



SCOPE OF ACCREDITATION TO ISO 17034:2016

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REFERENCE MATERIALS PRODUCER

Valid To: July 31, 2024

Certificate Number: 0883.02

In recognition of the successful completion of the A2LA evaluation process, accreditation is granted to this Reference Material Producer for the production of certified reference materials and reference materials of the following categories:

Certified Reference Material	Concentration Ranges and Best Relative Uncertainty <sup>1</sup>	Test, Analysis, Measurement, Methods	Measurement Technique(s)
Trace Metals Standard	Aluminum (Al) CRMs Containing this element –  Range 0.1 µg/L – 750 000 µg/mL Relative uncertainty ± 1 %	EPA Method 200.7 – Modified; EPA Method 200.8 – Modified WI-QC-21	Spectroscopy Titrimetric
	Antimony (Sb) CRMs Containing this element –  Range 0.05 µg/L–750 000 µg/mL Relative uncertainty ± 1 %	EPA Method 200.7 – Modified; EPA Method 200.8 – Modified	Spectroscopy
	Arsenic (As) CRMs Containing this element –  Range 0.1 µg/L – 750 000 µg/mL Relative uncertainty ± 1 %	EPA Method 200.7– Modified; EPA Method 200.8 – Modified	Spectroscopy
	Arsenic <sup>+3</sup> (As <sup>+3</sup> ) CRMs Containing this element –  Range 0.1 µg/L – 750 000 µg/mL Relative uncertainty ± 1 %	EPA Method 200.7– Modified; EPA Method 200.8 – Modified WI-QC-26	Spectroscopy Titrimetric
	Arsenic <sup>+5</sup> (As <sup>+5</sup> ) CRMs Containing this element –  Range 0.1 µg/L – 750 000 µg/mL Relative uncertainty ± 1 %	EPA Method 200.7– Modified; EPA Method 200.8 – Modified	Spectroscopy

<b>Certified Reference Material</b>	<b>Concentration Ranges and Best Relative Uncertainty<sup>1</sup></b>	<b>Test, Analysis, Measurement, Methods</b>	<b>Measurement Technique(s)</b>
Trace Metals Standard	Barium (Ba) CRMs Containing this element –  Range 0.1 µg/L – 750 000 µg/mL Relative uncertainty ± 1 %	EPA Method 200.7– Modified; EPA Method 200.8 – Modified WI-QC-22	Spectroscopy Gravimetric
	<sup>135</sup> Barium( <sup>135</sup> Ba) CRMs Containing this element –  Range 0.1 µg/L to 10 000 µg/mL Relative uncertainty ± 1 %	EPA Method 200.7– Modified; EPA Method 200.8 – Modified	Spectroscopy
	Beryllium (Be) CRMs Containing this element –  Range 0.1 µg/L to 750 000 µg/mL Relative uncertainty ± 1 %	EPA Method 200.7– Modified; EPA Method 200.8 – Modified	Spectroscopy
	Bismuth (Bi) CRMs Containing this element –  Range 0.02 µg/L to 750 000 µg/mL Relative uncertainty ± 1 %	EPA Method 200.7– Modified; EPA Method 200.8 – Modified	Spectroscopy
	Boron (B) CRMs Containing this element –  Range 0.1 µg/L to 750 000 µg/mL Relative uncertainty ± 1 %	EPA Method 200.7– Modified; EPA Method 200.8 – Modified	Spectroscopy
	<sup>10</sup> Boron( <sup>10</sup> B) CRMs Containing this element –  Range 0.1 µg/L to 10 000 µg/mL Relative uncertainty ± 1 %	EPA Method 200.7– Modified; EPA Method 200.8 – Modified	Spectroscopy
	<sup>11</sup> Boron( <sup>11</sup> B) CRMs Containing this element –  Range 0.1 µg/L to 10 000 µg/mL Relative uncertainty ± 1 %	EPA Method 200.7– Modified; EPA Method 200.8 – Modified	Spectroscopy
	Cadmium (Cd) CRMs Containing this element –  Range 0.025 µg/L to 750 000 µg/mL Relative uncertainty ± 1 %	EPA Method 200.7– Modified; EPA Method 200.8 – Modified WI-QC-21	Spectroscopy Titrimetric

