CERTIFICATE OF ACCREDITATION

RJ Hill Laboratories Ltd (Hill Labs) **Client Number 590**
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Authorised Representative
Ms Leisle Jacobsen
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Programme
Chemical Testing Laboratory

Accreditation Number 365 **Initial Accreditation Date** 15 April 1988

Conformance Standard
ISO/IEC 17025:2017
General requirements for the competence of testing and calibration laboratories

Laboratory Services Summary

Plants and Soils

2.36	Agricultural Products and Agricultural Materials

Inorganics

2.31	Foods
2.41	Waters
2.58	Environmental Monitoring

ICP

2.24	Textiles and Textile Products
2.31	Foods
2.32	Drugs and Pharmaceuticals
2.41	Waters
2.58	Environmental Monitoring
2.61	Biological Specimens
2.70	Instrumental Techniques

Organics

2.31	Foods
2.41	Waters
2.58	Environmental Monitoring
2.70	Instrumental Techniques

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Food and Bioanalytical

2.31	Foods
2.32	Drugs and Pharmaceuticals
2.36	Agricultural Products and Agricultural Materials
2.70	Instrumental Techniques

Work Place Drug Testing

2.61	Biological Specimens

Air Quality

2.58	Environmental Monitoring

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Plants and Soils

2.36 Agricultural Products and Agricultural Materials

In accordance with in-house test methods except where otherwise indicated.

(c) Stockfoods and licks

Crude fibre	AOAC 962.09 (modified)

(g) Soils

Anion storage capacity	
Base saturation percent of calcium	By calculation
Base saturation percent of magnesium	By calculation
Base saturation percent of potassium	By calculation
Base saturation percent of sodium	By calculation
Cation exchange capacity	By calculation
Lime requirement	By calculation
Organic matter	Dumas combustion / calculation
pH of soils and soil extracts	
Phosphorus (Olsen extractable)	
Phosphorus (Resin extractable)	
Potentially available nitrogen (anaerobic mineralisable nitrogen)	
Soluble salts	
Sulphate-sulphur	Ion chromatography
Total carbon	Dumas combustion
Total nitrogen	Dumas combustion
Volume weight	

The following elements in soil in accordance with ICP-OES methodology (including extraction):

Aluminium ($CaCl_2$ extractable)
Boron (hot water extractable)
Exchangeable Calcium (ammonium acetate extractable)
Exchangeable Magnesium (ammonium acetate extractable)
Exchangeable Potassium (ammonium acetate extractable)
Exchangeable Sodium (ammonium acetate extractable)
Extractable Cobalt (EDTA extractable)
Extractable Copper (EDTA extractable)
Extractable Iron (EDTA extractable)
Extractable Manganese (EDTA extractable)
Extractable Organic Sulphur
Extractable Zinc (EDTA extractable)

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Reserve Potassium (TBK)
Total Phosphorus (Aqua Regia digestion)
Total Sulphur (Aqua Regia digestion)

The following elements in soil in accordance with ICP-MS methodology (including extraction):

Total Selenium (Aqua Regia digestion)

(h) Plants

Acid detergent fibre (Direct)	Ankom fibre instrument
Acid detergent fibre (Sequential)	AFIA method 1.9A (a) (modified)
Acid detergent lignin	Ankom method 9 (modified)
Ash	AOAC 942.05
Chloride	
Chloride	NIR
Crude fat	AOCS AM 5-04
Crude protein	Dumas combustion / calculation
Crude protein	(NIR) By calculation
Digestibility of organic matter in dry matter (DOMD)	AFIA 1.7R (modified
Metabolisable Energy (ME) calculated from DOMD	AFIA 2.2R (modified) / AFRC by calculation
Neutral detergent fibre	AFIA Method 1.8A(a) (modified)
Nitrate - nitrogen	
Residual moisture	NFTA 2.1.4 (3hrs @ 105 °C)
Residual moisture	NIR
Soluble sugars	Colorimetric method
Total nitrogen	Dumas combustion
Total nitrogen	NIR
Total starch (Megazyme)	AOAC 996.11 (modified)

The following elements in plants in accordance with ICP-MS methodology:

Cobalt (microwave digestion)
Iodine (TMAH extraction)
Molybdenum (microwave digestion)
Selenium (microwave digestion)

The following elements in plants in accordance with ICP-OES methodology by microwave digestion:

Aluminium	Boron	Calcium	Copper
Iron	Magnesium	Manganese	Phosphorus
Potassium	Sodium	Sulphur	Zinc

