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SCOPE OF ACCREDITATION

**ACTIVATION LABORATORIES LTD.
41 Bittern Street
Ancaster, ON
L9G 4V5**

Accredited Laboratory No. 266

(Conforms with requirements of ISO/IEC 17025:2005, RG-FORENSIC , RG-LAB, RG-MINERAL)

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CLIENTS SERVED: All interested parties

FIELDS OF TESTING: Chemical/Physical, Mechanical/Physical

FORENSICS DISCIPLINE(S): Forensic Chemistry / Trace Evidence

PROGRAM SPECIALTY AREA: Agriculture Inputs, Food, Animal Health and Plant Protection (PSA-AFAP) , Environmental, Forensic, Mineral Analysis

SCOPE ISSUED ON: 2018-03-05

ACCREDITATION VALID TO: 2022-02-26

SCC GROUP ACCREDITATION

This laboratory is a party to a SCC Group Accreditation with the following facilities in accordance with SCC's policy on Group Accreditation as documented in Accreditation Services Accreditation Program Overview.

Standards Council of Canada Accredited Laboratory No. 266

- Activation Laboratories Ltd., Thunder Bay, Ontario, Accredited Laboratory No. 673
- Activation Laboratories Ltd., Kamloops, BC, Accredited Laboratory No. 790
- Activation Laboratories Ltd., Timmins, Ontario, Accredited Laboratory No. 799

ANIMAL AND PLANTS (AGRICULTURE)

Other

(Vegetation)

QOP AquaGeo	Multi-Element Analysis Using Aqua Regia Extraction and Inductively Coupled Plasma Atomic Emission Spectrometry (Cu, Pb, Ag, Ni)
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ELASTOMERS AND PROTECTIVE AND OTHER COATINGS

(Paints and Organic Coatings)

ASTM B499	Standard Test Method for measuring coating thickness by magnetic method non-magnetic coating on magnetic base
ASTM D3359	Standard test method for measuring adhesion by tape test
ASTM D3363	Standard test method for film hardness by pencil test

ENVIRONMENTAL AND OCCUPATIONAL HEALTH AND SAFETY

Environmental

Soil (Radiochemistry)

(Alpha and Beta Emitting Radionuclides - Soil)

QOP Gross Alpha and Beta	Measuring gross alpha and gross beta particle activities in water and soil
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(Gamma Emitting Radionuclides - Soil)

QOP Gamma Spec	Measuring gamma emitting radionuclides in water and soil
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(Ra-226 - Soil/High Resolution Alpha Spectrometry)

Standards Council of Canada Accredited Laboratory No. 266

QOP Ra-226 RA-226 for water and soil using High Resolution Alpha Spectrometry

Soil/Sediment

(BTEX in Soil/Sediment/SPME-GC/MS)

QOP BTEX GC/MS analysis of benzene, toluene, ethylbenzene and xylenes
Benzene
Ethylbenzene
m/p-xylene
o-xylene
Toluene

(Cyanide - Soil/Sediment / Automated UV digestion/colourimetric)

QOP Cyanide Automated analyzer method for the determination of Total CN in water/soil

(Mercury - Soil/Cold Vapour FIMS)

QOP Hg FIMS Mercury Analysis by Aqua Regia Leach and Cold Vapour Atomic Absorption Spectrophotometry (Package 1G: Hg)

(Metals - Soil/ICP - digestion)

QOP AquaGeo Multi-Element Analysis Using Aqua Regia Extraction and Inductively Coupled Plasma Atomic Emission Spectrometry
Cadmium
Chromium
Cobalt
Copper
Lead
Nickel
Zinc

(Metals - Soil/ICP-MS)

QOP Ultra Trace 1 Trace elements by aqua regia digestion and ICP/MS
Antimony
Arsenic
Beryllium
Cadmium

Chromium
Cobalt
Copper
Lead
Nickel
Zinc

Water (Inorganic)

(Alkalinity - Water/Titrimetric)

QOP Alkalinity Titration method for the determination of alkalinity of water

(Ammonium - Water/pH/mV meter with ion selective electrode)

QOP Ammonia Electrode method for the determination of ammonia in water

(Conductivity - Water/Conductivity meter)

QOP Conductivity Electrode method for measuring the conductivity of water

(Cyanide - Water/Automated UV digestion/colourimetric)

QOP Cyanide Automated analyzer method for the determination of Total CN
in water/soil

(DOC - Water/TOC instrument)

QOP TOC,
Verbatim United States Determination of Total Organic Carbon and Dissolved Organic
Pharmacopeia <643> Acid