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Trace Metals Standard	<sup>106</sup> Cadmium( <sup>106</sup> Cd) CRMs Containing this element –  Range 0.025 µg/L to 10 000 µg/mL Relative uncertainty ± 1 %	EPA Method 200.7– Modified; EPA Method 200.8 – Modified	Spectroscopy
	Calcium (Ca) CRMs Containing this element –  Range 0.1 µg/L to 120 000 µg/mL Relative uncertainty ± 1 %	EPA Method 200.7– Modified; EPA Method 200.8 – Modified WI-QC-21	Spectroscopy Titrimetric
	Carbon (C) CRMs Containing this element –  Range 0.1 µg/L to 100 000 µg/mL Relative uncertainty ± 1 %	EPA Method 300.0 - Modified	Chromatography
	Cerium (Ce) CRMs Containing this element –  Range 0.1 µg/L to 750 000 µg/mL Relative uncertainty ± 1 %	EPA Method 200.7– Modified; EPA Method 200.8 – Modified WI-QC-21	Spectroscopy Titrimetric
	Cesium (Cs) CRMs Containing this element –  Range 0.1 µg/L to 750 000 µg/mL Relative uncertainty ± 1 %	EPA Method 200.8 – Modified WI-QC-22 EPA 300.0 - Modified	Spectroscopy Gravimetric Chromatography
	Chromium <sup>+3</sup> (Cr <sup>+3</sup> ) CRMs Containing this element –  Range 0.1 µg/L to 750 000 µg/mL Relative uncertainty ± 1 %	EPA Method 200.7– Modified; EPA Method 200.8 – Modified	Spectroscopy
	Hexavalent Chromium (Cr+6) CRMs Containing this element –  Range 0.1 µg/L to 750 000 µg/mL Relative uncertainty ± 1 %	EPA Method 200.7–Modified; EPA Method 200.8–Modified EPA Method 300.0 Modified WI-QC-37	Spectroscopy Chromatography Titrimetric
	<sup>50</sup> Chromium( <sup>50</sup> Cr) CRMs Containing this element –  Range 0.1 µg/L to 10 000 µg/mL Relative uncertainty ± 1 %	EPA Method 200.7– Modified; EPA Method 200.8 – Modified	Spectroscopy

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Trace Metals Standard	Cobalt (Co) CRMs Containing this element –  Range 0.05 µg/L to 750 000 µg/mL Relative uncertainty ± 1 %	EPA Method 200.7– Modified; EPA Method 200.8 – Modified WI-QC-21	Spectroscopy Titrimetric
	Copper (Cu) CRMs Containing this element –  Range 0.1 µg/L to 750 000 µg/mL Relative uncertainty ± 1 %	EPA Method 200.7– Modified; EPA Method 200.8 – Modified WI-QC-21	Spectroscopy Titrimetric
	<sup>65</sup> Copper( <sup>65</sup> Cu) CRMs Containing this element –  Range 0.1 µg/L to 10 000 µg/mL Relative uncertainty ± 1 %	EPA Method 200.7– Modified; EPA Method 200.8 – Modified	Spectroscopy
	Dysprosium (Dy) CRMs Containing this element –  Range 0.1 µg/L to 750 000 µg/mL Relative uncertainty ± 1 %	EPA Method 200.7– Modified; EPA Method 200.8 – Modified WI-QC-21	Spectroscopy Titrimetric
	Erbium (Er) CRMs Containing this element –  Range 0.1 µg/L to 750 000 µg/mL Relative uncertainty ± 1 %	EPA Method 200.7– Modified; EPA Method 200.8 – Modified WI-QC-21	Spectroscopy Titrimetric
	Europium (Eu) CRMs Containing this element –  Range 0.1 µg/L to 750 000 µg/mL Relative uncertainty ± 1 %	EPA Method 200.7– Modified; EPA Method 200.8 – Modified WI-QC-21	Spectroscopy Titrimetric
	Gadolinium (Gd) CRMs Containing this element –  Range 0.1 µg/L to 750 000 µg/mL Relative uncertainty ± 1 %	EPA Method 200.7– Modified; EPA Method 200.8 – Modified WI-QC-21	Spectroscopy Titrimetric
	Gallium (Ga) CRMs Containing this element –  Range 0.1 µg/L to 750 000 µg/mL Relative uncertainty ± 1 %	EPA Method 200.7– Modified; EPA Method 200.8 – Modified WI-QC-21	Spectroscopy Titrimetric
	Germanium (Ge) CRMs Containing this element –  Range 0.1 µg/L to 750 000 µg/mL Relative uncertainty ± 1 %	EPA Method 200.7– Modified; EPA Method 200.8 – Modified	Spectroscopy

