2026

ANALYTICAL CAPABILITIES

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Water and Wastewater
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Wet Chemistry

Parameter	Method[1]	MDL (mg/L)
Acidity	SM 2310 B Titrimetric	2
Alkalinity	SM 2320 B Titrimetric	
Includes HCO3, CO3, OH and Total Alkalinity		2
Biological Activity Reaction Test (BART)		
Iron Related Bacteria	HACH IRB-BART	0, 1
Slime Forming Bacteria	HACH SLYM-BART	0, 1
Sulfate Reducing Bacteria	HACH SRB-BART	0, 1
Biological Oxygen Demand (BOD)	SM 5210B Electrode 5-day (20C)	2
Set-Up Charge for less than 4 samples		
Bromide	EPA M300.0 Ion Chromatography	0.05
Carbon		
Dissolved Inorganic (DIC)	SM 5310 B, Combustion/IR Detection	1
Dissolved Organic (DOC)	SM 5310 B, Combustion/IR Detection	1
Total Inorganic (TIC)	SM 5310 B, Combustion/IR Detection	1
Total Organic (TOC)	SM 5310 B, Combustion/IR Detection	1
Cation-Anion Balance (CAB)	Calculation	
Requires Alkalinity, Cl, SO4, Ca, Mg, Na and K		
Chemical Oxygen Demand (COD)	EPA M410.4 Colorimetric	10
Chloride	SM 4500 Cl-E Automated Colorimetric	1
Chloride	EPA M300.0 Ion Chromatography	0.4
Chromium		
Hexavalent	SM 3500 Cr- B/D Colorimetric	0.005
Trivalent	Calculation	
Requires Total and Hexavalent		0.01
Corrosivity (Langlier Index)	SM 2330 B Calculation	
Requires Alkalinity, Ca, TDS, Field pH and Field Temperature		0.01 SI unit
Cyanide		
Free (MDL may vary with matrix)	D 6888-09/OIA-1677-09	0.003
Available (MDL may vary with matrix)	D 6888-04/OIA-1677-09	0.006
Thiocyanate (SCN)	SM 4500 CN-M	0.1
Total, UV Digestion	D 7511-09	0.003
Total	EPA M335.4 Automated Colorimetric	0.003
Weak Acid Dissociable (WAD)	SM 4500 CN-I	0.003
Fluoride	SM 4500 F-C	0.15
Fluoride	EPA M300.0 Ion Chromatography	0.05

1. The methods listed throughout this fee schedule are ACZ's standard methods. Most parameters can be analyzed using alternative methods, such as SM or AOAC. Call an ACZ representative for availability and pricing of alternative methods.

Water and Wastewater
Inorganic
Wet Chemistry

Parameter	Method	MDL (mg/L)
Iron		
Ferrous (II)	SM 3500 Fe B	0.03
Ferric (III)	Calculation	
Requires Dissolved and Ferrous		0.01
Langlier Index (see Corrosivity)		
Nitrogen		
Ammonia (as N), NH_3	EPA M350.1 Automated Colorimetric	0.05
Ammonia (as N), Un-Ionized	Calculation (requires NH_3, Field pH and Temp)	0.1
Nitrate/Nitrite (as N), NO_3/NO_2	EPA M353.2 Automated Colorimetric	0.02
Nitrite (as N), NO_2	EPA M353.2 Automated Colorimetric	0.01
Nitrate (as N), NO_3	Calculation (requires NO_3/NO_2 and NO_2)	0.01
Organic	Calculation (requires TKN and NH_3)	0.1
Inorganic	Calculation (requires NO_2/NO_3 and NH_3)	0.02
Total	Calculation (requires NO_2/NO_3 and TKN)	0.1
Total Kjeldahl (TKN)	EPA M351.2 Block Digest./Auto Color.	0.2
Oil & Grease, Total Recoverable	EPA 1664A Hexane Extraction	2
Phenols		
Dissolved (with distillation)	EPA M420.4 Automated Colorimetric	0.007
Total (with distillation)	EPA M420.4 Automated Colorimetric	0.007
Phosphorus		
Orthophosphate (as P)	EPA M365.1 Automated Colorimetric	0.01
Total (as P) (with Persulfate digestion)	EPA M365.1 Automated Colorimetric	0.01
Phosphate	Calculation (requires Phosphorus)	0.01
Sulfate (SO_4)	D 516-02/-07/-11 - Turbidimetric	1
Sulfate (SO_4)	EPA M300.0 Ion Chromatography	0.4
Sulfide (as H_2S)	SM4500 S2-D Colorimetric	0.02
Sulfide, Un-ionized	Calculation (requires H_2S, Field Temp/pH, EC)	0.02
Sulfite (SO_3)	EPA M377.1 Titrimetric	2

Water and Wastewater
Inorganic

Anions by Ion Chromatography

Parameter	Method	MDL (mg/L)
Bromide (Br)	EPA M300.0	0.05
Chloride (Cl)	EPA M300.0	0.4
Fluoride (F)	EPA M300.0	0.05
Sulfate (SO_4)	EPA M300.0	0.4

Physical Properties

Parameter	Method	MDL (mg/L)
Color	HACH Color Wheel	5 Co/Pt
Conductance (EC)	SM 2510 B (Meter)	1 (umhos/cm)
Hardness (requires Ca and Mg)	SM 2340 B Calculation	1.5
pH	SM 4500 H+B (Meter)	0.1 (units)
Residue		
Settleable (SS)	SM 2540 F Imhoff Cone	0.1 (mL/L/hr)
Total (TS)	SM 2540 B Gravimetric, 105° C	20
Filterable (TDS)	SM 2540 C Gravimetric, 180° C	20
Non-Filterable (TSS)	SM 2540 D Gravimetric, 105° C	5
Resistivity (requires conductivity)	SM 2510 B (Meter)	1 (umhos-cm)
Specific Gravity	SM 2710 F	0.001
Turbidity	EPA M180.1 Nephelometric	0.1 (NTU)