(Hydride Metals - Water/ICP-MS)

QOP HydroGeo Hydrogeochemistry by ICP/MS
Total Antimony
Total Arsenic
Total Selenium

(Ions - Water/Ion Chromatography)

QOP Anions, EPA 300.1 Determination of Inorganic anions in water by IC as described
by EPA Method 300.1

Dissolved Orthophosphate
Dissolved Bromide
Dissolved Fluoride
Dissolved Nitrate
Dissolved Nitrite
Dissolved Sulfate
Dissolved Chloride

(Mercury - Water/Cold Vapour AA)

QOP Hg FIMS Mercury Analysis by Aqua Regia Leach and Cold Vapour
Atomic Absorption Spectrophotometry (Hg)

(Metals - Water/ICP-MS)

QOP HydroGeo Hydrogeochemistry by ICP/MS
Dissolved Aluminum
Dissolved Barium
Dissolved Beryllium
Dissolved Boron
Dissolved Cadmium
Dissolved Calcium
Dissolved Chromium
Dissolved Cobalt
Dissolved Copper
Dissolved Iron
Dissolved Lead
Dissolved Magnesium
Dissolved Manganese
Dissolved Molybdenum
Dissolved Nickel
Dissolved Silver
Dissolved Strontium
Dissolved Thallium
Dissolved Tin
Dissolved Titanium
Dissolved Uranium
Dissolved Vanadium
Dissolved Zinc
Potassium
Sodium

(Metals - Water/ICP-OES)

Standards Council of Canada Accredited Laboratory No. 266

QOP Water Determination of Multi-Elements in waters using inductively coupled plasma atomic emission spectrometry

- Dissolved Aluminum
- Dissolved Barium
- Dissolved Beryllium
- Dissolved Boron
- Dissolved Cadmium
- Dissolved Calcium
- Dissolved Chromium
- Dissolved Cobalt
- Dissolved Copper
- Dissolved Iron
- Dissolved Lead
- Dissolved Magnesium
- Dissolved Manganese
- Dissolved Molybdenum
- Dissolved Nickel
- Dissolved Phosphorus
- Dissolved Silica
- Dissolved Silver
- Dissolved Strontium
- Dissolved Thallium
- Dissolved Tin
- Dissolved Titanium
- Dissolved Uranium
- Dissolved Vanadium
- Dissolved Zinc

(pH - Water/pH meter)

QOP pH pH Analysis of Waters Using ORION 720A pH Meter

(Total Metals - Water/ICP-MS-digestion)

QOP HydroGeo Hydrogeochemistry, by ICP/MS

- Total Antimony
- Total Arsenic
- Total Cadmium
- Total Calcium
- Total Chromium
- Total Cobalt
- Total Copper
- Total Iron
- Total Lead

Total Magnesium
Total Manganese
Total Nickel
Total Phosphorus
Total Selenium
Total Vanadium
Total Zinc

(Total Metals - Water/ICP-OES)

QOP Water Determination of Multi Elements in water using inductively coupled plasma atomic emission spectrometry
Total Antimony
Total Arsenic
Total Cadmium
Total Calcium
Total Chromium
Total Cobalt
Total Copper
Total Iron
Total Lead
Total Magnesium
Total Manganese
Total Nickel
Total Phosphorus
Total Selenium
Total Silica
Total Vanadium
Total Zinc

(TSS - Water/Gravimetric)

QOP TSS Filter method for the measurement of total suspended solids in water by gravimetry

(Turbidity - Water/Nephelometric)

QOP Turbidity Turbidimeter method for the measurement of turbidity of water

Water (Organic)

(BTEX in water/SPME-GC/MS)

QOP BTEX

GC/MS analysis of benzene, toluene, ethylbenzene and xylenes

Benzene
Ethylbenzene
m/p-xylene
o-xylene
Toluene

(Phenol - Water/Wastewater/UV digestion/colourimetric)

QOP Phenol Automated Analyzer Method for the Determination of Total Phenol in Water

Water (Radiochemistry)

(Alpha and Beta Emitting Radionuclides - Water)

QOP Gross Alpha and Beta Measuring gross alpha and gross beta particle activities in water and soil

(Gamma Emitting Radionuclides - Water)

QOP Gamma Spec Measuring gamma emitting radionuclides in water and soil

(Ra-226 - Water/High Resolution Alpha Spectrometry)

QOP Ra-226 Ra-226 for water and soil using High Resolution Water Spectrometry

Occupational Health and Safety:

QOP U Isotope Hair Uranium isotopic ratio in hair samples by ICP/MS
QOP U Isotope Urine Uranium isotopic ratio in urine samples by ICP/MS
QOP Uranium Hair Total uranium concentration in hair samples by ICP/MS
QOP Uranium Urine Total uranium concentration in urine by ICP/MS

METALLIC ORES AND PRODUCTS

Articles of Metal:

(Chemical Tests)

QOP Carbon& Sulphur Total Sulphur Content in Metals by the Combustion

QOP ICP MET Instrumental Method (Sulphur Content by Combustion/IR)
Multi-Element Chemical Analysis of Metallic Material using (ICP-AES) for alloys of Steel, Stainless Steel, Copper, Aluminum, Nickel (Chemical analysis of metals for the following elements: Mn, P, Si, Cr, Ni, Mo, Cu, V, Al - Co, Zr, Cb, Nb, Ta, W, Mg, Fe, Sn, Sb, Ag, Bi, Sr, Cd)

(Laboratory Corrosion Tests)

ASTM B117 Procedure for salt spray testing (fog testing) (Salt spray exposure to various parts for a specified amount of time or during cyclical corrosion testing)

ASTM B154 Standard test method for mercurous nitrate test for copper and copper alloys

ASTM D1735 Standard practice for water resistance of coating using water fog apparatus

ASTM G48, method A and B only Standard test method for pitting and crevice corrosion resistance of stainless steels and related alloys by use of ferric chloride solution

ASTMD2247 Standard Practice for Testing Water Resistance of Coatings in 100% Relative Humidity

(Mechanical Tests)

ASTM A370 Standard test methods and definitions for mechanical testing of steel products

ASTM A489 Carbon Steel Lifting Eyes

ASTM E10 Brinell Hardness of Metallic Materials

ASTM E18 Rockwell Hardness of Metallic Materials

ASTM E190 Guided Bend Test for Ductility of Welds

ASTM E23 Notched Bar Impact Testing of Metallic Materials

ASTM E290 Bend Testing of Material for Ductility

ASTM E517 Plastic Strain Ratio r for Sheet Metal

ASTM E646 Tensile Strain-Hardening Exponents (n-values)

ASTM E8 Tension Testing of Metallic Materials

ASTM F606, Except for section 7 (Embrittlement test) Standard test method for mechanical properties of externally and internally threaded fasteners, washers, and rivets

(Metallic Coatings)

ASTM A428 Standard test method for weight of coating on aluminium coated iron or steel articles

ASTM A90 Standard test method for weight of coating on zinc coated iron or steel articles

ASTM B487 Using Microscopic Examination or Instrumentation to determine the coating thickness on various materials

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ASTM B578	Standard test method for microhardness of electroplated coating
ASTM D3170	Test Method for Chip Resistance of Coatings

(Metallography)

ASTM A247	Standard test method for the microstructure of graphite in iron castings
ASTM A262, Method A only	Standard tests method for oxalic acid etch test for austenitic stainless steel
ASTM A923	Standard test method for detecting detrimental intermetallic phase in duplex stainless steel
ASTM E1077	Standard test method for estimating the depth of decarburization of steel
ASTM E112	Determining Average Grain Size
ASTM E3	Preparation of metallographic specimens
ASTM E340	Standard test method for macroetch metals and alloy
ASTM E381	Macrotech for Inspection and Rating of Steel Products
ASTM E384	Method for microindentation hardness test
ASTM E45	Determination of Inclusion Content of Steel
ASTM E562	Systematic Manual Point Count

Metallic Ores:

Rocks and Ores

Refer to minor sub-heading: **Sediments**

Sediments

QOP H ₂ O:	Gravimetric Determination of H ₂ O +/H ₂ O-Water of Soils and Rocks (Gravimetric Package 4F: H ₂ O+/H ₂ O-)
QOP Hg FIMS	Mercury Analysis by Aqua Regia Leach and Cold Vapour Atomic Absorption Spectrophotometry (Package 1G: Hg)

Mineral Analysis Testing

(CAN-P-1579)