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Trace Metals Standard	Gold (Au) CRMs Containing this element –  Range 0.1 µg/L to 750 000 µg/mL Relative uncertainty ± 1 %	EPA Method 200.7– Modified; EPA Method 200.8 – Modified	Spectroscopy
	Hafnium (Hf) CRMs Containing this element –  Range 0.02 µg/L to 750 000 µg/mL Relative uncertainty ± 1 %	EPA Method 200.7– Modified; EPA Method 200.8 – Modified	Spectroscopy
	Holmium (Ho) CRMs Containing this element –  Range 0.1 µg/L to 750 000 µg/mL Relative uncertainty ± 1 %	EPA Method 200.7– Modified; EPA Method 200.8 – Modified WI-QC-21	Spectroscopy Titrimetric
	Iodide (I <sup>-</sup> ) CRMs Containing this element –  Range 0.1 µg/L to 750 000 µg/mL Relative uncertainty ± 1 %	EPA Method 200.7 – Modified; EPA Method 200.8 –Modified WI-QC-29 WI-QC-48	Spectroscopy Titrimetric
	Indium (In) CRMs Containing this element –  Range 0.1 µg/L to 750 000 µg/mL Relative uncertainty ± 1 %	EPA Method 200.7 – Modified; EPA Method 200.8 –Modified WI-QC-21	Spectroscopy Titrimetric
	Iridium (Ir) CRMs Containing this element –  Range 0.1 µg/L to 750 000 µg/mL Relative uncertainty ± 1 %	EPA Method 200.7 – Modified; EPA Method 200.8 –Modified SOP-LAB-34	Spectroscopy, Gravimetric
	Iron (Fe) CRMs Containing this element –  Range 0.1 µg/L to 750 000 µg/mL Relative uncertainty ± 1 %	EPA Method 200.7 – Modified; EPA Method 200.8 –Modified WI-QC-21	Spectroscopy Titrimetric
	<sup>54</sup> Iron( <sup>54</sup> Fe) CRMs Containing this element –  Range 0.1 µg/L to 10 000 µg/mL Relative uncertainty ± 1 %	EPA Method 200.7 – Modified; EPA Method 200.8 –Modified	Spectroscopy

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Trace Metals Standard	<sup>57</sup> Iron( <sup>57</sup> Fe) CRMs Containing this element –  Range 0.1 µg/L to 10 000 µg/mL Relative uncertainty ± 1 %	EPA Method 200.7 – Modified; EPA Method 200.8 – Modified	Spectroscopy
	Lanthanum (La) CRMs Containing this element –  Range 0.1 µg/L to 750 000 µg/mL Relative uncertainty ± 1 %	EPA Method 200.7 – Modified; EPA Method 200.8 – Modified WI-QC-21	Spectroscopy Titrimetric
	Lead (Pb) CRMs Containing this element –  Range 0.025 µg/L to 750 000 µg/mL Relative uncertainty ± 1 %	EPA Method 200.7 – Modified; EPA Method 200.8 – Modified WI-QC-21	Spectroscopy Titrimetric
	<sup>204</sup> Lead( <sup>204</sup> Pb) CRMs Containing this element –  Range 0.025 µg/L to 10 000 µg/mL Relative uncertainty ± 1 %	EPA Method 200.7 – Modified; EPA Method 200.8 – Modified	Spectroscopy
	<sup>206</sup> Lead( <sup>206</sup> Pb) CRMs Containing this element –  Range 0.025 µg/L to 10 000 µg/mL Relative uncertainty ± 1 %	EPA Method 200.7 – Modified; EPA Method 200.8 – Modified	Spectroscopy
	<sup>207</sup> Lead( <sup>207</sup> Pb) CRMs Containing this element –  Range 0.025 µg/L to 10 000 µg/mL Relative uncertainty ± 1 %	EPA Method 200.7 – Modified; EPA Method 200.8 – Modified	Spectroscopy
	Lithium (Li) CRMs Containing this element –  Range 0.05 µg/L to 750 000 µg/mL Relative uncertainty ± 1 %	EPA Method 200.7 – Modified; EPA Method 200.8 – Modified WI-QC-22	Spectroscopy Gravimetric
	<sup>6</sup> Lithium( <sup>6</sup> Li) CRMs Containing this element –  Range 0.05 µg/L to 750 000 µg/mL Relative uncertainty ± 1 %	EPA Method 200.7 – Modified; EPA Method 200.8 – Modified WI-QC-22	Spectroscopy Gravimetric