(i) Other agricultural products and related materials

Nutrient solutions:

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Ammonium - nitrogen
Chloride
Conductivity
Nitrate - nitrogen
pH

The following elements in accordance with ICP-MS methodology:

Molybdenum

The following elements in accordance with ICP-OES methodology:

Boron	Calcium	Copper	Iron
Magnesium	Manganese	Phosphorus	Potassium
Sodium	Sulphur	Zinc	

Growing media (potting mix, composts):

Ammonium - nitrogen
Conductivity
Nitrate - nitrogen
pH

Media DTPA extraction for the following metals by ICP-OES:

Boron	Copper	Iron	Manganese
Zinc			

Media water extraction for the following metals by ICP-OES:

Calcium	Magnesium	Phosphorus	Potassium
Sodium	Sulphur		

References:

AOAC AOAC International (Online)

Inorganics

2.31 Foods

(j) Alcoholic beverages (Wine)

Sulfate in Wine	Ion Chromatography (IC) In-House
Sulfate as K_2SO_4	By Calculation

2.41 Waters

(a) Potable waters
(b) Non-potable waters
(c) Sewage
(d) Effluents and trade wastes
(h) Boiler waters

The following tests are in accordance with APHA "Standard Methods for the Examination of Water and Wastewater" (Online Edition) except where otherwise indicated.

Acidity	2310 B
Alkalinity (as $CaCO_3$)	2320 B (modified)
Ammonium (nitrogen)	4500-NH_3 F (modified, discrete analyser)
Ammonium (nitrogen)	4500-NH_3 H
Ammonium (nitrogen)	4500-NH_3 H (modified)
Ammonium (nitrogen)	In-house
Ash	2540 E (modified) (by calculation)
Ash from suspended solids	In-house (by calculation)
Bicarbonate	4500-CO_2 D
Biochemical oxygen demand	5210 B (modified)
Biochemical oxygen demand	In-house
Bromate	USEPA 300.1 Part B (modified)
Bromide	4110 B (modified)
Bromide	USEPA 300.1 (modified)
Bromide	USEPA 300.1 Part B (modified)
Carbonate	4500-CO_2 D
Chemical oxygen demand	5220 D
Chloramines	4500-Cl G
Chlorate	USEPA 300.1 Part B (modified)
Chloride	4110 B (modified)
Chloride	USEPA 300.1 (modified)
Chlorine	4500-Cl G
Chlorite	USEPA 300.1 Part B (modified)
Chlorophyll A	10150 B (modified, Spectrophotometer)
Chlorophyll A	10150 C (modified, Fluorometer)
Chromium (VI)	3500-Cr B (modified, discrete analyser)
Chromium (III) Total	In-house (by calculation)
Colour (Hazen)	2120 C (modified)
Conductivity	2510 B
Cyanide (total)	4500-CN C (modified)

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Cyanide (total)	ISO 14403:2012 (e)
Cyanide	4500-CN E (modified, discrete analyser)
Cyanide (weak acid dissociable)	4500-CN I (modified)
Cyanide (weak acid dissociable)	4500-CN O (modified)
Dissolved Inorganic Nitrogen	In-house (by calculation)
Dissolved Organic Carbon	5310 C (modified) (by calculation)
Dissolved reactive phosphorus	4500-P G
Dissolved reactive phosphorus	4500-P G (modified)
Fluoride (potable water only)	4110 B (modified)
Fluoride (potable water only)	USEPA 300.1 (modified)
Fluoride	4500-F C
Free carbon dioxide	4500-CO_2 D
Hardness	2340 B (by calculation)
Hydroxide Alkalinity from Alkalinity	2320 B (by calculation)
Hydroxide Alkalinity from pH	4500-CO2 D (by calculation)
Ion Balance	1030 E
Langelier saturation index (LSI)	2330 B
Mercury	USEPA 245.7 (CVAF)
Nitrate	4110 B (modified)
Nitrate	USEPA 300.1 (modified)
Nitrate (nitrogen)	4500-NO_3 I (modified)
Nitrite	USEPA 300.1 (modified)
Nitrite (nitrogen)	4110 B (modified)
Nitrite (nitrogen)	4500-NO_3 I (modified)
Oil and Grease	5520 D (modified)
pH	4500-H B (modified)
Phenols	5530 B (modified)
Phenols	5530 D (Auto analyser)
Phosphate	4110 B (modified)
Phosphate	USEPA 300.1 (modified)
Phosphate from DRP	In-house (by calculation)
Reactive silica	4500-SiO_2 F (modified)
Reactive silica	4500-SiO_2 F (modified, discrete analyser)
Ryznar index (RI)	In-house
Sulphate	4110 B (modified)
Sulphate	USEPA 300.1 (modified)
Sulphide	4500-S^2 I (modified, FIA)
Sulphide	4500-S2 E (modified)
Sulphite	4500-$S0_3$ B
Tannins and lignins	5550 B (modified)
Total and nonpurgeable organic carbon	5310 C (modified)
Total dissolved nitrogen	In-house (by calculation)
Total dissolved solids	2540 C (modified)
Total inorganic nitrogen	In-house (by calculation)
Total Kjeldahl nitrogen	4500-N_{org} D (modified, discrete analyser)
Total nitrogen	4500-N C
Total nitrogen	4500-NO_3 I (modified)