Water and Wastewater
Inorganic

Sample Preparation

Parameter	Method
Lab Filtration *	SM 3030 B
Lab Filtration & Acidification *	SM 3030 B
Lab Filtration (Radiochemistry)*	SM 3030 B

***(Difficult to filter, high TDS samples may require more then one filtration and additional charge)**

Metals Digestions - Hot Plate/Block Technique

Total Metals (ICP & ICP-MS)	EPA M200.2
Total Metals - (ICP & ICP-MS)	EPA M3010-A
Total Recoverable Metals-(ICP & ICP-MS)	EPA M3005-A
Total Recoverable Metals-(ICP & ICP-MS)	EPA M200.2
Potentially Dissolved Metals-(ICP & ICP-MS)	Colorado 5 CCR 1002-31.5.31 (2009)

Metals Analysis

Parameter	Method	MDL (ug/L)
ICP-MS		
One-time per sample per species setup charge (if < 4 parameters requested)		
Routine parameters listed on page 7	EPA M200.8/6020	see page 7
Rare Earth Elements[1]	EPA M200.8/6020	
Cerium (Ce), Dysprosium (Dy), Erbium (Er), Europium (Eu), Gadolinium (Gd), Holmium (Ho)		
Lanthanum (La), Lutetium (Lu), Neodymium (Nd), Praseodymium (Pr), Scandium (Sc)		
Samarium (Sm), Terbium (Tb), Thulium (Tm), Yttrium (Y) & Ytterbium (Yb)		0.1
ICP		
One-time per sample per species setup charge (if < 4 parameters requested)		
Routine parameters listed on page 7	EPA M200.7/6010B	see page 7
Mercury		
CVAA Mercury (Hg)	EPA 245.1 or 7470A	0.2
CVAFS Mercury (Hg)[2]	EPA 1631E	0.0003
ICP-MS Mercury (Hg)	EPA M200.8/6020	0.06
Hydride Generation AA (HGAA)		
HGAA Selenium (Se)	SM 3114 B & C	2
HGAA Selenium Speciation	SM 3114 B & C	
Includes +6, +4, dissolved and organic		2

1. Includes Lanthanides, Scandium and Yttrium

2. 1 Field transfer blank is required for each project of 1-10 samples. Field transfer blanks are considered billable samples.

Water and Wastewater
Inorganic

Metals Detection Limits [1] in mg/L [2]

Instrument EPA Method	ICP 200.7/6010	ICP/MS[3,4] 200.8/6020	Other
Aluminum (Al)	0.08	0.005	-
Antimony (Sb)	0.04	0.0004	-
Arsenic (As)	0.04	0.0002	-
Barium (Ba)	0.009	0.0005	-
Beryllium (Be)	0.01	0.0001	-
Bismuth (Bi)	0.04	-	-
Boron (B)	0.03	0.001	-
Cadmium (Cd)	0.008	0.00005	-
Calcium (Ca)	0.2	-	-
Cesium (Cs)	-	0.0002	-
Chromium (Cr)	0.02	0.0005	-
Cobalt (Co)	0.02	0.00006	-
Copper (Cu)	0.02	0.0008	-
Gallium (Ga)	0.1	-	-
Iron (Fe)	0.09	0.007	-
Lead (Pb)	0.03	0.0001	-
Lithium (Li)	0.01	-	-
Magnesium (Mg)	0.2	-	-
Manganese (Mn)	0.02	0.0004	-
Mercury (Hg)	-	0.06 ug/L	0.0002 (CVAA)
Mercury (Hg) (Ultra Low Level)[5]	-	-	0.3 ng/L (1631)
Molybdenum (Mo)	0.02	0.0002	-
Nickel (Ni)	0.008	0.0004	-
Potassium (K)	0.5	-	-
Phosphorous (P)	0.1	-	-
Scandium (Sc)	0.05	0.0001	-
Selenium (Se)	0.05	0.0001	0.002 (Hydride)
Silicon (Si)	0.1	-	-
Silica (SiO2)	0.214	-	-
Silver (Ag)	0.01	0.0001	-
Sodium (Na)	0.2	-	-
Strontium (Sr)	0.009	-	-
Sulfur (S)	0.25	-	-
Tellurium (Te)	-	0.001	-
Thallium (Tl)	0.1	0.0001	-
Thorium (Th)	-	0.001	-
Tin (Sn)	0.04	0.0008	-
Titanium (Ti)	0.005	-	-
Uranium (U)	-	0.0001	-
Vanadium (V)	0.01	0.0005	-
Zinc (Zn)	0.02	0.006	-

1. *Any required dilution due to matrix or high TDS will increase the MDLs.*
2. *Unless otherwise noted.*
3. *MDLs for elements analyzed by ICP-MS are for a dissolved basis only.*
4. *See previous page for Rare Earth Elements (Ce, Dy, Er, Eu, Gd, Ho, La, Lu, Nd, Pr, Sc, Sm, Tb, Tm, Y and Yb)*
5. *1 Field transfer blank is required for each project of 1-10 samples. Field transfer blanks are considered billable samples.*

Water and Wastewater
Organic

Gas Chromatography Techniques

Parameter	Method	MDL (mg/L)
TPH (C10-C28) (Extractable), DRO	EPA M8015D/API-DRO GC/FID	0.1
TPH (C10-C36), DRO/MRO	EPA M8015D/API-DRO GC/FID	4.95
TVH (C6-C10) (Volatile), GRO	EPA M8015D/API-GRO GC/FID	0.05
BTEX	EPA M8021B GC/PID	1 - 2 ug/L
BTEX/TVH, GRO	EPA M8021B/8015D GC/PID/FID	0.05 - 2