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Trace Metals Standard	Lutetium (Lu) CRMs Containing this element –  Range 0.02 µg/L to 750 000 µg/mL Relative uncertainty ± 1 %	EPA Method 200.7 – Modified; EPA Method 200.8 – Modified WI-QC-21	Spectroscopy Titrimetric
	Magnesium (Mg) CRMs Containing this element –  Range 0.1 µg/L to 750 000 µg/mL Relative uncertainty ± 1 %	EPA Method 200.7 – Modified; EPA Method 200.8 – Modified WI-QC-21	Spectroscopy Titrimetric
	<sup>25</sup> Magnesium( <sup>25</sup> Mg) CRMs Containing this element –  Range 0.1 µg/L to 10 000 µg/mL Relative uncertainty ± 1 %	EPA Method 200.7 – Modified; EPA Method 200.8 – Modified	Spectroscopy
	Manganese (Mn) CRMs Containing this element –  Range 0.1 µg/L to 750 000 µg/mL Relative uncertainty ± 1 %	EPA Method 200.7 – Modified; EPA Method 200.8 – Modified WI-QC-21	Spectroscopy Titrimetric
	Mercury (Hg) CRMs Containing this element –  Range 0.05 µg/L to 750 000 µg/mL Relative uncertainty ± 1 %	EPA Method 200.7 – Modified; EPA Method 200.8 – Modified WI-QC-21	Spectroscopy Titrimetric
	Molybdenum (Mo) CRMs Containing this element –  Range 0.05 µg/L to 750 000 µg/mL Relative uncertainty ± 1 %	EPA Method 200.7 – Modified; EPA Method 200.8 – Modified	Spectroscopy
	Neodymium (Nd) CRMs Containing this element –  Range 0.1 µg/L to 750 000 µg/mL Relative uncertainty ± 1 %	EPA Method 200.7 – Modified; EPA Method 200.8 – Modified WI-QC-21	Spectroscopy Titrimetric
	Nickel (Ni) CRMs Containing this element –  Range 0.1 µg/L to 750 000 µg/mL Relative uncertainty ± 1 %	EPA Method 200.7 – Modified; EPA Method 200.8 – Modified WI-QC-21	Spectroscopy Titrimetric

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Trace Metals Standard	<sup>61</sup> Nickel( <sup>61</sup> Ni) CRMs Containing this element –  Range 0.1 µg/L to 750 000 µg/mL Relative uncertainty ± 1 %	EPA Method 200.7 – Modified; EPA Method 200.8 – Modified	Spectroscopy
	Niobium (Nb) CRMs Containing this element –  Range 0.1 µg/L to 750 000 µg/mL Relative uncertainty ± 1 %	EPA Method 200.7 – Modified; EPA Method 200.8 – Modified	Spectroscopy
	Osmium (Os) CRMs Containing this element –  Range 0.1 µg/L to 1011 µg/mL Relative uncertainty ± 1%	WI-QC-17 SOP-LAB-32	Spectroscopy Gravimetric
	Palladium (Pd) CRMs Containing this element –  Range 0.05 µg/L to 750 000 µg/mL Relative uncertainty ± 1 %	EPA Method 200.7 – Modified; EPA Method 200.8 – Modified	Spectroscopy
	Phosphorus (P) CRMs Containing this element –  Range 0.1 µg/L to 750 000 µg/mL Relative uncertainty ± 1 %	EPA Method 200.7 – Modified; EPA Method 200.8 – Modified WI-QC-28	Spectroscopy Titrimetric
	Platinum (Pt) CRMs Containing this element –  Range 0.05 µg/L to 750 000 µg/mL Relative uncertainty ± 1 %	EPA Method 200.7 – Modified; EPA Method 200.8 – Modified	Spectroscopy
	Potassium (K) CRMs Containing this element –  Range 0.1 µg/L to 750 000 µg/mL Relative uncertainty ± 1 %	EPA Method 200.7 – Modified; EPA Method 200.8 – Modified WI-QC-22	Spectroscopy Gravimetric
	Praseodymium (Pr) CRMs Containing this element –  Range 0.1 µg/L to 750 000 µg/mL Relative uncertainty ± 1 %	EPA Method 200.7 – Modified; EPA Method 200.8 – Modified WI-QC-21	Spectroscopy Titrimetric