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Total nitrogen	In-house (by calculation)
Total organic nitrogen	In-house (by calculation)
Total organic nitrogen (trace level)	In-house (by calculation)
Total phosphorus	4500-P B / E (modified, discrete analyser)
Total phosphorus	4500-P H (modified)
Total solids	2540 B (modified)
Total suspended solids	2540 D (modified)
Turbidity	2130 B (modified)
Turbidity	ISO 7027:2016 (modified)
Ultraviolet absorption	5910 B
Unionised hydrogen sulphide	4500-S^2 H (modified) (by calculation)
Urea (nitrogen)	In-house
Volatile fatty acids	In-house by IC
Volatile fatty acids (total)	In-house (by calculation)
Volatile suspended solids	2540 E (modified)
Volatile total solids	2540 E (modified)

(g) Marine waters

Ammonium (nitrogen)	4500-NH3 H
Ash	2540 E (modified) (by calculation)
Ash from suspended solids	In-house (by calculation)
Chlorophyll A	10150 B (modified, Spectrophotometer)
Chlorophyll A	10150 C (modified, Fluorometer)
Conductivity	2510 B
Dissolved Inorganic Nitrogen	In-house (by calculation)
Dissolved reactive phosphorus	4500-P G
Hydroxide Alkalinity from pH	4500-CO2 D (by calculation)
Nitrate (nitrogen)	4500-NO3 I (modified)
Nitrite (nitrogen)	4500-NO3 I (modified)
pH	4500-H^+ B (modified)
Phosphate from DRP	In-house (by calculation)
Reactive silica	4500-SiO2 F (modified, discrete analyser)
Total inorganic nitrogen	In-house (by calculation)
Total nitrogen	4500-N C
Total nitrogen	4500-NO3 I (modified)
Total organic nitrogen (trace level)	In-house (by calculation)
Total phosphorus	4500-P H (modified)
Total suspended solids	2540 D (modified)
Turbidity	2130 B (modified)
Turbidity	ISO 7027: 2016 (modified)
Volatile suspended solids	2540 E (modified)

2.58 Environmental Monitoring

(c) Soils and sludges

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Oil and Grease	5520 E (modified)

ICP

2.24 Textiles and Textile Products

(c) Chemical tests

2.31 Foods

(c) Nuts, fruits and vegetables and derived products
(f) Dairy products

Microwave Digestion of textiles, food and biological specimens for Elemental Analysis, in accordance with in-house procedures:

Aluminium	Antimony	Arsenic	Barium
Boron	Cadmium	Caesium	Calcium
Cerium	Chromium	Cobalt	Copper
Dysprosium	Erbium	Europium	Gadolinium
Holmium	Iron	Lanthanum	Lead
Lithium	Lutetium	Magnesium	Manganese
Molybdenum	Neodymium	Nickel	Potassium
Praseodymium	Rubidium	Samarium	Selenium
Sodium	Strontium	Thulium	Tin
Uranium	Vanadium	Ytterbium	Yttrium
Zinc			

(c) Nuts, fruits and vegetables and derived products
(f) Dairy products
(g) Meat, poultry and derived products
(i) Eggs and egg products
(o) Other specified foods (honey, propolis and related products)

The following elements by ICP-MS in accordance with in-house procedures based on alkaline digestion or APHA 3030 and 3125:

Aluminium	Antimony	Arsenic	Barium
Boron	Cadmium	Caesium	Calcium
Cerium	Chromium	Cobalt	Copper
Dysprosium	Erbium	Europium	Gadolinium

