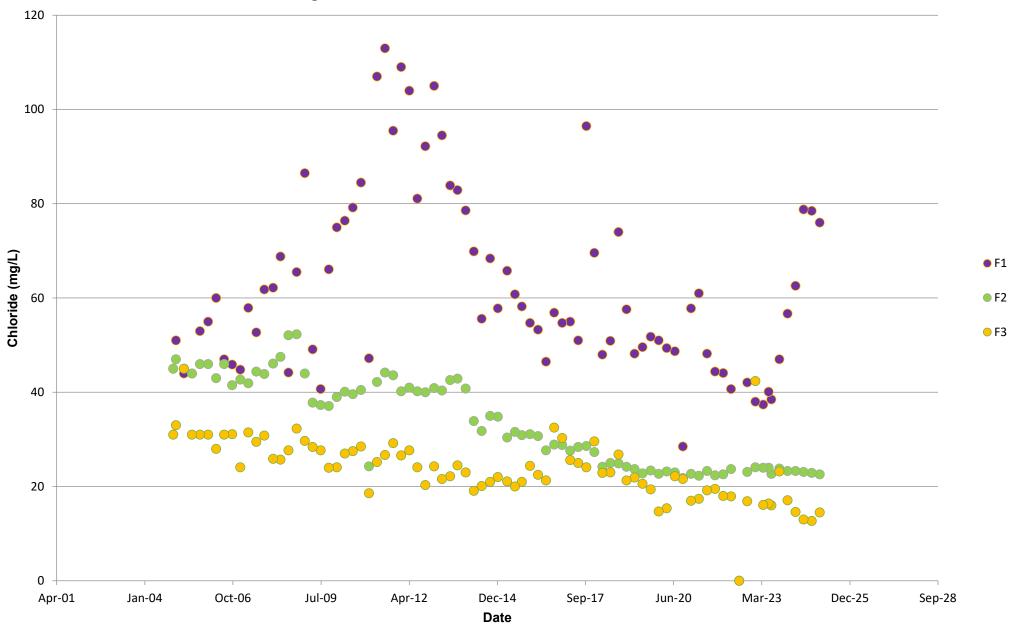


Sand Aquifer Downgradient of Old Landfill - Sodium Concentrations

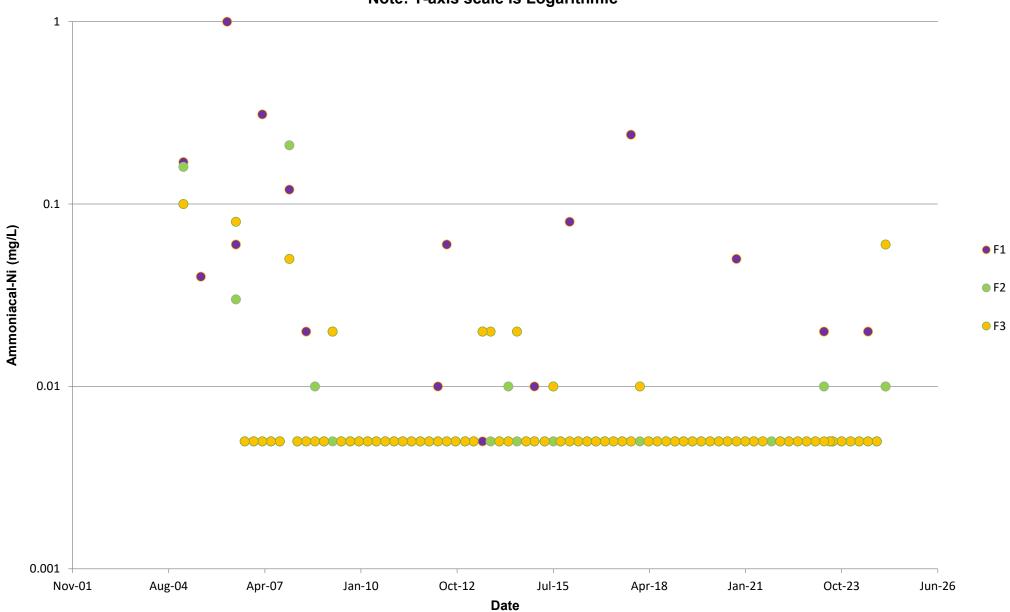