Gas Chromatography/Mass Spectrometry Techniques

Parameter	Method	MDL (ug/L)
Volatiles, Low-Level (VOC)	EPA M624.1/8260B GC/MS	0.2 - 0.5
BTEX	EPA M8260C/D GC/MS	0.2 - 0.4
BTEX	EPA M624.1 GC/MS	0.2 - 0.4
Trihalomethanes	EPA M8260C/D GC/MS	4
Semi-Volatiles (SVOC)(BNAs)	EPA M625.1/8270D/E GC/MS	0.9 - 20
SVOC Base/Neutral Extractables	EPA M625.1/8270D/E GC/MS	0.9 - 20
SVOC Acid Extractables	EPA M625.1/8270D/E GC/MS	0.9 - 20
PAH	EPA M8270D/E GC/MS	2
1,4 Dioxane	EPA M8270D/E GC/MS	2
GC/MS Library Search (10 TICs/Fraction)	EPA M624/8260B GC/MS	N/A
GC/MS Library Search (10 TICs/Fraction)	EPA M625/8270C GC/MS	N/A
Nonylphenols	ASTM D7065-06	
Monoethyloxalate, Diethyloxalate, Ocylphenol and Bisphenol A (BPA)		1 - 20

Water and Wastewater Radiochemistry

Parameter	Method	LLD (pCi/L)
Gamma Scan	EPA 901.1	various
Gross Alpha/Beta	EPA 900.0/9310	2 & 4
Gross Alpha (High TDS Samples)	EPA 900.1	1.5
Lead - 210	Eichrom OTW01	4*
Polonium - 210	HASL 300 PO-01-RC	1.5
Radium - 226 (Alpha Emitting)	EPA 903.0 / 9315	1
Radium - 226 (Drinking Water)	EPA 903.1	0.4
Radium - 228 (Drinking Water)	EPA 904.0	1.5
Radium - 228	EPA 9320	1.5
Thorium - Isotopic (228, 230, 232)	ESM 4108/4506 TOPO Extraction	0.6
Uranium, Isotopic (234, 235, 238)	Eichrom ACWO3	1

Metals Analysis by ICP-MS

Parameter	Method	MDL (ug/L)
Thorium, Total - 232	EPA 200.8/6020	1
Uranium, Total - 238	EPA 200.8/6020	0.1

1. An additional setup charge for ICP-MS analysis may apply. See page 6 for sample prep and setup charges.

**Lower MDLs may be achievable for certain radchem parameters with larger sample volume. Please contact an ACZ rep for more information*

Please note, if ACZ is requested to lab filter for dissolved radiochemical parameters additional filtration charges may apply if the sample contains high TDS and is hard to filter or requires pressure filtration.

Soil and Overburden
Inorganics

Sample Preparation

Parameter	Method
Air Dry	USDA No. 1, 1972
Coarse Fragments (> 2.0mm)	ASA No. 9 15-4.2.2
Crush (per 1 kg sample)*	USDA No. 1, 1972
Pulverize (Ring & Puck)	EPA-600/2-78-054 3.1.3
Pulverize (Ring & Puck) Low-Level	EPA-600/2-78-054 3.1.3
Percent Moisture / Percent Solids	ASTM D2216-80/EPA M209F
Screen / Pulverize	USDA No. 1, 1972
Screen (per sieve fraction)	ASA No. 9 15-4.2.2
Multi Increment Sampling Composite	HAWAII DOH HEER TGM 4.2.6
Incremental Sampling Methodology (ISM)	ITRC ICM-2 2020

Extractions

Parameter	Method
AB-DTPA	ASA No. 9 3-5.2.3
Acetic Acid	C.S.U. Soil Testing Lab
Bray P-1 Extraction	Soil Survey Method #6S3
NH_4 Acetate (Extractable)	USDA No. 60 (18)
KCL	ASA No. 9 33-3.2.2
Hot Water	ASA No.9 80-3
Saturated Paste (includes Saturation %)	USDA No. 60 (2)
Water	ASA No. 9 10-2.3.2
TCLP Metals Extraction	EPA M1311
TCLP SVOC Organics Extraction	EPA M1311
TCLP VOC Organics Extraction (ZHE)	EPA M1311
CA Waste Extraction Test (WET-STLC)	California Method, Title 22
Meteoric Water Mobility Procedure	NDEP - MWMT (5/96) (Column)
Meteoric Water Mobility Procedure	NDEP - MWMT (1990) (Bottle Roll)
Column/Serial Batch Leach Studies	per client specifications
Sequential Leach Studies	per client specifications
SPLP	EPA M1312
DI Leaching Procedure	EPA M1312 DI
Shake Extraction	ASTM D3987-85/D4646-16
MEND Shake Extraction	MEND Report 1.20.1
Leaching Environmental Assessment Framework (LEAF)	
LSP Curve as a function of pH	EPA M1313
LSP as a function of (L/S) (Percolation)	EPA M1314
Mass Transfer Rates	EPA M1315
LSP as a function of (L/S) (Equilibrium)	EPA M1316
Humidity Cell Test	ASTM D5744-13
In Vitro Bioaccessibility (IVBA)	EPA M1340/9200.2-86
As, Pb and other metals	

**$5 charge for each additional kg of sample.*

Soil and Overburden

Inorganic

Digestions

Parameter	Method
EPA Method 3050B (Hot Block)	EPA M3050B
EPA Method 3051 (Microwave)	EPA M3051A
EPA Method 3051 (Waste Oil Digestion)	EPA M3051A
EPA Method 3060 (For Hex-Chrome)	EPA M3060A
Hydrofluoric/Nitric Acid Digestion	EPA M3052