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Holmium	Iron	Lanthanum	Lead
Lithium	Lutetium	Magnesium	Manganese
Molybdenum	Neodymium	Nickel	Potassium
Praseodymium	Rubidium	Samarium	Selenium
Sodium	Strontium	Thulium	Tin
Uranium	Vanadium	Ytterbium	Yttrium
Zinc			

(c) Nuts, fruits and vegetables and derived products

The following elements by ICP-MS in accordance with in-house procedures based on APHA 3030 and 3125:

Antimony	Arsenic	Bismuth	Cadmium
Chromium	Copper	Lead	Mercury
Molybdenum	Silver	Tin	Zinc

(f) Dairy products

The following elements by ICP-OES in accordance with in-house procedures based on APHA 3030 and 3120:

Calcium	Iron	Magnesium	Phosphorus
Potassium	Sodium	Sulphur	Zinc

The following elements by ICP-MS in accordance with in-house procedures based on alkaline digestion or APHA 3030 and 3125:

Aluminium	Antimony	Arsenic	Bismuth
Boron	Cadmium	Chromium	Cobalt
Copper	Iodine	Lead	Lithium
Manganese	Mercury	Molybdenum	Nickel
Selenium	Silver	Tin	Zinc

(g) Meat, poultry and derived products

The following elements by ICP-MS in accordance with in-house procedures based on alkaline digestion or APHA 3030 and 3125:

Arsenic	Cadmium	Lead	Mercury
Selenium			

(h) Fish and fish products

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The following elements by ICP-MS in accordance with in-house procedures based on alkaline digestion or APHA 3030 and 3125:

Aluminium	Antimony	Arsenic	Barium
Beryllium	Bismuth	Boron	Cadmium
Caesium	Chromium	Cobalt	Copper
Lanthanum	Lead	Lithium	Manganese
Mercury	Molybdenum	Nickel	Rubidium
Selenium	Silver	Strontium	Thallium
Tin	Uranium	Vanadium	Zinc

(j) Alcoholic beverages (wine)

The following elements by ICP-MS in accordance with in-house procedures based on APHA 3030 and 3125:

Antimony	Arsenic	Bismuth	Boron
Cadmium	Chromium	Copper	Lead
Manganese	Mercury	Nickel	Silver
Tin	Zinc		

The following elements by ICP-OES in accordance with in-house procedures based on APHA 3030 and 3120:

Calcium	Iron	Potassium	Sodium

(o) Other specified foods (honey, propolis and related products)

The following elements by ICP-MS in accordance with in-house procedures based on alkaline digestion or APHA 3030 and 3125:

Aluminium	Antimony	Arsenic	Cadmium
Chromium	Copper	Iodine	Lead
Mercury	Selenium	Zinc	

2.32 Drugs and Pharmaceuticals

(i) Other products – Cannabis (plant and oil)

The following elements by ICP-MS in accordance with in-house procedures based on EU Pharmacopeia 2.4.27:

Arsenic (plant only)	Cadmium	Lead	Mercury

The following element by ICP-MS in accordance with in-house procedures based on alkaline digestion:

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Arsenic (oil only*)
*Finished medicinal cannabis and ethanol extracts only

2.41 Waters

(a) Potable waters
(b) Non-potable waters
(c) Sewage
(d) Effluents and trade wastes
(h) Boiler waters

The following elements by ICP-MS in accordance with APHA 3030 (modified), 3125 and USEPA 1638, 200.1:

Aluminium	Antimony	Arsenic	Barium
Beryllium	Bismuth	Boron	Cadmium
Caesium	Calcium	Chromium	Cobalt
Copper	Iodine	Iron	Lanthanum
Lead	Lithium	Magnesium	Manganese
Mercury	Molybdenum	Nickel	Phosphorus
Potassium	Rubidium	Selenium	Silicon
Silver	Sodium	Strontium	Sulphur
Thallium	Thorium	Tin	Uranium
Vanadium	Zinc		

The following element by ICP-OES in accordance with APHA 3030 (modified) and 3120:

Sulphur

Borate (B_4O_7) In-house (by calculation)

(g) Marine waters

The following elements by ICP-MS in accordance with APHA 3030 (modified), 3125 and USEPA 1638, 200.1:

Aluminium	Antimony	Arsenic	Barium
Beryllium	Bismuth	Boron	Cadmium
Caesium	Calcium	Chromium	Cobalt
Copper	Iron	Lanthanum	Lead
Lithium	Magnesium	Manganese	Mercury
Molybdenum	Nickel	Phosphorus	Potassium
Rubidium	Selenium	Silica	Silver
Sodium	Strontium	Sulphur	Thallium
Tin	Uranium	Vanadium	Zinc