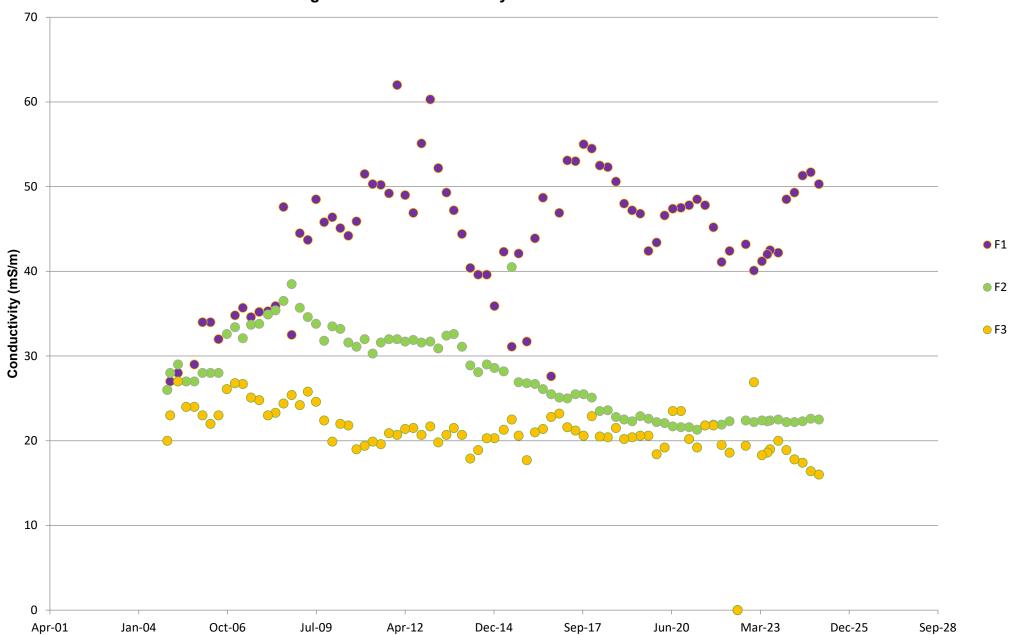
Irrigation Area - Boron Concentrations



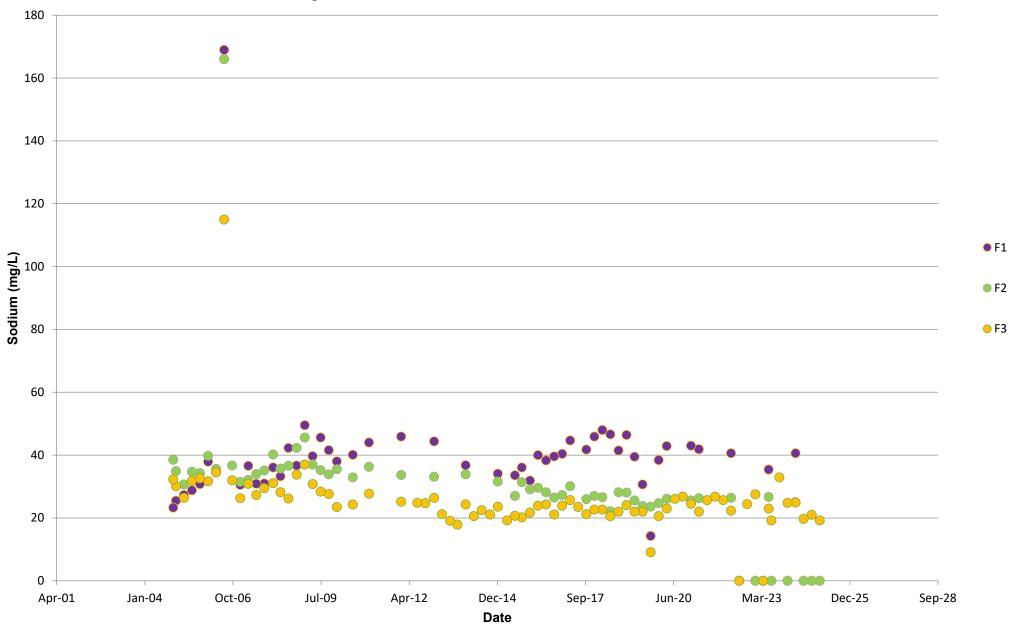
Irrigation Area - Chloride Concentrations