Chemical Properties

Parameter	Method	MDL (mg/Kg)
Acid-Base Accounting (with Total Sulfur)	EPA 600/2-78-54	
Requires Neutralization Potential & Total Sulfur		1 (T CaCO3/1000 T)
Acid-Base Accounting (with Sulfur Forms)	EPA 600/2-78-54	
Requires Neutralization Potential & Sulfur Forms		1 (T CaCO3/1000 T)
Carbon		
Organic (Low Temperature Ignition)	EPA 600/2-78-054 M3.2.14	0.3 (%)
Total (TC)	ASA No.9 29-2.2.4 Combustion/IR	0.1
Total Carbonate as $CaCO_3$ (TIC)	ASA No.9 29-2.2.4 Combustion/IR	
(Requires TC and TOC)	Calculation	0.1
Total Organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	0.1
Cations, Soluble	EPA 6010B ICP	
Includes Ca, Mg, Na and K		various
Chromium, Hexavalent	EPA M3060A/EPA 7196A	0.005
Cation Exchange Capacity (CEC)	USDA No. 60 (19)	0.2 mg/L
Chloride, Soluble	SM4500Cl-E	0.5 mg/L
Conductivity	SM 2510 B/USDA 60 M2,21A,27A	0.001 (mmhos/cm)
Cyanide		
Total	EPA M9012B	0.006
Weak Acid Dissociable (WAD)	SM 4500 CN-I	0.006
Exchangeable Cations (Ca, Mg, K & Na)	Calculation	
Requires: Cations via NH_4 & Saturated Paste Extractions & Saturation %		N/A
Exchangeable Sodium Percentage	USDA No. 60 (20 b)	
Requires: CEC, Na via NH_4 & Saturated Paste Extractions & Saturation %		N/A
Fluoride, Soluble	SM 4500 F-C/ASTM D 3761	0.15
Lime, Estimated (FIZZ)	EPA 600/2-78-054 3.2.3	N/A
Lime Requirement (SMP Buffer)	ASA No.9, 12-3.4.4	2.4 m (tons/hectare)
Net Acid Generation Procedure (NAG)		
Single NAG	EGI 2002	0.1 to 1 Kg H2SO4/t
Sequential NAG	EGI 2002	0.1 to 1 Kg H2SO4/t
Australian NAG	Miller & Donahue (1997 ICARD)	0.1 to 1 Kg H2SO4/t
NAG pH (Only)	EGI 2002	0.1 (units)
Nevada NAG	Warwick-Stuart-Roger, 7th ICARD	1 Kg H2SO4/t

1. Requires extraction, see page 10.

2. Reported as text - N, SL, MO or ST

Soil and Overburden
Inorganic
Chemical Properties

Parameter	Method	MDL (mg/Kg)
Neutralization Potential	EPA 600/2-78-054 3.2.3	0.1 (%)
Neutralization Potential (Modified-no heat)	EPA 600/2-78-054 3.2.3 (MOD)	0.1 (%)
Neutralization Potential Siderite Correction	EPA 600/2-78-054 3.2.3-NV	0.1 (%)
Nitrogen		
Ammonia	EPA M350.1	0.1
Extractable NO_3/NO_2	EPA M353.2	0.2
Organic (Requires Total and Ammonia)	Calculation	0.1 (%)
Soluble NO_3/NO_2	EPA M353.2	0.1
Total Kjeldahl	EPA M351.2	0.2 (%)
pH	USDA No. 60 (21a)	0.1 (units)
pH, Corrosivity	EPA M9045D/M9040C	0.1 (units)
Phenols, Total	EPA M420.4	0.007
Phosphorus, Extractable	EPA M365.1	0.01
Phosphorus, Total	EPA M365.1	0.1 (%)
Sodium Adsorption Ratio (SAR)	USDA No. 60 Calculation	
Requires Saturated Paste Extraction, Ca, Mg and Na		N/A (meq./ L ratio)
Sulfur		
Forms (Coal/Overburden)	EPA 600/2-78-054 3.2.4 (Sobek)	
Includes Organic, Pyritic, Sulfate and Total		0.01 (%)
Forms (Hard Rock w/heat)	EPA 600/2-78-054 3.2.4 (MOD Sobek)	
Includes Organic, Pyritic, Sulfate and Total		0.01 (%)
Forms (Nevada Modified Sobek)	EPA 600/2-78-054 3.2.4 & 3.2.6	
Includes Organic, Pyritic, Sulfate, Hot Water Soluble Sulfate and Total		0.01 (%)
Total	ASTM D-4239-85C (LECO)	0.01 (%)
Sodium Carbonate Insoluble	ASTM D-4239-85C, D1915	0.01 (%)
Water Insoluble	ASTM D-4239-97C (LECO)	0.01 (%)
Sulfate, Soluble	ASTM D516-07	1

Mineralogy

Parameter	Method
X-Ray Diffraction (XRD)	
Bulk Semi-Quantitative	EPA 600/2-78-054 3.3.4
Quantitative w/Rietveld Refinement	EPA 600/2-78-054 3.3.4
<2µm Clay Speciation	

1. *Requires KCL extraction, see page 10.*
2. *Requires water extraction, see page 10.*
3. *Requires AB-DTPA extraction, see page 10.*

Soil and Overburden

Physical Properties

Parameter	Method	MDL (%)
Color	Munsel Color chart	N/A
Organic Matter - Ignition	EPA M600/2-78-054 3.2.14	0.3
Particle Size		
Dry Sieve (per fraction)	ASA No. 9 15-4.2.2	0.1
Wet Sieve (per fraction)	ASA No. 9 15-4.2.2	0.1
Hydrometer (< 2.0mm)	ASA No. 9 15-5	
Sand, Silt and Clay by percentage plus Texture Classification		0.1
Rock Fragments (Cobble, Gravel, etc.)	ASA No. 9 15-4.2.2	0.1
Very Fine Sand (Wet Sieve)	ASA No. 9 15-4.2.2	0.1
Solids, Volatile (550°C)	SM 2540G	0.1
Solids, Total	SM 2540B	0.1