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Borate (B_4O_7)	In-house (by calculation)

2.58 Environmental Monitoring

(b) Air

(Filters and wipes)
The following element by ICP-MS in accordance with in-house procedures based on NIOSH Method 7303 Issue 1:

Lead

(c) Soils and sludges

Acid extractable using USEPA 200.2 (modified) digestion procedures and TCLP/SPLP USEPA 1311 and 1312 extractable metals by ICP-MS in accordance with APHA 3125:

Detection limits depend on the matrix tested e.g. soils or marine sediments and are available from the laboratory on request.

Aluminium	Antimony	Arsenic	Barium
Beryllium	Bismuth	Boron	Cadmium
Caesium	Calcium	Chromium	Cobalt
Copper	Iron	Lanthanum	Lead
Lithium	Magnesium	Manganese	Mercury
Molybdenum	Nickel	Phosphorus	Potassium
Rubidium	Selenium	Silver	Sodium
Strontium	Thallium	Tin	Uranium
Vanadium	Zinc		

OLEM 9200.2-164, Standard Operating Procedure for an In Vitro Method for the determination of Arsenic and Lead Bioaccessibility (April 20, 2017) / APHA 3125.

(d) Other materials

(Fish and shellfish)
Detection limits depend on the technique used e.g. ICP-MS or ICP-OES and are available from the laboratory on request.

The following elements by ICP-MS in accordance with in-house procedures based on alkaline digestion or APHA 3030 and 3125:

Aluminium	Antimony	Arsenic	Barium
Beryllium	Bismuth	Boron	Cadmium
Caesium	Chromium	Cobalt	Copper
Lanthanum	Lead	Lithium	Manganese

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Mercury	Molybdenum	Nickel	Rubidium
Selenium	Silver	Strontium	Thallium
Tin	Uranium	Vanadium	Zinc

The following element by ICP-OES in accordance with in-house procedures based on APHA 3030 and 3120:

Calcium	Iron	Magnesium	Potassium
Sodium			

(Paint)
The following element by ICP-MS in accordance with in-house procedures:

Lead

2.61 Biological Specimens

(b) Residues in specified veterinary specimens

The following elements by ICP-MS in accordance with in-house procedures based on alkaline digestion or APHA 3030 and 3125:

Aluminium	Antimony	Arsenic	Barium
Boron	Cadmium	Caesium	Calcium
Cerium	Chromium	Cobalt	Copper
Dysprosium	Erbium	Europium	Gadolinium
Holmium	Iron	Lanthanum	Lead
Lithium	Lutetium	Magnesium	Manganese
Molybdenum	Neodymium	Nickel	Potassium
Praseodymium	Rubidium	Samarium	Selenium
Sodium	Strontium	Thulium	Tin
Uranium	Vanadium	Ytterbium	Yttrium
Zinc			

References:

APHA	APHA “Standard Methods for the Examination of Water and Wastewater” (Online Edition)
USEPA	United States Environmental Protection Agency

2.70 Instrumental Techniques

(i) Inductively Coupled Plasma-Mass Spectrometry (ICP-MS)

All techniques pertain to classes of tests 2.24, 2.31, 2.32, 2.41, 2.58, 2.61 as detailed above.

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Explanatory Note:

This 2.70 class of test allows specifically approved senior analysts to develop, validate and use a new test method by the specified instrumental technique for a non-routine analysis in the classes of tests specified. The report over the analyst's personal signature may be endorsed with the IANZ Accreditation symbol. Should the method become routine, an IANZ technical assessment is required before the method can appear on the laboratory's scope of routine accredited tests.

Organics

2.31 Foods

(j) Alcoholic beverages (Wine)

The following tests in wine in accordance with the requirements of the MPI Wine Notice Requirements for Recognised Agencies and Persons (10 March 2022):

Solvents in Wine (including methanol)	GC-FID/FID In-House

2.41 Waters

(a) Potable waters
(b) Non-potable waters
(c) Sewage
(d) Effluents and trade wastes
(h) Boiler waters

The following tests are in accordance with validated in-house methods and based upon standard methods where indicated. A full listing of compounds and detection limits are available from the laboratory upon request.

