KaizenLAB

LIST OF SERVICES 2017

Accredited by:
Canadian Association for Laboratory Accreditation (CALA)
to ISO 17025 for Specific Tests

333 - 50th Avenue SE
Calgary, AB T2G 2B3
Phone (403) 297-0868
Fax (403) 297-0869

KaizenLAB is a well established Accredited Environmental Laboratory with expertise in environmental organic and inorganic analysis. We have been in operation for 23 years providing analytical services to the environmental, water & waste water and the oil & gas businesses.

We have a team of expert Chemists, Biologists and Technologists who are specialists in environmental testing, data interpretation and customer service. The Lab is equipped with state-of-the-art analytical instrumentation and sample preparation equipment.

Some of the highlights of our services are:

- **BEST TURNAROUND TIME IN THE INDUSTRY (2-4 days)**
- **100% SERVICE ORIENTED LAB**
- **EXCELLENT PERSONALIZED SERVICE**
- **24/7 SUPPORT FOR LAB SERVICES**
- **WEEKEND & HOLIDAY SERVICES**
- **LAB RESULTS AVAILABLE ON-LINE**
- **CALA ACCREDITED LABORATORY**

Should you require an analysis not listed in this Schedule please contact our Customer Services Group:

Client Services Team

Regular hours: 7:30 am to 5:30 pm Monday to Friday
7:30 am to 4:00 pm Saturday/Sunday and holidays

Office: 403-297-0699
Toll free: 1-888-525-5902
Emergency (afterhours): 403-815-5815
email: kaizencsr@kaizenlab.ca

For sales inquiries please contact:

Koshy Malayil
Chief Technical Officer
Office: 403-297-0412
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Lab Manager
Office: 403-930-0188
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SOIL - General Salinity Packages

Basic Salinity
pH, EC , Na, K, Ca, Mg, SAR, Saturation Percentage

Detailed Salinity
pH, EC, Cl, SO4, Ca, Mg, K, Na, SAR, Saturation Percentage

Nitrogen Add-on for Salinities
Ammonia, Nitrate and Nitrite

SOIL - General Inorganics

Ammonia, soluble (as N)

Chloride

Cyanide

Electrical Conductivity (Saturated Paste)

pH (1:2), Calcium Chloride extraction

pH (Saturated Paste)

Phenols (4AAP colorimetric method)

Sodium Adsorption Ratio (SAR)
Calcium, Magnesium and Sodium plus SAR

Sulphate (%) by ASTM C1580

Sulphate (Saturated paste)

Total Kjeldahl Nitrogen (TKN)

Total Nitrogen
TKN, NO2, NO3 and Total Nitrogen

SOIL - Nutrients

Available Ammonia (NH3-N)
Available ammonia (as N)

Available Nitrate Nitrogen (NO3-N)

Available Nitrite Nitrogen (NO2-N)

Available NPK
Available nitrate (as N), Available phosphorus, Available potassium

Available NPKS
Available nitrate (as N), Available phosphorus, Available potassium, Available sulphate sulphur(SO4-S)

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SOIL - Metals

AB Tier 1 Metals
Sb, As, Ba, Be, Sat-B, Cd, Cr, Cr-VI, Co, Cu, Pb, Hg, Mo, Ni, Se, Ag, Tl, Sn, V, U and Zn

Boron by Saturated Paste Extract

CCME Metals
Sb, As, Ba, Be, HWS-B or Sat-B, Cd, Cr, Cr-VI, Co, Cu, Pb, Hg, Mo, Ni, Se, Ag, Tl, Sn, V, U and Zn

Chromium (Hexavalent)

Extractable Barium

Mercury

Metal: any single Metal (except Mercury)

Metal: each additional Metal (except Mercury)

Saskatchewan Metals Package
Ba, Cd, Cr, Cu, Pb, Hg, Ni, V, Zn

SOIL - Physical Parameters

Atterberg Limits

Bulk Density

Grain Size (0.075 mm sieve)

Moisture Content

Particle Size Distribution by Hydrometer: Regular
% Clay, % Sand, % Silt and Texture