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Trace Metals Standard	Rhenium (Re) CRMs Containing this element –  Range 0.1 µg/L to 750 000 µg/mL Relative uncertainty ± 1 %	EPA Method 200.7 – Modified; EPA Method 200.8 – Modified	Spectroscopy
	Rhodium (Rh) CRMs Containing this element –  Range 0.1 µg/L to 750 000 µg/mL Relative uncertainty ± 1 %	EPA Method 200.7 – Modified; EPA Method 200.8 – Modified	Spectroscopy
	Rubidium (Rb) CRMs Containing this element –  Range 0.1 µg/L to 750 000 µg/mL Relative uncertainty ± 1 %	EPA Method 200.7 – Modified; EPA Method 200.8 – Modified WI-QC-22	Chromatography  Spectroscopy  Gravimetric
	Ruthenium (Ru) CRMs Containing this element –  Range 0.1 µg/L to 750 000 µg/mL Relative uncertainty ± 1 %	EPA Method 200.7 – Modified; EPA Method 200.8 – Modified	Spectroscopy
	Samarium (Sm) CRMs Containing this element –  Range 0.1 µg/L to 750 000 µg/mL Relative uncertainty ± 1 %	EPA Method 200.7 – Modified; EPA Method 200.8 – Modified WI-QC-21	Spectroscopy Titrimetric
	Scandium (Sc) CRMs Containing this element –  Range 0.1 µg/L to 750 000 µg/mL Relative uncertainty ± 1 %	EPA Method 200.7 – Modified; EPA Method 200.8 – Modified WI-QC-21	Spectroscopy Titrimetric
	Selenium <sup>+4</sup> (Se <sup>+4</sup> ) CRMs Containing this element –  Range 0.1 µg/L to 750 000 µg/mL Relative uncertainty ± 1 %	EPA Method 200.7 – Modified; EPA Method 200.8 – Modified	Spectroscopy
	Selenium <sup>+6</sup> (Se <sup>+6</sup> ) CRMs Containing this element –  Range 0.1 µg/L to 10 000 µg/mL Relative uncertainty ± 1 %	EPA Method 200.7 – Modified; EPA Method 200.8 – Modified	Spectroscopy

Certified Reference Material	Concentration Ranges and Best Relative Uncertainty <sup>1</sup>	Test, Analysis, Measurement, Methods	Measurement Technique(s)
Trace Metals Standard	<sup>78</sup> Selenium( <sup>78</sup> Se) CRMs Containing this element –  Range 0.1 µg/L to 10 000 µg/mL Relative uncertainty ± 1 %	EPA Method 200.7 – Modified; EPA Method 200.8 – Modified	Spectroscopy
	<sup>82</sup> Selenium( <sup>82</sup> Se) CRMs Containing this element –  Range 0.1 µg/L to 10 000 µg/mL Relative uncertainty ± 1 %	EPA Method 200.7 – Modified; EPA Method 200.8 – Modified	Spectroscopy
	Silicon (Si) CRMs Containing this element –  Range 0.1 µg/L to 750 000 µg/mL Relative uncertainty ± 1 %	EPA Method 200.7 – Modified; EPA Method 200.8 – Modified	Spectroscopy
	Silver (Ag) CRMs Containing this element –  Range 0.025 µg/L to 750 000 µg/mL Relative uncertainty ± 1 %	EPA Method 200.7 – Modified; EPA Method 200.8 – Modified WI-QC-29	Spectroscopy Titrimetric
	<sup>109</sup> Silver( <sup>109</sup> Ag) CRMs Containing this element –  Range 0.025 µg/L to 10 000 µg/mL Relative uncertainty ± 1 %	EPA Method 200.7 – Modified; EPA Method 200.8 – Modified	Spectroscopy
	Sodium (Na) CRMs Containing this element –  Range 0.1 µg/L to 750 000 µg/mL Relative uncertainty ± 1 %	EPA Method 200.7 – Modified; EPA Method 200.8 – Modified WI-QC-22	Spectroscopy Gravimetric
	Strontium (Sr) CRMs Containing this element –  Range 0.05 µg/L to 100 000 µg/mL Relative uncertainty ± 1 %	EPA Method 200.7 – Modified; EPA Method 200.8 – Modified WI-QC-21	Spectroscopy Titrimetric
	<sup>86</sup> Strontium( <sup>86</sup> Sr) CRMs Containing this element –  Range 0.05 µg/L to 100 µg/mL Relative uncertainty ± 1 %	EPA Method 200.7 – Modified; EPA Method 200.8 – Modified	Spectroscopy

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Trace Metals Standard	Sulfur (S) CRMs Containing this element –  Range 0.1 µg/L to 750 000 µg/mL Relative uncertainty ± 1 %	EPA Method 200.7 – Modified; EPA Method 200.8 – Modified WI-QC-28 & WI- QC-46	Spectroscopy Titrimetric
	Tantalum (Ta) CRMs Containing this element –  Range 0.025 µg/L to 750 000 µg/mL Relative uncertainty ± 1 %	EPA Method 200.7 – Modified; EPA Method 200.8 – Modified	Spectroscopy
	Tellurium (Te) CRMs Containing this element –  Range 0.1 µg/L to 750 000 µg/mL Relative uncertainty ± 1 %	EPA Method 200.7 – Modified; EPA Method 200.8 – Modified	Spectroscopy
	Terbium (Tb) CRMs Containing this element –  Range 0.1 µg/L to 750 000 µg/mL Relative uncertainty ± 1 %	EPA Method 200.7 – Modified; EPA Method 200.8 – Modified WI-QC-21	Spectroscopy Titrimetric
	Thallium (Tl) CRMs Containing this element –  Range 0.05 µg/L to 750 000 µg/mL Relative uncertainty ± 1 %	EPA Method 200.7 – Modified; EPA Method 200.8 – Modified	Spectroscopy
	<sup>203</sup> Thallium( <sup>203</sup> Tl) CRMs Containing this element –  Range 0.05 µg/L to 10 000 µg/mL Relative uncertainty ± 1 %	EPA Method 200.7 – Modified; EPA Method 200.8 – Modified	Spectroscopy
	<sup>205</sup> Thallium( <sup>205</sup> Tl) CRMs Containing this element –  Range 0.05 µg/L to 10 000 µg/mL Relative uncertainty ± 1 %	EPA Method 200.7 – Modified; EPA Method 200.8 – Modified	Spectroscopy
	Thorium (Th) CRMs Containing this element –  Range 1 µg/L to 20 000 µg/mL Relative uncertainty ± 1%	EPA Method 200.7 – Modified; EPA Method 200.8 – Modified WI-QC-21	Spectroscopy Titrimetric