GC-ECD

Organochlorine pesticides (OCP)	In-house based on USEPA 8081
Pentachlorophenol (PCP)	

GC-MS

Amine acid chelating agents (EDTA & NTA) (potable only)	
Halogenated acetic acids (HAA) (potable only)	In-house based on USEPA 552
Halogenated volatile disinfection by-products (HVDB)	In-house based on USEPA 551

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(potable only)

Volatile organic compounds (VOC) incl. compound classes: • BTEX • Haloaromatics • Halogenated aliphatics • Ketones • Monocyclic aromatic hydrocarbons • Trihalomethanes	In-house based on USEPA 8260, 5021
Semi-volatile organic compounds (SVOC) incl. compound classes: • Acid herbicides (AHB) • Multiresidue pesticides • Organochlorine pesticides (OCP) • Polychlorinated biphenyls (PCB) • Polycyclic aromatic hydrocarbons (PAH)	In-house based on USEPA 8270

GC-MS and GC-FID

Total petroleum hydrocarbons (TPH) (covering C6 – C9)	In-house based on USEPA 5021 and 8260 (GC-MS Head Space)
Total petroleum hydrocarbons (TPH) (covering C7 – C44)	In-house based on USEPA 8015 (GC-FID)

GC-MS/MS

Organochlorine Pesticides	In-house based on USEPA 8081, 8270
Polycyclic Aromatic Hydrocarbons (PAH)	In-house based on USEPA 8270

LC-MS/MS

Acid Herbicides (including PCP) Acrylamide Formaldehyde	In-house based on USEPA 8315

(a) Potable waters

LC-MS/MS

Aldicarb (including Sulfoxide & Sulphone) Isoproturon Oryzalin Oxamyl Primisulfuron Methyl Thiabendazole	

(a) Potable waters

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(b) Non-potable waters
(g) Marine waters

LC-MS/MS

Tributyl Tin

(a) Potable waters
(b) Non-potable waters

LC-MS/MS

Per- and Polyfluoroalkyl Substances (PFAS)	ASTM 8421-24 (modified)

2.58 Environmental Monitoring

(c) Soils and sludges

The following tests are in accordance with validated in-house methods and based upon standard methods where indicated. A full listing of compounds and detection limits are available from the laboratory upon request.

Extraction and analysis of TCLP/SPLP extractions

GC-ECD

Organochlorine pesticides (OCP)	In-house based on USEPA 8081

GC-FID

Total petroleum hydrocarbons (TPH)	In-house based on USEPA 8015

GC-MS

Organonitrogen and Organophosphorus (ON/OP) Pesticides

Volatile organic compounds (VOC) including compound classes: • BTEX • Haloaromatics • Halogenated aliphatics • Ketones • Monocyclic aromatic hydrocarbons • Trihalomethanes	In-house based on USEPA 8260, 5021
Semi-volatile organic compounds (SVOC) including	In-house based on USEPA 8270

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compound classes:

- Acid herbicides (AHB)
- Multiresidue pesticides
- Organochlorine pesticides (OCP)
- Polychlorinated biphenyls (PCB)
- Polycyclic aromatic hydrocarbons (PAH)

GC-MS/MS

Organochlorine Pesticides	In-house based on USEPA 8081, 8270
Polycyclic Aromatic Hydrocarbons (PAH)	In-house based on USEPA 8270

LC-MS/MS

Acid Herbicides (including PCP) Per- and Polyfluoroalkyl Substances (PFAS) Tributyl Tin	ASTM D7968-23 (modified)

(d) Other materials (Environmental wipes)

LC-MS/MS

Methamphetamine Drug Suite by LC-MS/MS	NIOSH 9111 (modified)

2.70 Instrumental Techniques

(a1) Gas chromatography (2.41, 2.58)
(a2) Gas chromatography (including Mass Selective Detection (MSD)) (2.41, 2.58)
(b) High performance liquid chromatography (including UPLC) (2.41)
(d2) Liquid chromatography – Tandem Mass Spectrometry (2.41, 2.58)

All techniques pertain to classes of test shown in parenthesis detailed above.

Explanatory Note:

This 2.70 class of test allows specifically approved senior analysts to develop, validate and use a new test method by the specified instrumental technique for a non-routine analysis in the classes of tests specified. The report over the analyst's personal signature may be endorsed with the IANZ Accreditation symbol. Should the method become routine, an IANZ technical assessment is required before the method can appear on the laboratory's scope of routine accredited tests.