Particle Size Distribution by Hydrometer: Sand Classification
% Sand (Coarse & Very Coarse), % Sand (Medium) and % Sand (Very Fine & Fine)

Saturation Percentage

Specific Gravity (as received)

Specific Gravity (Saturated Paste)

Sump Suitability Package
Atterberg Limits, Texture - Hydrometer, Grain Size (75 micron)

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SOIL - Organics

Alcohols

Methanol, Ethanol, Propanol, Isopropanol, Butanol and Pentanol

BTEX

Benzene, Toluene, Ethylbenzene and Xylenes

CCME Petroleum Hydrocarbons

BTEX and Fractions 1 to 4

CCME Petroleum Hydrocarbons in soil: F2, F3 & F4 (C10-C50)

F2, F3 and F4

CCME Petroleum Hydrocarbons: F4G

Fraction 4 by Gravimetry

Creosote related target compounds (PAH's & Pentachlorophenol)

Regular PAH's (16 compounds) plus Carbazole, Dibenzofuran, C1 and C2-Naphthalenes, Pentachlorophenol and C1-Phenanthrenes/Anthracenes

Glycols

Ethylene Glycol, DiethyleneGlycol, Propylene Glycol, Triethylene Glycol and Tetraethylene Glycol

Mineral Oil & Grease

Oil & Grease (Dean & Stark)

Organic Matter

Polychlorinated Biphenyls

Aroclors 1016, 1221, 1232, 1242, 1248, 1254, 1260, 1262, 1268, Total PCBs

Polycyclic Aromatic Hydrocarbons (PAH)

Acenaphthene, Acenaphthylene, Anthracene, Bz(a)anthracene, Bz(a)pyrene, Bz(b+j,k)fluoranthene, Benzo(g,h,i)perylene, Chrysene, Dibenzo(a,h)anthracene, Fluoranthene, Fluorene, Indeno(1,2,3-c,d)pyrene, Naphthalene, Phenanthrene, Pyrene

Saskatchewan Hydrocarbons: BTEX / TEH

BTEX and Total Extractable Hydrocarbons (C11-C22, C23-C60)

Solvent scan

Acetone, BTEX, n-Butyl Alcohol, Carbon Disulfide, Cresols & Cresylic Acid, Cyclohexanone, Ethyl Acetate, Ethyl Ether, Isobutanol, Methanol, MEK, Nitrobenzene, 2-Nitropropane and Pyridine

Sulfolane

Total Extractable Hydrocarbons (C10-C50)

Volatile Organic Compounds

BTEX, Trihalomethanes, Halogenated Aliphatics (24 compounds), Halogenated Aromatics (19 compounds), MTBE

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SOIL - Organics - BC Criteria

Extractable Hydrocarbons - BC criteria (not PAH adjusted)

Extractable Hydrocarbons - BC criteria (PAH adjusted)

PAH, LEPH - Light Extractable Petroleum Hydrocarbons (C10-C19) and HEPH - Heavy Extractable Petroleum Hydrocarbons (C19-C32)

Hydrocarbons - BC criteria (not PAH adjusted)

BTEX, VPH, and EPH

Hydrocarbons - BC criteria (PAH adjusted)

BTEX, VPH, LEPH, HEPH and PAH

Volatile Petroleum Hydrocarbons - BC Criteria

Benzene, Toluene, Ethylbenzene, Xylenes and VPH - Volatile Petroleum Hydrocarbons (C6-C10)

WASTE - Toxicity

Microtox in Drilling Waste

Microtox in soil or sludge

Microtox in water or liquid

Microtox on charcoal treated sample

Microtox Threshold Study

WASTE - Salinity

Detailed Salinity for Drilling Waste

pH, EC, Cl, SO4, Ca, Mg, K, Na, SAR, Specific Gravity

Detailed Salinity for Drilling Waste with Nitrogen

pH, EC, Cl, SO4, Ca, Mg, K, Na, SAR, Specific Gravity plus Ammonia, Nitrite and Nitrate