Inorganic

Metals Analysis

Parameter	Method	MDL (mg/Kg)
ICP/MS		
Onetime per sample per species setup charge (if < 4 parameters are requested)		
Routine parameters listed on page 14	EPA M6020B	see page 14
Rare Earth Elements[1]	EPA M6020B	
Cerium (Ce), Dysprosium (Dy), Erbium (Er), Europium (Eu), Gadolinium (Gd), Holmium (Ho)		
Lanthanum (La), Lutetium (Lu), Neodymium (Nd), Praseodymium (Pr), Scandium (Sc)		
Samarium (Sm), Terbium (Tb), Thulium (Tm), Yttrium (Y) & Ytterbium (Yb)		0.05
ICP		
Onetime per sample per species setup charge (if < 4 parameters are requested)		
Routine parameters listed on page 14	EPA M6010D	see page 14
Mercury Analysis		
CVAA Mercury (Hg)	EPA M7471A/7470A	0.02
Direct Combustion AA	EPA M7473	2 (ng/g)

1. Includes Lanthanides, Scandium and Yttrium

2. Lower detection limit available

3. TCLP, SPLP or MWMP extraction required

Soil and Overburden
Inorganic

Metals Detection Limits [1] in mg/Kg [2]

Instrument EPA Method	ICP 200.7/6010	ICP/MS [3] 200.8/6020	Other
Aluminum (Al)	8	2.5	-
Antimony (Sb)	4	0.2	-
Arsenic (As)	4	0.1	-
Barium (Ba)	0.9	0.25	-
Beryllium (Be)	1	0.05	-
Bismuth (Bi)	4	-	-
Boron (B)	3	0.5	-
Cadmium (Cd)	0.8	0.025	-
Calcium (Ca)	20	-	-
Cesium (Cs)	-	0.1	-
Chromium (Cr)	2	0.25	-
Cobalt (Co)	2	0.025	-
Copper (Cu)	2	0.4	-
Gallium (Ga)	10	-	-
Iron (Fe)	9	-	-
Lead (Pb)	3	0.05	-
Lithium (Li)	1	-	-
Magnesium (Mg)	20	-	-
Manganese (Mn)	2	0.2	-
Mercury (Hg)	-	-	0.02 (CVAA)
Mercury (Hg) Direct Combustion	-	-	4 ng/g (EPA 7473)
Molybdenum (Mo)	2	0.1	-
Nickel (Ni)	0.8	0.2	-
Potassium (K)	50	-	-
Phosphorous (P)	10	-	-
Scandium (Sc)	5	0.05	-
Selenium (Se)	5	0.05	-
Silicon (Si)	10	-	-
Silica (SiO2)	21.4	-	-
Silver (Ag)	1	0.05	-
Sodium (Na)	20	-	-
Strontium (Sr)	0.9	-	-
Sulfur (S)	0.25	-	-
Tellurium (Te)	-	0.5	-
Thallium (Tl)	10	0.05	-
Thorium (Th)	-	0.5	-
Tin (Sn)	4	0.4	-
Titanium (Ti)	0.5	-	-
Uranium (U)	-	0.05	-
Vanadium (V)	1	0.25	-
Zinc (Zn)	2	3	-

1. *Any required dilution due to matrix or high TDS will increase the MDLs.*
2. *Unless otherwise noted.*

Soil and Overburden
Organic

Gas Chromatography Techniques

Parameter	Method	MDL (mg/Kg)
TPH (C10-C28) (Extractable), DRO	EPA M8015D/API-DRO GC/FID	3.3
TPH (C10-C36), DRO/MRO	EPA M8015D/API-DRO GC/FID	3.3
TVH (C6-C10) (Volatile), GRO	EPA M8015D/API-GRO GC/FID	0.05
BTEX	EPA M8021B GC/PID	1 - 2 (ug/Kg)
BTEX/TVH, GRO	EPA M8021B/8015D GC/PID/FID	0.05 - 2

Gas Chromatography/Mass Spectrometry Techniques

Parameter	Method	MDL (ug/Kg)
Volatiles (VOC)	EPA M8260C/D GC/MS	3 - 10
BTEX	EPA M8260C/D GC/MS	0.2 - 0.4
BTEX/MTBE	EPA M8260C/D GC/MS	0.2 - 0.4
Semi-Volatiles (SVOC)	EPA M8270D/E GC/MS	66.6 - 833.25
PAHs	EPA M8270D/E GC/MS	66.6
GC/MS Library Search (10 TICs/Fraction)	EPA M8260C/D GC/MS	N/A
GC/MS Library Search (10 TICs/Fraction)	EPA M8270D/E GC/MS	N/A

Soil and Overburden Radiochemistry

Parameter	Method	LLD (pCi/g)
Gamma Scan	ESM 901.1	various
Gross Alpha/Beta	EPA 9310 modified	1 & 2
Lead - 210	Eichrom OTW01	10
Polonium - 210	HASL Po-01-RC	1.5
Radium - 226 (alpha emitting)	EPA M9315	2
Radium - 226	EPA M903.1	0.5
Radium - 228	EPA M9320 / 904.0	3
Thorium - Isotopic (228, 230, 232)	ESM 4506 TOPO Extraction	0.3 - 0.6
Uranium - Isotopic (234, 235, 238)	Eichrom ACW 3	0.4

All Soils radchem pricing listed above does not include sample prep or digestion charges see page 11.

No digestion charge is needed for gamma.