Contract Settlement Assaying

Refer to minor sub-heading: **Geotechnical Testing**

Geotechnical Testing

Refer to minor sub-heading: **Mineral Assaying**

Mineral Assaying

QOP 1B2 ICP-MS	Platinum Group Elements using NiS Fire Assay and ICP-MS (Ir, Ru, Rh, Pt, Pd, and Re by Fire Assay with ICP-MS finish)
QOP AA - Au	Procedure for analysis of Gold and/or Silver by Fire Assay with AA or Gravimetric finish
QOP AquaGeo	Multi-Element Analysis Using Aqua Regia Extraction and Inductively Coupled Plasma Atomic Emission Spectrometry for Ag, Co, Cu, Ni, Pb, Zn
QOP ASSAY	Assay Analysis Using Aqua Regia and Inductively Coupled Plasma Atomic Emission Spectrometry for Ag, Co, Cu, Ni, Pb, Zn
QOP INAAGEO	Procedures for Instrumental Neutron Activation Analysis (INAA) for Mineral Samples As, Au, Cr, Co, Sb, Sc, Sn, Ta, U (238), U (235 by DNC, Delayed Neutron Counting), W
QOP PGE ICP-MS	Platinum Group Elements Analysis using Fire Assay and Inductively Coupled Plasma Mass Spectrometry for Au, Pt, Pd
QOP ProTRACE XRF	Trace Element analysis using XRF Spectrometer (Quantify analytes by pressing into a disk and using X-ray Fluorescence spectrophotometry - Rb, Sr, Y, Zr, Nb, Mo, Th, U, Sn, Pb, Ga, Ba, Cr, Co, V)
QOP Sodium Peroxide	Multi-Element Analysis using Sodium Peroxide Extraction and Inductively Couple Plasma Atomic Emission Spectrometry for Al, As, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Ni, K, Si, S, Ti, Zn
QOP TOTAL	Multi-Element Analysis Using Hydrofluoric/HNO ₃ /Perchloric/HCl Acid Digestion and Inductively Coupled Plasma Atomic Emission Spectrometry for Ag, Co, Cu, Ni, Pb, Zn
QOP Total Assay	Total Assay Digestion using Hydrofluoric/HNO ₃ /Perchloric/HCl Acid with Inductively Coupled Plasma Atomic Emission Spectrometry for Ag, Co, Cu, Ni, Pb, Zn
QOP Ultra Trace 1	Trace elements by aqua regia digestion and ICP/MS-for Li, Be, B, Na, Mg, Al, K, Ca V, Cr, Mn, Fe, Co, Ni, Cu, Zn, Ga, Ge, As, Se, Rb, Sr, Y, Zr, Nb, Mo, Ag, Cd, In, Sn, Sb, Te, Cs, Ba, La, Ce, Nd, Sm, Eu, Tb, Yb, Lu, Hf, Ta, W, Re, Au, Tl, Pb, Bi, Th, U
QOP WRA	Multi-Element Whole Rock Analysis - Using Multi-Element Fusion Inductively Coupled Plasma - Atomic Emission Spectrometer (Al ₂ O ₃ , CaO, Fe ₂ O ₃ , K ₂ O, LOI, MgO, MnO, Na ₂ O, P ₂ O ₅ , SiO ₂ , TiO ₂ , Ba, Be, Sc, Sr, V, Y, Zr)
QOP WRA4B2	Trace Element Suite by Fusion Method 4B and Inductively Coupled Plasma-Mass Spectrometer (ICP/MS) Ba, Hf, Nb, Rb, Sn, Ta, Th, U, V, Y, Zr, La, Ce, Pr, Nd, Sm, Eu, Gd, Tb, Dy, Ho, Er, Tm, Yb, Lu
QOP XRF FUSION	Fusion using XRF spectrometer (Quantify analytes by X-ray Fluorescence which are fused with Lithium and reported in the oxide form - SiO ₂ , Al ₂ O ₃ , Fe ₂ O ₃ , MnO, MgO, CaO, Na ₂ O, K ₂ O, TiO ₂ , P ₂ O ₅ , Cr ₂ O ₃ , Co ₃ O ₄ , NiO, Zn, Sn and Cu)

FORENSICS

Forensic Chemistry / Trace Evidence

Techniques for which laboratory is accredited:

- a. QOP Ignitable : The analysis for the presence/absence of ignitable liquids in fire debris samples.

Notes:

ISO/IEC 17025: General Requirements for the Competence of Testing and Calibration Laboratories (ISO/IEC 17025-2005)

RG - FORENSIC: SCC Requirements and Guidance for the Accreditation for Forensic Testing Laboratories

RG - MINERAL: SCC Requirements and Guidance for the Accreditation of Mineral Analysis Testing Laboratories

RG - LAB: SCC Requirements and Guidance for the Accreditation of Testing Laboratories

Elias Rafoul, Vice President
Accreditation Services

Date: 2018-03-05

Number of Scope Listings: 87

Number of Forensic Techniques: 1

SCC 1003-15/308

Partner File #0

Partner: SCC