WASTE - Metals

Extractable Barium

Metals for Drilling Waste (includes Extractable Barium)

Sb, As, Ba, Be, Sat-B, Cd, Cr, Cr(VI), Co, Cu, Pb, Hg, Mo, Ni, Se, Ag, Sr, Tl, Sn, V, Zn, extractable Ba

WASTE - Organics

CCME Hydrocarbons for Drilling Waste

BTEX and Fractions 1 to 4

Oil & Grease (Dean & Stark) for Drilling Waste

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WASTE - Landfill Characterization

AB Class I Landfill Package

pH, Flashpoint, Paint Filter, TCLP Metals, TCLP Solvents

AB Class II Landfill Package

pH, Paint Filter, Flashpoint, TLCP BTEX and TCLP Metals

BC Landfill Package

pH, Paint Filter, Flashpoint, TCLP Metals, TCLP BTEX, Total BTEX

City of Calgary Landfill Package

pH, EC, Flashpoint, Cl, Ca, Mg, Na, SAR, Sb, As, Ba, Be, Sat-B, Cd, Cr, Co, Cu, Pb, Hg, Mo, Ni, Se, Ag, Tl, Sn, U, V, Zn, BTEX, TPH, TCLP Metals, Paint Filter

Flashpoint of soil or solid sample

Flashpoint of water or liquid sample

Ignitability (Rope Burn Test)

Paint Filter Test

pH (1:2)

SK Landfill Package

pH, Flashpoint, Paint Filter, TCLP Metals, TCLP Benzene, Total TEX (Toluene, Ethylbenzene, Xylenes)

TCLP BTEX

TCLP Benzene, Toluene, Ethylbenzene and Xylenes

TCLP Hexavalent Chromium

TCLP Lead

TCLP Metals

TLCP Sb, As, Ba, Be, B, Cd, Cr, Co, Cu, Fe, Pb, Hg, Ni, Se, Ag, Tl, U, V, Zn and Zr

TCLP Solvent Scan

Acetone, BTEX, n-Butyl Alcohol, Carbon Disulfide, Cresols & Cresylic Acid, Cyclohexanone, Ethyl Acetate, Ethyl Ether, Isobutanol, Methanol, MEK, Nitrobenzene, 2-Nitropropane and Pyridine

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WATER - General Inorganics

Alkalinity

Ammonia-Nitrogen

Anions
Chloride, Fluoride, Nitrate, Nitrite, Sulphate and Phosphate

Biochemical Oxygen Demand (BOD)

Bromate

Bromide

Carbonaceous Oxygen Demand (CBOD)

Cations
Ca, Mg, K and Na

Chemical Oxygen Demand (COD)

Chlorate

Chlorate and Chlorite

Chloride

Chlorite

Cyanide

Dissolved Kjeldahl Nitrogen (DKN)

Dissolved Oxygen

Dissolved Phosphorus (DP)

Electrical Conductivity (EC)

Fluoride

Hardness
Dissolved Ca, Dissolved Mg, Dissolved K, Dissolved Na, Hardness

Nitrate+Nitrite-Nitrogen
NO2-N, NO3-N, Total NO2+NO3-N

pH

Phenols (4AAP colorimetric method)

Reactive Silica

Resistivity

Sodium Adsorption Ratio (SAR)
Calcium, Magnesium and Sodium plus SAR

Sulphide

Total Dissolved Solids (TDS)

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WATER - General Inorganics (contd.)

Total Kjeldahl Nitrogen (TKN)

Total Nitrogen
Total Kjeldahl Nitrogen, Nitrate and Nitrite

Total Phosphorus (TP)

Total Residual Chlorine

Total Solids

Total Suspended Solids (TSS)

True colour

Turbidity

UV Absorbance

WATER - Microbiology

E.Coli in Water

Heterotrophic Plate Count

Iron Reducing Bacteria (IRB)

Microcystins

Sulphate Reducing Bacteria (SRB)

Thermotolerant (Fecal) Coliforms

Total and Fecal Coliforms

Total and Fecal Coliforms and E. Coli in Water

Total Coliforms and E. coli

Total Coliforms in Water

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WATER - Metals

Dissolved Hexavalent Chromium (Cr VI)