Metals Analysis by ICP-MS

Parameter	Method	MDL (mg/Kg)
Thorium, Total	EPA 200.8/6020	0.5
Uranium, Total	EPA 200.8/6020	0.05

1. An additional setup charge for ICP-MS analysis may apply. See page 13 prep and setup charges.

**Lower MDLs may be achievable for certain radchem parameters with larger sample volume. Please contact an ACZ rep for more information.*

Biological Tissue Analysis
Inorganic and Organic

Sample Preparation

Parameter	Method
Flora	
Dry	Air Dry at 40° C
Grind/Pulverize	Willy Mill or Riesch Knife Mill
Extraction	EPA 600/4-81-055
Ash	USNRC Guidelines
Moisture Percent	D2216-80
Fauna	
Dissection	EPA 600/4-81-055
Dissection	USDA/CDC Level III
USDA/CDC Biosafety Level III, i.e. Deer Mice	
Extractions - Metals	EPA 600/4-81-055
Extractions/Cleanup - Organics	EPA M5000 series
Digestions	EPA M200.3/3051

Analysis

Parameter	Method	**MDL** (mg/Kg)
Metals		
ICP/MS	EPA M6020B	Available on request
ICP	EPA M6010D	Available on request
CVAA	EPA M7470A	Available on request
Direct Combustion AA	EPA M7473	Available on request
Nutrients		
N, P, K, SO_4, B, cations, etc.	EPA M300 series, ASA, etc.	Available on request

Regulatory Parameters and Packages
Inorganic and Organic

Nevada Division of Environmental Protection (NDEP) Mining Parameters

Parameter	Method
Monitoring Tables	
NDEP Profile I	NDEP Certified Methods
NDEP Profile I-R	NDEP Certified Methods
NDEP Profile II	NDEP Certified Methods
NDEP Profile III	NDEP Certified Methods
Cyanide	
Cyanide WAD (NV Method)	SM-4500-CN I,E
Cyanide Extraction on Soils and Mine Rock	ASTM D7572-11
Cyanide, Available	ASTM D6888-09
Cyanide, Total (AUTO)	ASTM D7511-09e2
Cyanide, Total	EPA 335.4
Meteoric Water Mobility Procedure (MWMP)	
Column Extraction	ASTM E2242-13
Bottle Roll Extraction	ASTM E2242-13 Appendix X1.2
Acid-Base Accounting (ABA)[1]	
Total Sulfur (High Temp. Combustion Method), HCL, HNO3, & Hot Water Extractable Sulfur	EPA 600/2-78-054, 3.2.6_NV Modified
ANP by Titration to Phenolphthalein End Point	EPA 600/2-78-054,3.2.3_NV Modified
Net Acid Generation (NAG)	Warwick-Stuart-Roger, NV Modified
Potential Acid Generation (PAG)	Nevada Modified Net Acid Generation
Paste pH[1]	EPA 600/2-78-054, 3.2.2_NV Modified
Humidity Cell Test (HCT)	
Weathering Products of Solid Materials	ASTM D5744-13
Redox Potential (ORP)	ASTM D1498
Iron-(II) (Ferrous Iron)	SM 3500-Fe B
Iron-(III) (Ferric Iron)	Calculation
Mineralogy	
XRD	EPA 600/R-02-070
SEM/EDX	EPA 600/R-02-070

1. Requires additional preparation charges

Regulatory Parameters and Packages
Inorganic (IOC's)

Safe Drinking Water Act (SDWA); National Primary Drinking Water Standards

Parameter	Method	MCL (mg/L)
Primary Drinking Water Regs (PDWR)		
Arsenic	EPA M200.8	0.01
Fluoride Rule		
Fluoride	SM 4500 F-C	4
Surface Water Treatment Rule		
Turbidity	EPA M180.1	TT
Phase II & IIB		
Asbestos (>10um)	TEM	7 (MFL)
Barium	EPA M200.7	2
Cadmium	EPA M200.8	0.005
Chromium (total)	EPA M200.7	0.1
Mercury	EPA M245.1	0.002
Nitrate/Nitrite (as N)	EPA M353.2	N/A
Nitrite (as N)	EPA M353.2	1
Nitrate (as N)	EPA M353.2 Calculation	
Requires NO_2/NO_3 and NO_2		10
Selenium	EPA M200.8	0.05
Lead and Copper Rule		
Copper	EPA M200.8	1.3
Lead	EPA M200.8	0.015
Phase V		
Antimony	EPA M200.8	0.006
Beryllium	EPA M200.8	0.004
Cyanide	EPA M335.4	0.2
Thallium	EPA M200.8	0.002

1. *An additional setup charge for ICP & ICP-MS analysis may apply.*

Regulatory Parameters and Packages
Inorganic (IOC's)

Safe Drinking Water Act (SDWA); National Primary Drinking Water Standards

Parameter	Method	MCL (mg/L)
Unregulated		
Sulfate	D 516-02/-07/-11 - Turbidimetric	250
Aluminum	EPA M200.7	0.05 - 0.2
Chloride	SM 4500 CL-E	250
Color	EPA M110.2	15 (cu)
Copper	EPA M200.8	1
Corrosivity (Langlier Index)	SM 2330B Calculation	
Requires Alkalinity, Ca, pH, TDS and Field Temperature		N/A
Fluoride	SM 4500 F-C	2
Iron	EPA M200.7	0.3
Manganese	EPA M200.8	0.05
pH	SM 4500 H+B meter	6.5 - 8.5
Silver	EPA M200.8	0.1
TDS	SM 2540 C	500
Zinc	EPA M200.8	5
Radiological Standards (Interim and Proposed)		
Alpha emitter	EPA M900.0	15
Beta/photon emitters	EPA M900.0	4 (mrem/yr)
Radium 226	EPA M903.1	5
Radium 228	EPA M904.0	5
Uranium by ICP-MS	EPA M200.8	
Includes digestion and ICP-MS setup charge		0.03 (mg/L)