Food and Bioanalytical

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RJ Hill Laboratories Ltd (Hill Labs)
Chemical Testing Laboratory
SCOPE OF ACCREDITATION

Accreditation Number 365

2.31 Foods

(a) Cereals and cereal products
(b) Edible oils, fats and their products
(c) Nuts, fruits and vegetables and derived products
(d) Sauces, herbs, spice and condiments
(f) Dairy products
(g) Meat, poultry and derived products
(h) Fish and fish products
(i) Eggs and egg products
(k) Non-alcoholic beverages
(o) Other prepared foods

The following tests in selected matrices in accordance with validated in-house methods except where otherwise indicated:

Ash	In-house based on AOAC 942.05
Crude protein	In-house based on AOAC 992.15
Moisture	In-house based on AOAC 945.15
Total nitrogen	In-house based on AOAC 992.15

(n) Residues in foodstuffs and crops

In accordance with validated in-house methods in selected matrices by the techniques specified.

GC-MS

Total dithiocarbamates as carbon disulfide
p-Dichlorobenzene (pDCB) (honey, propolis, bee's wax)(SPME)

GC-MS/MS

Amitraz (Total) in Honey (honey and edible infused honey)

Multi-residue screening by Citrate buffered QUECHERS (fruit, vegetables, crops, wine and derived products, honey, milk)

LC-MS/MS

Acidic herbicides (milk, fruit, vegetables, crops and derived products)
Glyphosate, Glufosinate and AMPA (honey, fruit, vegetables, crops and derived products)
Glyphosate, Glufosinate and Metabolites (honey)
Mycotoxins (grain and grain products, feed)

- Aflatoxins (plus peanuts and derived products, and spices)
- Aflatoxins M1 (milk)

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- Fumonisins
- Ochratoxin A
- Trichothecenes
- Zearalenone

Multi-Residue Polar Compounds in Cannabis, oil and derived products

- Chlomequat
- Daminozide

Multi-residue screening by Citrate buffered QUECHERS (fruit, vegetables, wine, crops & derived products, honey, milk)
Polar triazines and their precursors in milk
Streptomycin, Dihydrostreptomycin and Kasugamycin (Kiwifruit)
Tutin (honey: water extraction)
Tutin (honey: acetonitrile extraction)

LC-HRAM-MS

Glucosinolates and SMCO (brassicas)

(o) Other prepared foods

Brix in honey	AOAC 990.35A
Colour in honey	In-house (spectrophotometer)
Diastase in honey	IHC Method 6.2 (modified)
Diastase in honey	DIN 10750-2 (modified)
Electrical Conductivity @ 20 °C in honey	IHC Method 2 (modified)
Moisture in honey	IHC Method 1 (modified)

uHPLC / UV-Vis

3 in 1 Honey (DHA, HMF and MGO)

- Dihydroxyacetone (DHA)
- 5-hydroxymethylfurfural (HMF)
- Methylglyoxal (MGO)

Non-Peroxide Activity as % Phenol Equivalence by calculation from methylglyoxal concentration

Isotopic Ratio Mass Spectroscopy (IRMS)

C-4 Sugars in honey	AOAC 998.12
C-4 Sugars in honey – Screen	AOAC 998.12 (modified)

LC-MS/MS

Analysis of the following analytes in New Zealand Manuka Honey by LC-MS/MS in accordance with in-house procedures:

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Four Chemical Characterisation (NZ Manuka Honey)

- 2-Methoxyacetophenone (2-MAP)
- 2-Methoxybenzoic acid (2-MBA)
- 3-Phenyllactic acid (3-PA)
- 4-Hydroxyphenyllactic acid (4-HPA)

Leptosperin (NZ Manuka Honey)

References:

AOAC AOAC International (Online)

2.32 Drugs and Pharmaceuticals

(e) Hormones and their preparations

Progesterone in powder	HPLC (in-house)
Progesterone in silicone implants	HPLC (in-house)

(i) Other products – Cannabis

Cannabinoids in cannabis	LC-MS/MS (in-house)

2.36 Agricultural Products and Agricultural Materials

(c) Stockfoods

Ash	In-house based on AOAC 942.05
Crude protein	In-house based on AOAC 992.15
Moisture	In-house based on AOAC 945.15
Total nitrogen	In-house based on AOAC 992.15

(h) Plants

GC-MS/MS

Multi-residue screening by Citrate buffered QUECHERS

LC-MS/MS

Multi-residue screening by Citrate buffered QUECHERS

(i) Other agricultural products – Agricultural chemicals

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Amino alcohols	LC-MS/MS (in-house)
Quaternary Ammonium Compounds (QAC)	LC-MS/MS (in-house)
• Benzalkonium chloride	
• Didecyldimethylammonium chloride	

2.70 Instrumental Techniques

(a1) Gas chromatography (2.31)
(a2) Gas chromatography (including Mass Selective Detection (MSD)) (2.31)
(a3) Gas chromatography (including Tandem Mass Spectrometry GC-MS/MS) (2.31)
(b) High performance liquid chromatography (including UPLC) (2.31)
(d2) Liquid chromatography – Tandem Mass Spectrometry (LC-MS/MS) (2.31)(2.32)

All techniques pertain to classes of test shown in parenthesis detailed above.