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Trace Metals Standard	Thulium (Tm) CRMs Containing this element –  Range 0.1 µg/L to 750 000 µg/mL Relative uncertainty ± 1 %	EPA Method 200.7 – Modified; EPA Method 200.8 – Modified WI-QC-21	Spectroscopy Titrimetric
	Tin (Sn) CRMs Containing this element –  Range 0.1 µg/L to 750 000 µg/mL Relative uncertainty ± 1 %	EPA Method 200.7 – Modified; EPA Method 200.8 – Modified	Spectroscopy
	<sup>122</sup> Tin( <sup>122</sup> Sn) CRMs Containing this element –  Range 0.1 µg/L to 10 000 µg/mL Relative uncertainty ± 1 %	EPA Method 200.7 – Modified; EPA Method 200.8 – Modified	Spectroscopy
	Titanium (Ti) CRMs Containing this element –  Range 0.1 µg/L to 750 000 µg/mL Relative uncertainty ± 1 %	EPA Method 200.7 – Modified; EPA Method 200.8 – Modified	Spectroscopy
	Tungsten (W) CRMs Containing this element –  Range 0.05 µg/L to 750 000 µg/mL Relative uncertainty ± 1 %	EPA Method 200.7 – Modified; EPA Method 200.8 – Modified	Spectroscopy
	Uranium(U) CRMs Containing this element –  Range 0.02 µg/L to 750 000 µg/mL Relative uncertainty ± 1 %	EPA Method 200.7 – Modified; EPA Method 200.8 – Modified	Spectroscopy
	Vanadium (V) CRMs Containing this element –  Range 0.1 µg/L to 750 000 µg/mL Relative uncertainty ± 1 %	EPA Method 200.7 – Modified; EPA Method 200.8 – Modified WI-QC-21	Spectroscopy Titrimetric
	Ytterbium (Yb) CRMs Containing this element –  Range 0.1 µg/L to 750 000 µg/mL Relative uncertainty ± 1 %	EPA Method 200.7 – Modified; EPA Method 200.8 – Modified WI-QC-21	Spectroscopy Titrimetric

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Trace Metals Standard	Yttrium (Y) CRMs Containing this element –  Range 0.1 µg/L to 750 000 µg/mL Relative uncertainty ± 1 %	EPA Method 200.7 – Modified; EPA Method 200.8 – Modified WI-QC-21	Spectroscopy Titrimetric
	Zinc (Zn) CRMs Containing this element –  Range 0.1 µg/L to 750 000 µg/mL Relative uncertainty ± 1 %	EPA Method 200.7 – Modified; EPA Method 200.8 – Modified WI-QC-21	Spectroscopy Titrimetric
	<sup>67</sup> Zinc( <sup>67</sup> Zn) CRMs Containing this element –  Range 0.1 µg/L to 10 000 µg/mL Relative uncertainty ± 1 %	EPA Method 200.7 – Modified; EPA Method 200.8 – Modified	Spectroscopy
	Zirconium (Zr) CRMs Containing this element –  Range 0.1 µg/L to 750 000 µg/mL Relative uncertainty ± 1 %	EPA Method 200.7 – Modified; EPA Method 200.8 – Modified	Spectroscopy
Ion Chromatography & Ion Selective Electrode Calibrants	3-methoxypropylamine (MPA) CRMs Containing this component –  Range 0.1 µg/L to 100 000 µg/mL Relative uncertainty ± 1 %	EPA Method 300.0 – Modified	Chromatography
	Acetate (OAC) CRMs Containing this component –  Range 0.1 µg/L to 100 000 µg/mL Relative uncertainty ± 1 %	EPA Method 300.0 – Modified	Chromatography
	Adipate (ADP) CRMs Containing this component –  Range 0.1 µg/L to 100 000 µg/mL Relative uncertainty ± 1 %	EPA Method 300.0 – Modified	Chromatography
	Ammonium (NH <sub>4</sub> ) CRMs Containing this component –  Range 0.1 µg/L to 100 000 µg/mL Relative uncertainty ± 1 %	EPA Method 300.0 – Modified WI-QC-29 WI-QC-48	Chromatography Titrimetric