1. *An additional setup charge for ICP & ICP-MS analysis may apply.*

Data Reporting Formats

	Standard Report	QC Report	Extended Report
Cover Page	x	x	x
Case Narrative (if required)	x	x	x
Analytical Results Report			
Parameter Name	x	x	x
EPA Method	x	x	x
Analytical Results	x	x	x
Qualifiers	x	x	x
Units	x	x	x
MDL / PQL	x	x	x
Analysis Date	x	x	x
Analyst	x	x	x
Reference Table	x	x	x
Sample Receipt Form	x	x	x
Chain of Custody	x	x	x
Attachments (if required)	x	x	x
QC Summary			
Initial Calibration Summary		x	x
Daily Calibration Check Results			x
Blank Results		x	x
Spike Results		x	x
LCS Results		x	x
Analytical/Instrumentation Logs			x
Raw Data			x
Calibration Chromatograms			x

Data Reporting Charges

Available Formats
Standard Report
QC Report (ACZ Standard QC)
Extended Report
Full CLP-like Level IV reporting
Custom reports per client specifications
Hard Copy by Mail

Electronic Data Deliverables

Available Formats
ACZ Default (MS Excel spreadsheet or MS Access database table)
Custom EDD formats per client specifications

Labor

Description
Expert Witness, plus travel
Officer
Section Supervisor
Project Manager
Senior Chemist
Chemist
Technician
Clerical

Rush Turnaround

Description
1 Working Day Turnaround
2 Working Days Turnaround
3 Working Days Turnaround
4 Working Days Turnaround
5 Working Days Turnaround
7 Working Days Turnaround
10 Working Days Turnaround
15 Working Days Turnaround

Sample Storage, Return and Disposal

Description
Long Term Storage - Non-Hazardous Waste Samples
Disposal - Hazardous Waste Samples
Disposal - Non-Hazardous Waste Samples
Disposal - Quarantined Material
Return/Ship Samples Back to Client

Small Sampling Event

ACZ reserves the right to add a surcharge for any project with less than five samples. Minimum charge is $250.00 Please contact your customer service representative or project manager for details.

*Minimum fee, may be adjusted based on volume and waste type.

Terms & Conditions

General Agreement

These Terms and Conditions, together with any additions or revisions which may be agreed to in writing by ACZ, embody the whole agreement of the parties in the absence of a signed and executed contract between ACZ Laboratories, Inc., hereinafter referred to as ACZ, and Client. They shall supersede all previous communications, representations, or agreements, either verbal or written, between the parties. ACZ specifically rejects all additional, inconsistent or conflicting terms, whether printed or otherwise set forth in any purchase order or other communication from the Client to ACZ. The invalidity or unenforceability, in whole or in part of any provision, term or condition hereof shall not affect in any way the validity or enforceability of the remainder of the Terms and Conditions, the intent of the parties being that the provision is severable. No waiver by ACZ of any provision, term or condition hereof or of any breach by or obligation of Client hereunder shall constitute a waiver of such provision, term or condition on any other occasion or a waiver of any other breach by or obligation of Client, unless specifically set forth in writing and executed on behalf of ACZ by a duly authorized officer. This agreement shall be administered and interpreted under the laws of the State of Colorado.

Order of Service

Part A

A1 ACZ will accept orders by submission of written purchase order, by telephone or by contractual agreement. Telephone orders should be subsequently confirmed in writing to avoid potential misunderstandings. Submission of a telephone or written purchase order constitutes Client's acceptance of these general terms and conditions.

A2 ACZ will provide Client with all necessary sample containers, coolers, labels and chain of custody documents at no additional charge provided these supplies are used for samples to be analyzed by ACZ. Sample containers provided by ACZ will include appropriate preservatives.

A3 ACZ will ship supplies to Client's US destination at ACZ expense using UPS ground services. Expedited services will be invoiced at cost to Client. Client pays for return shipping unless otherwise agreed to in a signed contract between ACZ and Client. Expense of international shipping of sample containers will be by a contract basis only between ACZ and Client.

A4 All orders are subject to a minimum charge of $250.00.

Credit Application & Payment Terms

Part B

B1 Payment terms are Net 30 Days from invoice date unless otherwise executed by written contract. A service charge of 1.5% (18% per annum) will be made on all unpaid invoices 31 (or more) days old. Should it be necessary to assign account balance to a collection agency or attorney for legal action, all subsequent charges and legal fees shall be paid by Client. Should litigation become necessary, Client agrees that the venue shall be Routt County, State of Colorado. ACZ reserves the right to require payment prior to release of data. If payment terms are exceeded, ACZ has no obligation, and will not defend, reproduce, return or supplement data results.

B2 Services performed by ACZ will be in accordance with quoted prices or as stated in the fee schedule, which is subject to change without notice. It is preferred that the client calls an ACZ representative prior to submitting samples to verify price and turnaround time.

B3 In applying for credit, the Client certifies that the information (along with any other information submitted) is true and correct, and will update information that materially changes. All information received shall be treated confidentially by ACZ, and will be used only for the purpose of establishing the amount and conditions of extending commercial credit (not for consumer purposes). Client hereby authorizes all bank and trade references listed in this account application and agreement to release all information, verbal or written, to ACZ and to allow ACZ to utilize any other sources of credit information which ACZ deems reliable. Subsequent credit inquires may be completed by ACZ in connection with any update, renewal or extension of credit. ACZ reserves the right to suspend or terminate credit at any time.

B4 A consulting firm who authorizes ACZ to perform work for Client must be responsible to have Client submit a signed credit application to ACZ that ACZ approves in advance of performing the work. If Client credit is approved, said Client shall elect to either a) be billed directly or, b) have work billed to consulting firm. Regardless if the Client or the consultant is billed, Client accepts final responsibility for payment to ACZ.

Sample Receipt, Delivery of Services and Sample Storage

Part C

C1 Prior to receipt of samples at ACZ, Client is responsible for the entire risk of loss or any damage to samples. In no event will ACZ assume any responsibility or liability for the action or inaction of any carrier shipping or delivering samples to or from ACZ's premises.