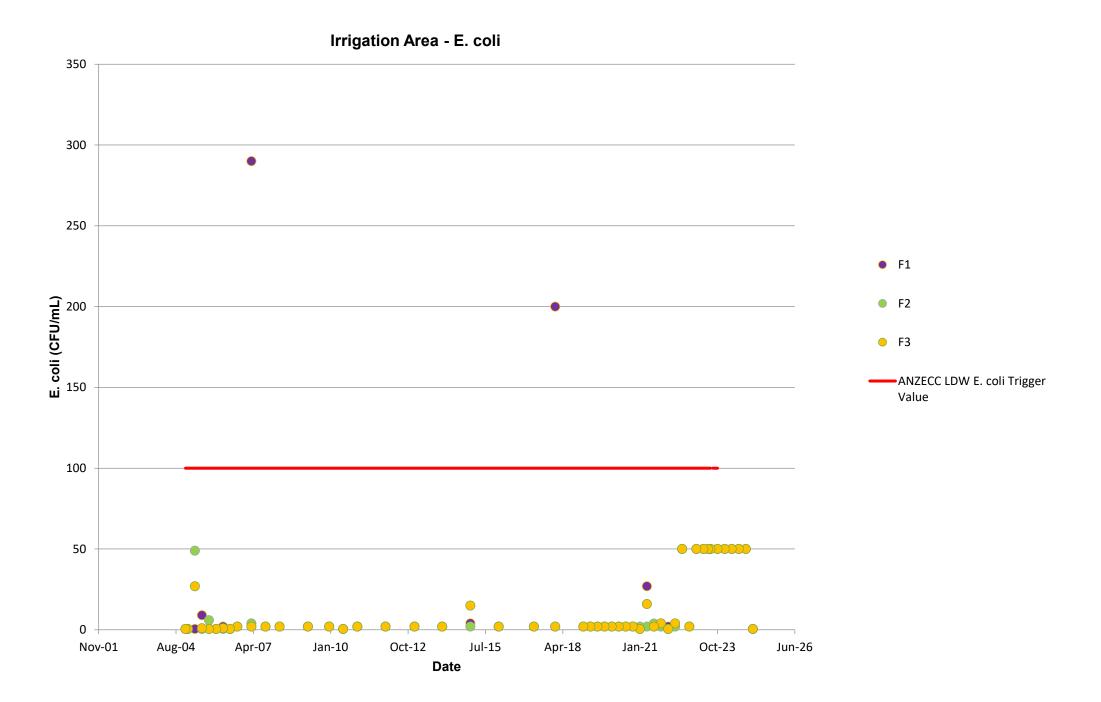
Irrigation Area - Ammoniacal-Nitrogen Concentrations Note: Y-axis scale is Logarithmic