Explanatory Note:

This 2.70 class of test allows specifically approved senior analysts to develop, validate and use a new test method by the specified instrumental technique for a non-routine analysis in the classes of test specified. The report over the analyst's personal signature may be endorsed with the IANZ Accreditation symbol. Should the method become routine, an IANZ technical assessment is required before the method can appear on the laboratory's scope of routine accredited tests.

Work Place Drug Testing

2.61 Biological Specimens

(a) Residues in specified human specimens

In accordance with the general requirements of the Australian/New Zealand Standard AS/NZS 4308:2008 "Procedures for the collection, detection and quantitation of drugs of abuse in urine".

Screening and confirmation of the following drugs of abuse in urine specimens by LC-MS/MS:

Amphetamine Type Substances (ATS)

Amphetamine	Ephedrine	MDA	MDMA
Methamphetamine	Phentermine	Pseudoephedrine	

Opiates and Opioids

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6-Monoacetylmorphine (MAM)	Codeine	Fentanyl	Hydrocodone
Hydromorphone	Morphine	Oxycodone	Oxymorphone
Tramadol			

Cocaine metabolites

Benzoylecgonine	Ecgonine Methyl Ester (EME)

Benzodiazepines

Alprazolam*	Clonazepam*	Diazepam	Flunitrazepam*
Lorazepam	Midazolam*	Nitrazepam*	Nordiazepam
Oxazepam	Temazepam	Triazolam*	

*The following Benzodiazepine metabolites are analysed and reported:

7-amino-clonazepam	7-amino-flunitrazepam	7-amino-nitrazepam
alpha-hydroxy-alprazolam	alpha-hydroxy-midazolam	alpha-hydroxy-triazolam

Cannabis

THC-COOH

Air Quality

2.58 Environmental Monitoring

(b) Air

A full listing of the compounds and their detection limits are available from the laboratory on request. The laboratory is accredited for analysis only for the methods below.

GC-FID/FID

NIOSH 1403 (charcoal tubes only) (modified)
Alcohols IV

NIOSH 1501 (charcoal tubes and badges) (modified)
Monocyclic Aromatic Hydrocarbons

HPLC

USEPA TO-11A (modified) (DNPH impregnated silica tubes and badges)
Determination of Formaldehyde in Ambient Air Using Adsorbent Cartridge Followed by High Performance Liquid Chromatography (HPLC) [Active Sampling Methodology]

USEPA TO-11A (modified) (DNPH impregnated silica tubes and badges)
Determination of Acetaldehyde in Ambient Air Using Adsorbent Cartridge Followed by High Performance Liquid Chromatography (HPLC) [Active Sampling Methodology]

USEPA TO-11A (modified) (DNPH impregnated silica tubes and badges)
Determination of Carbonyl compounds in Ambient Air Using Adsorbent Cartridge Followed by High Performance Liquid Chromatography (HPLC) [Active Sampling Methodology]

NIOSH 2016 (modified) (DNPH impregnated silica tubes and badges)
Formaldehyde

Gravimetric

AS 3640:2009
Gravimetric determination of inhalable dust in workplace atmospheres

AS 2985:2009
Gravimetric determination of respirable dust in workplace atmospheres

AS/NZS 3580.9.3:2015
Determination of suspended particulate matter – Total suspended particulate matter (TSP) – High volume sampler Gravimetric method

AS/NZS 3580.9.6:2015
Determination of suspended particulate matter – PM_{10} high volume sampler with size selective inlet – Gravimetric method

AS 3580.9.9:2017 (modified)
Determination of suspended particulate PM_{10} low volume sampler – gravimetric method

AS 3580.9.10:2017 (modified)
Determination of suspended particulate $PM_{2.5}$ low volume sampler – gravimetric method

References:

AS	Australian Standard
AS/NZS	Australian and New Zealand Standard
NIOSH	National Institute for Occupational Safety and Health
USEPA	United States Environmental Protection Agency

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