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Ion Chromatography & Ion Selective Electrode Calibrants	Ammonium as Nitrogen (NNH <sub>4</sub> ) CRMs Containing this component –  Range 0.1 µg/L to 100 000 µg/mL Relative uncertainty ± 1 %	EPA Method 300.0 – Modified WI-QC-29 WI-QC-48	Chromatography Titrimetric
	Benzoate (BEN) CRMs Containing this component –  Range 0.1 µg/L to 100 000 µg/mL Relative uncertainty ± 1 %	EPA Method 300.0 – Modified	Chromatography
	Bromate (BRO <sub>3</sub> ) CRMs Containing this component –  Range 0.1 µg/L to 100 000 µg/mL Relative uncertainty ± 1 %	EPA Method 300.0 – Modified WI-QC-29	Chromatography Titrimetric
	Bromide (BR) CRMs Containing this component –  Range 0.1 µg/L to 100 000 µg/mL Relative uncertainty ± 1 %	EPA Method 300.0 – Modified WI-QC-29 WI-QC-48	Chromatography Titrimetric
	Butyrate (BTR) CRMs Containing this component –  Range 0.1 µg/L to 100 000 µg/mL Relative uncertainty ± 1 %	EPA Method 300.0 – Modified	Chromatography
	Carbonate (CO <sub>3</sub> ) CRMs Containing this component  Range 0.1 µg/L to 100 000 µg/mL Relative uncertainty ± 1 %	WI-QC-33 WI-QC-45	Titrimetric
	Chlorate (CLO <sub>3</sub> ) CRMs Containing this component –  Range 0.1 µg/L to 100 000 µg/mL Relative uncertainty ± 1 %	EPA Method 300.0 – Modified EPA Method 200.7	Chromatography Spectroscopy
	Chloride (CL) CRMs Containing this component –  Range 0.1 µg/L to 750 000 µg/mL Relative uncertainty ± 1 %	EPA Method 300.0 – Modified WI-QC-29 WI-QC-48	Chromatography Titrimetric

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Ion Chromatography & Ion Selective Electrode Calibrants	Chlorite (CLO <sub>2</sub> ) CRMs Containing this component –  Range 0.1 µg/L to 100 000 µg/mL Relative uncertainty ± 1 %	EPA Method 300.0 – Modified WI-QC-32-9	Chromatography Titrimetric
	Chromate (CRO <sub>4</sub> ) CRMs Containing this component –  Range 0.1 µg/L to 100 000 µg/mL Relative uncertainty ± 1 %	EPA Method 200.7 WI-QC-37	Spectroscopy  Titrimetric
	Citrate (CIT) CRMs Containing this component –  Range 0.1 µg/L to 100 000 µg/mL Relative uncertainty ± 1 %	EPA Method 300.0 – Modified	Chromatography
	Dichloroacetate (DCA) CRMs Containing this component –  Range 0.1 µg/L to 100 000 µg/mL Relative uncertainty ± 1 %	EPA Method 300.0 – Modified	Chromatography
	DiEthanolamine (DEA) CRMs Containing this component –  Range 0.1 µg/L to 100 000 µg/mL Relative uncertainty ± 1 %	EPA Method 300.0 – Modified	Chromatography
	DiMethylamine (DMA) CRMs Containing this component –  Range 0.1 µg/L to 100 000 µg/mL Relative uncertainty ± 1 %	EPA Method 300.0 – Modified	Chromatography
	Fluoride (F) CRMs Containing this component –  Range 0.1 µg/L to 100 000 µg/mL Relative uncertainty ± 1 %	EPA Method 300.0 – Modified	Chromatography
	Formate (HCO) CRMs Containing this component –  Range 0.1 µg/L to 100 000 µg/mL Relative uncertainty ± 1 %	EPA Method 300.0 – Modified	Chromatography