Dissolved Mercury

Dissolved Metal: any single Dissolved Metal (except Mercury)

Dissolved Metal: each additional Dissolved Metal (except Mercury)

Dissolved Metals - Full Scan

Al, Sb, As, Ba, Be, Bi, B, Cd, Ca, Cr, Co, Cu, Fe, Pb, Li, Mg, Mn, Hg, Mo, Ni, P, K, Se, Si, Ag, Na, Sr, S, Tl, Sn, Ti, U V, Zn and Zr

Dissolved Metals including AB Tier 1 Metals

Al, Sb, As, Ba, Be, B, Cd, Cr(III), Cr(VI), Co, Cu, Fe, Pb, Mn, Hg (low-level), Mo, Ni, Se, Ag, Sr, Tl, Sn, U, V and Zn

Dissolved Metals including Mercury

Al, Sb, As, Ba, Be, B, Cd, Cr, Co, Cu, Fe, Pb, Mn, Hg (standard-level), Mo, Ni, Se, Ag, Sr, Tl, Sn, U, V and Zn

Total Hexavalent Chromium (Cr VI)

Total Iron and Managanese

Total Lead

Total Mercury

Total Metal: any single Total Metal (except Mercury)

Total Metal: each additional Total Metal (except Mercury)

Total Metals - Drinking Water

Al, Sb, As, Ba, B, Cd, Cr, Cu, Fe, Pb, Mn, Hg, Se, U and Zn

Total Metals - Full Scan

Al, Sb, As, Ba, Be, Bi, B, Cd, Ca, Cr, Co, Cu, Fe, Pb, Li, Mg, Mn, Hg, Mo, Ni, K, Se, Si, Ag, Na, Sr, S, Tl, Sn, Ti, U V, Zn and Zr

Total Metals including AB Tier 1 Metals

Al, Sb, As, Ba, Be, B, Cd, Cr(III), Cr(VI), Co, Cu, Fe, Pb, Mn, Hg (low-level), Mo, Ni, Se, Ag, Sr, Tl, Sn, U, V and Zn

Total Metals including Mercury

Al, Sb, As, Ba, Be, B, Cd, Cr, Co, Cu, Fe, Pb, Mn, Hg (standard-level), Mo, Ni, Se, Ag, Sr, Tl, Sn, U, V and Zn

WATER - Salinity

Basic Salinity

pH, EC, Cl, Ca, Mg, Na, SAR

Detailed Salinity

pH, EC, Cl, SO4, Ca, K, Mg, Na and SAR

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WATER - Organics

Alcohols

Methanol, Ethanol, Propanol, Isopropanol, Butanol and Pentanol

BTEX

Benzene, Toluene, Ethylbenzene and Xylenes

CCME Petroleum Hydrocarbons

BTEX and Fractions 1 to 2

Creosote related target compounds (PAH's & Pentachlorophenol)

Regular PAH's (16 compounds) plus Carbazole, Dibenzofuran, C1 and C2-Naphthalenes, Pentachlorophenol and C1-Phenanthrenes/Anthracenes

Dissolved Organic Carbon (DOC)

Glycols

Ethylene Glycol, DiethyleneGlycol, Propylene Glycol, Triethylene Glycol and Tetraethylene Glycol

Glyphosate

Haloacetic Acids

Bromoacetic Acid, Bromochloroacetic Acid, Chloroacetic Acid, Dibromoacetic Acid, Dichloroacetic Acid and Trichloroacetic acid

MCPA

Methanol

Nitrilotriacetic Acid (NTA)

Oil and Grease

Pesticides & Herbicides

Atrazine, Bz(a)pyr, Bromoxynil, Chlorpyrifos, Cyanazine, Diazinon, Dicamba, 2,4-D, Diclofop-me, Diuron, Dimethoate, Glyphosate, Malathion, Methoxychlor, Metolachlor, Metribuzin, NTA, Picloram, Simazine, Terbufos, Triallate,Trifluralin