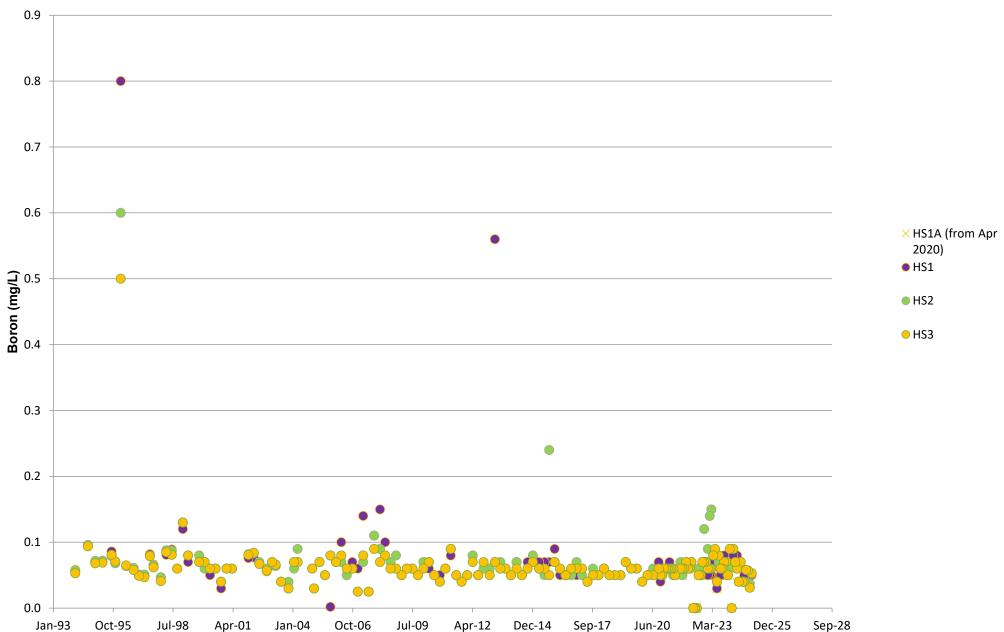


Irrigation Area - Conductivity Levels

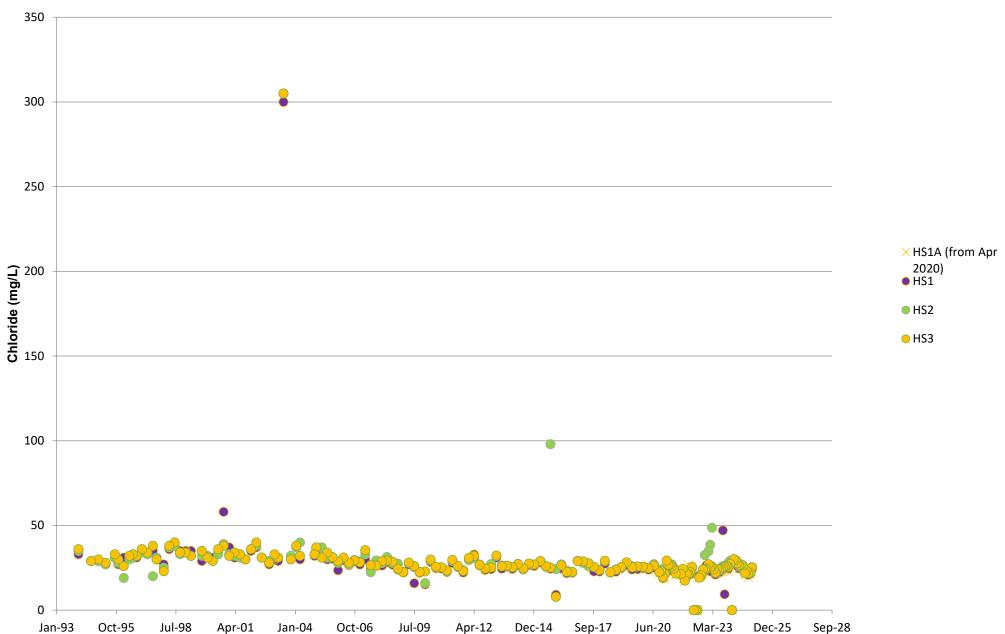


Irrigation Area - Sodium Concentrations

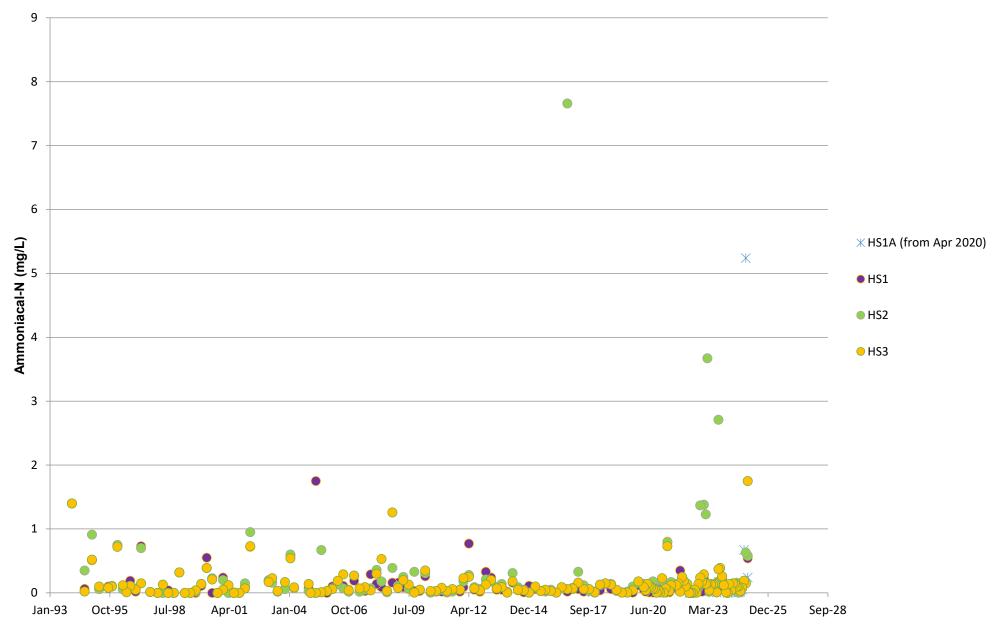




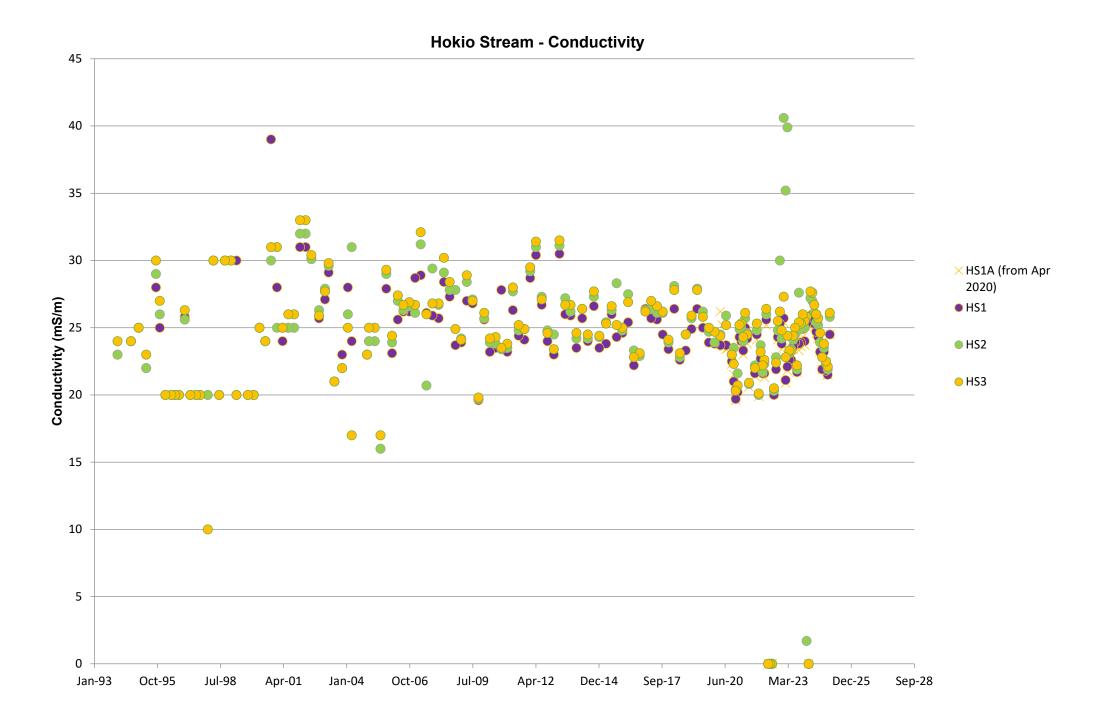
Hokio Stream - Boron Concentrations



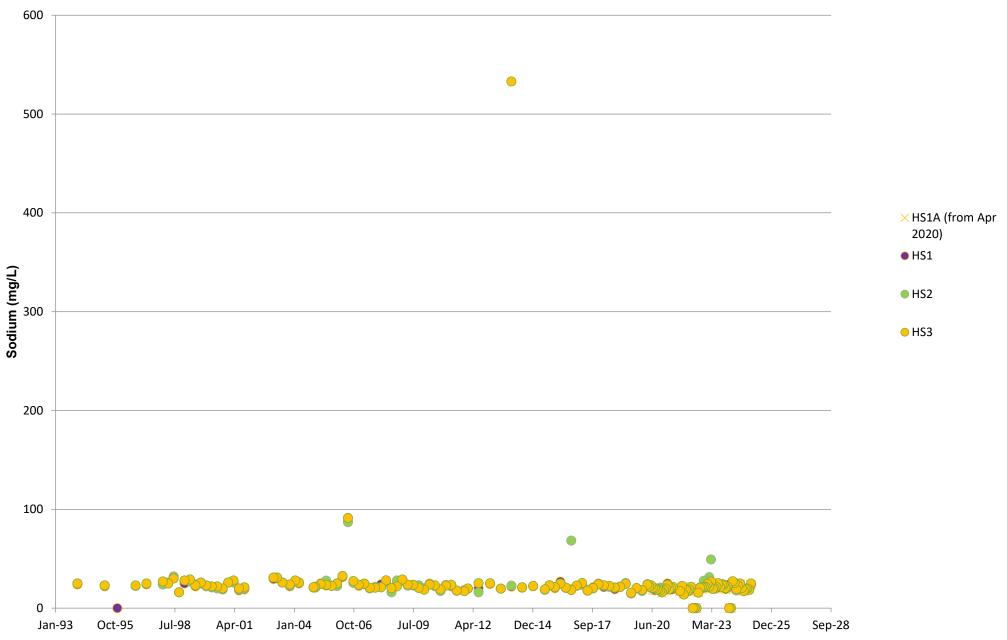
Hokio Stream - Chloride Concentrations

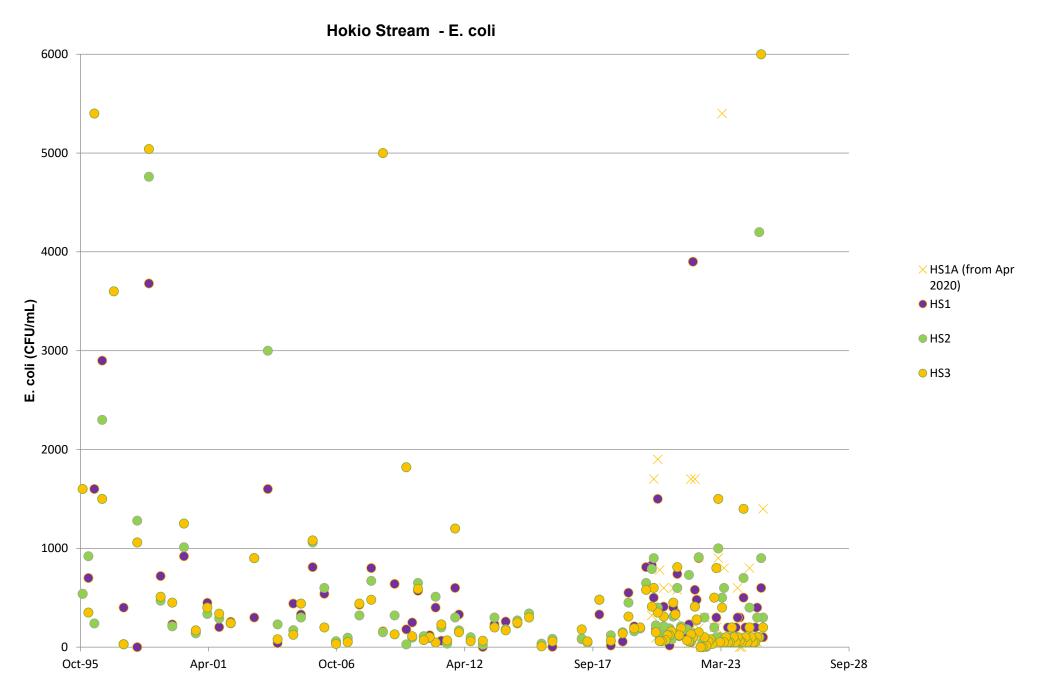


Hokio Stream - Ammoniacal-N Concentrations



Hokio Stream Sodium Concentrations





Levin Landfill January 2025 Quarterly Groundwater, Surface Water and Leachate Monitoring Report Appendix E Landfill Gas Monitoring Results at GW Bores for January 2025

Appendix E Landfill Gas Monitoring Results at GW Bores for January 2025