C2 ACZ reserves the right at any time to refuse delivery of, or to revoke acceptance of, any samples which, in the judgment of ACZ, represents a health, safety or environmental risk due to handling, transporting or processing of such samples.

C3 All NRC licensed material and/or samples not meeting ACZ's 250 uRad/Hr screening levels, will be returned to the facility of origin at Client's expense. Any licensed material sent to ACZ for analytical testing must be identified on the COC or Client may incur additional costs including any labor and return fees.

Terms & Conditions

Sample Receipt, Delivery of Services and Sample Storage

Part C

C4 ACZ utilizes analytical methodologies appropriate for sample matrices and accepted by EPA, USGS, ASTM, ASA, Standard Methods and other professional associations. Unless specifically mandated by Client, ACZ reserves the right to use alternative, equivalent methods. It is the responsibility of Client to verify with the regulatory agency that ACZ's quoted methods are acceptable for their statement of work.

C5 Upon receipt of samples, ACZ will use its best efforts to comply with storage, processing and analytical holding time limits as stated in applicable EPA, state guidelines, as requested by Client. However, unless specifically made part of a written agreement between ACZ and Client, such time limits and analytical turnaround times are not guaranteed.

C6 In accordance with ACZ sample acceptance policy, a client must use ACZ's Chain of Custody. ACZ's Chain of Custody contains specific information regarding the criteria that determines whether or not samples will be accepted for analysis. If an alternative Chain of Custody is used, ACZ will make the best effort possible to accept and analyze samples; however, ACZ will not be held liable for any issues that may arise from the use and submission of an improper Chain of Custody form. Likewise, ACZ will not be held liable when an ACZ Chain of Custody is not filled out completely or properly. It is the responsibility of the Client to ensure that all personnel conducting sampling activities are made aware of the requirements stated within Section C6 of ACZ's Terms & Conditions.

C7 ACZ reserves the right to be compensated for instrument down time or damage caused by highly contaminated samples sent to ACZ for trace level analysis (PPM, PPB or PPT) due to percent level or pure product being shipped to ACZ without warning the lab on the COC or in writing to a Project Manager.

C8 Preliminary results, verbal or written, may be given to Client in advance of the final written report. Preliminary data has not been fully reviewed in accordance with ACZ's Quality System and is subject to change without notice.

C9 ACZ will at times subcontract analytical services ordered by Client. In all cases, Client will be informed prior to subcontracting out the work to another laboratory. ACZ assumes no liability for any subcontracted services except as specifically provided for in Part D.

C10 ACZ will store all samples 30 days from date of invoice. At the end of this period, samples will be disposed of properly in compliance with applicable laws or returned to Client. Client will be responsible for shipping and handling charges associated with the return shipping of samples. Client will be billed a surcharge for sample disposal as agreed upon in any written agreement or at the rate quoted in the Administrative Services section of the current ACZ fee schedule. Any special storage, disposal or return requirements of Client must be outlined on the Chain of Custody prior to delivery of samples. Extended storage at Client's request will be invoiced as per the Administrative Services section of ACZ's fee schedule

C11 Client will be charged $20.00 per sample disposal fee for all samples deemed to be hazardous.

Part D

D1 ACZ warrants only that its services will fulfill obligations set forth in Sections C4 and C5 above. This warranty is the sole and exclusive warranty given by ACZ in connection with any services performed by ACZ or any results generated from such services. ACZ gives and makes no other representation or warranty of any kind, expressed or implied. Unless a specific contract or Statement of Work (SOW) is accepted by ACZ, no representative of ACZ is authorized to give or make any other representation or warranty or modify this warranty in any way.

D2 The liabilities and obligations of ACZ and the remedies of Client in connection with any services performed by ACZ, will be limited to repeating the service performed or, at the sole option of ACZ, refunding in full or in part, fees paid by Client for such services. ACZ's obligation to repeat services will be contingent on the client providing, at the request of ACZ and at the client's expense, any additional samples necessary. Any reanalysis generating results consistent with the original results will be at Client's expense. Except as otherwise specifically provided herein, ACZ shall have no liability, obligation or responsibility of any kind for any losses, costs, expenses or other damages for any representation or warranty of any kind with respect to ACZ's service or results.

D3 In no event shall ACZ have any responsibility or liability to Client for any failure or delay in performance by ACZ which results, directly or indirectly, from any cause or circumstances beyond the reasonable control of ACZ. Such causes or circumstances shall included, but are not limited to, acts of God, acts of Client, acts or order of any governmental authority, labor disputes, natural disasters, accidents, wars, difficulties or delays in transportation, mail or delivery services, inability to obtain from ACZ's usual sources sufficient services or supplies, or any other cause beyond ACZ's reasonable control.

D4 All results provided by ACZ are strictly for the use of Client. ACZ is in no way responsible for use of such results by Client or third parties. All results should be considered in their entirety and ACZ is in no way responsible for the separation, detachment, or other use of any portion of the results.

D5 Client represents and warrants that any sample delivered to ACZ will be preceded or accompanied by complete written disclosure of the presence of any hazardous substance known or suspected by Client. Client further warrants that any sample containing any hazardous substance that is delivered to ACZ will be packaged, labeled, transported and delivered properly and in accordance to applicable regulations.

D6 The customer shall indemnify and hold harmless ACZ from and against any and all claims, suits, judgments, damages, losses, liabilities, expenses, payments, taxes, duties, fines and/or other costs (including but not limited to reasonable attorney's fees and liability to a third party) arising out of: a) the presence of hazardous substances in any sample of Client regardless of Client's compliance with paragraph D5 hereof, b) accidents occurring during the transport of any sample of Client, c) events or delays caused by Client or otherwise beyond ACZ's control, or d) negligence by Client in the use, evaluation, or application of results provided by ACZ.