Polychlorinated Biphenyls

Aroclors 1016, 1221, 1232, 1242, 1248, 1254, 1260, 1262, 1268, Total PCBs

Polycyclic Aromatic Hydrocarbons (PAH)

Acenaphthene, Acenaphthylene, Anthracene, Bz(a)anthracene, Bz(a)pyrene, Bz(b+j,k)fluoranthene, Benzo(g,h,i)perylene, Chrysene, Dibenzo(a,h)anthracene, Fluoranthene, Fluorene, Indeno(1,2,3-c,d)pyrene, Naphthalene, Phenanthrene, Pyrene

Sulfolane

Total Extractable Hydrocarbons (C10-C50) in water

Total Organic Carbon

Trihalomethanes

Bromoform, Bromodichloromethane, Dibromochloromethane and Chloroform

Volatile Organic Compounds (Drinking Water list)

Benzene, Carbon Tetrachloride, Chlorobenzene, 1,2 and 1,4-Dichlorobenzene, 1,2-dichloroethane, Ethylbenzene, Tetrachloroethene, Vinyl Chloride and Xylenes

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WATER - Organics (contd.)

Volatile Organic Compounds (Full list - including AB Tier1 - 54 compounds)

BTEX, Trihalomethanes, Halogenated Aliphatics (24 compounds), Halogenated Aromatics (19 compounds), MTBE

WATER - Organics - BC Criteria

Extractable Hydrocarbons - BC criteria (not PAH adjusted)

Extractable Hydrocarbons - BC criteria (PAH adjusted)

PAH, LEPH - Light Extractable Petroleum Hydrocarbons (C10-C19) and HEPH - Heavy Extractable Petroleum Hydrocarbons (C19-C32)

Hydrocarbons - BC criteria (not PAH adjusted)

BTEX, VPH and EPH

Hydrocarbons - BC criteria (PAH adjusted)

BTEX, VPH, LEPH, HEPH and PAH

Volatile Petroleum Hydrocarbons - BC Criteria

Benzene, Toluene, Ethylbenzene, Xylenes and VPH - Volatile Petroleum Hydrocarbons (C6-C10)

WATER - Drinking Water Packages

Basic Water Potability Analysis (Potability pkg #1)

pH, EC, Ca, Mg, K, Na, Dissolved Fe, Cl, F, NO2-N, NO3-N, SO4, PO4, Carbonate, Bicarbonate, Hydroxide, Alkalinity, Hardness and TDS

Routine Water Potability Analysis (Potability pkg #2)

pH, EC, Ca, Mg, K, Na, Dissolved Fe, Dissolved Mn, Cl, F, NO2-N, NO3-N, SO4, PO4, Carbonate, Bicarbonate, Hydroxide, Alkalinity, Hardness, TDS, Turbidity and True Colour

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TURNAROUND TIME & SAMPLE STORAGE

Tests can be requested according to the desired turnaround time as follows (working/business days):

	Drilling Waste & Hydrometer Testing	Regular Soil & Water
Regular	**2 days**	**4 days***
Rush	**Next Day**	**2 days**
Priority	**Same Day****	**Next Day**
Emergency	**Weekends, Holidays & Same-day**	

Due to the nature of some tests, 'Rush' analysis may not always be possible. Coordination with your Project Coordinator prior to submission of the samples to the lab is strongly advised.

The following additional charges will apply for fast turn-around time:

Rush	**50%**
Priority	**100%**
Emergency	**200%**

All samples will be stored until disposal date (30 days from the date received for water and 60 days for soil) unless other instructions are received. Additional charges will apply to extend sample storage depending on the number of samples and time to be stored.

Sample Handling and Disposal: $3 per sample

All prices are subject to change without notice.
Please call for a quotation for parameters that are not listed in the price book.

Chain of Custody and Supply Request forms are available at our website: www.kaizenlab.ca

* IRB/SRB: 10 days; Crypto/Giardia: 7 days; Pesticides, Alkylated PAH's and Open Scans: 15 days.
** If sample is received after noon, it will be reported next day before noon