Entry Date	Borehole	Methane (CH ₄) %	Carbon Dioxide (CO ₂) %	Hydrogen Sulphide (H ₂ S) ppm	Oxygen (O ₂) %
14/01/2025	Levin Landfill: Levin G1d	0	0.09	0	20.7
14/01/2025	Levin Landfill: Levin D4	0	0.13	1	20.7
14/01/2025	Levin Landfill: Levin E1s	0	0.07	0	20.3
14/01/2025	Levin Landfill: Levin E1d	0.07	0.07	0	20.3
14/01/2025	Levin Landfill: Levin D3rd	0	0.08	1	20.4
14/01/2025	Levin Landfill: Levin D3rs	0	0.11	0	20.3
14/01/2025	Levin Landfill: Levin D5	0.07	0.06	0	20.9
14/01/2025	Levin Landfill: Levin F1	0	0.08	1	19.5
15/01/2025	Levin Landfill: Levin F2	0	0.15	0	20.8
15/01/2025	Levin Landfill: Levin F3	0	0.06	0	20.7
15/01/2025	Levin Landfill: Levin D2	0	0.15	1	20.6
15/01/2025	Levin Landfill: Levin D1	0	0.11	0	20.2
15/01/2025	Levin Landfill: Levin D6	0.07	0.07	1	20
15/01/2025	Levin Landfill: Levin E2d	0	0.13	0	20.8
15/01/2025	Levin Landfill: Levin E2s	0.01	0.12	0	20.8
15/01/2025	Levin Landfill: Levin Xd1	0	0.1	1	20.8
15/01/2025	Levin Landfill: Levin B3s	0	0.3	1	20.5
15/01/2025	Levin Landfill: Levin C1	0	0.2	0	20.6
15/01/2025	Levin Landfill: BH102	0	0.09	1	20.5
15/01/2025	Levin Landfill: Levin C2ds	0.05	0.23	1	19.4
15/01/2025	Levin Landfill: Levin C2ds	0	0.1	1	19.8
15/01/2025	Levin Landfill: Levin C2dd	0.07	0.12	1	19.6
15/01/2025	Levin Landfill: Levin B2	0.06	3.07	0	19
15/01/2025	Levin Landfill: BH103	0.05	0.12	1	20.1
15/01/2025	Levin Landfill: Levin B1	0	0.2	0	21.1
16/01/2025	Levin Landfill: Levin Xs2	0.06	0.09	0	20.7
16/01/2025	Levin Landfill: BH101B	0	0.3	0	20.3
16/01/2025	Levin Landfill: BH101A	0	0.05	0	20.2
16/01/2025	Levin Landfill: Levin Xs1	0	0.27	0	19.8
16/01/2025	Levin Landfill: BH104	0	0.16	0	19.9
22/01/2025	Levin Landfill: Levin G1s	0	0.18	0	20.5
22/01/2025	Levin Landfill: Levin G2s	0	0.11	0	21.1



Stantec is a global leader in sustainable engineering, architecture, and environmental consulting. The diverse perspectives of our partners and interested parties drive us to think beyond what's previously been done on critical issues like climate change, digital transformation, and future-proofing our cities and infrastructure. We innovate at the intersection of community, creativity, and client relationships to advance communities everywhere, so that together we can redefine what's possible.