<b>Certified Reference Material</b>	<b>Concentration Ranges and Best Relative Uncertainty<sup>1</sup></b>	<b>Test, Analysis, Measurement, Methods</b>	<b>Measurement Technique(s)</b>
Ion Chromatography & Ion Selective Electrode Calibrants	Glutarate (GTR) CRMs Containing this component –  Range 0.1 µg/L to 100 000 µg/mL Relative uncertainty ± 1 %	EPA Method 300.0 – Modified	Chromatography
	Glycolate (GLY) CRMs Containing this component –  Range 0.1 µg/L to 100 000 µg/mL Relative uncertainty ± 1 %	EPA Method 300.0 – Modified	Chromatography
	Lactate (LCT) CRMs Containing this component –  Range 0.1 µg/L to 100 000 µg/mL Relative uncertainty ± 1 %	EPA Method 300.0 – Modified	Chromatography
	Malate (MLA) CRMs Containing this component –  Range 0.1 µg/L to 100 000 µg/mL Relative uncertainty ± 1 %	EPA Method 300.0 – Modified	Chromatography
	Maleate (MLE) CRMs Containing this component –  Range 0.1 µg/L to 100 000 µg/mL Relative uncertainty ± 1 %	EPA Method 300.0 – Modified	Chromatography
	Malonate (MLO) CRMs Containing this component –  Range 0.1 µg/L to 100 000 µg/mL Relative uncertainty ± 1 %	EPA Method 300.0 – Modified	Chromatography
	Methanesulfonate (MSA) CRMs Containing this component –  Range 0.1 µg/L to 100 000 µg/mL Relative uncertainty ± 1 %	EPA Method 300.0 – Modified	Chromatography
	MonoEthanolamine (MEA) CRMs Containing this component –  Range 0.1 µg/L to 100 000 µg/mL Relative uncertainty ± 1 %	EPA Method 300.0 – Modified	Chromatography



<b>Certified Reference Material</b>	<b>Concentration Ranges and Best Relative Uncertainty<sup>1</sup></b>	<b>Test, Analysis, Measurement, Methods</b>	<b>Measurement Technique(s)</b>
Ion Chromatography & Ion Selective Electrode Calibrants	MonoMethylamine (MMA) CRMs Containing this component –  Range 0.1 µg/L to 100 000 µg/mL Relative uncertainty ± 1 %	EPA Method 300.0 – Modified	Chromatography
	Nitrate (NO3) CRMs Containing this component –  Range 0.1 µg/L to 100 000 µg/mL Relative uncertainty ± 1 %	EPA Method 300.0 – Modified	Chromatography
	Nitrate as Nitrogen (NNO3) CRMs Containing this component –  Range 0.1 µg/L to 100 000 µg/mL Relative uncertainty ± 1 %	EPA Method 300.0 – Modified	Chromatography
	Nitritotriacetate (NTA) CRMs Containing this component –  Range 0.1 µg/L to 100 000 µg/mL Relative uncertainty ± 1 %	EPA Method 300.0 – Modified	Chromatography
	Nitrite (NO2) CRMs Containing this component –  Range 0.1 µg/L to 100 000 µg/mL Relative uncertainty ± 1 %	EPA Method 300.0 – Modified	Chromatography
	Nitrite as Nitrogen (NNO2) CRMs Containing this component –  Range 0.1 µg/L to 100 000 µg/mL Relative uncertainty ± 1 %	EPA Method 300.0 – Modified	Chromatography
	Oxalate (OXA) CRMs Containing this component –  Range 0.1 µg/L to 100 000 µg/mL Relative uncertainty ± 1 %	EPA Method 300.0 – Modified	Chromatography
	Perchlorate (CLO4) CRMs Containing this component –  Range 0.1 µg/L to 100 000 µg/mL Relative uncertainty ± 1 %	EPA Method 300.0 – Modified EPA Method 200.7	Chromatography Spectroscopy

<b>Certified Reference Material</b>	<b>Concentration Ranges and Best Relative Uncertainty<sup>1</sup></b>	<b>Test, Analysis, Measurement, Methods</b>	<b>Measurement Technique(s)</b>
Ion Chromatography & Ion Selective Electrode Calibrants	Phosphate (PO <sub>4</sub> ) CRMs Containing this component –  Range 0.1 µg/L to 750 000 µg/mL Relative uncertainty ± 1 %	EPA Method 300.0 – Modified	Chromatography
	Phosphate as Phosphorous (PPO <sub>4</sub> ) CRMs Containing this component –  Range 0.1 µg/L to 750 000 µg/mL Relative uncertainty ± 1 %	EPA Method 300.0 – Modified	Chromatography
	Phthalate (KHP) CRMs Containing this component –  Range 0.1 µg/L to 100 000 µg/mL Relative uncertainty ± 1 %	EPA Method 300.0 – Modified	Chromatography
	Propionate (OPR) CRMs Containing this component–  Range 0.1 µg/L to 100 000 µg/mL Relative uncertainty ± 1 %	EPA Method 300.0 – Modified	Chromatography
	Succinate (SCC) CRMs Containing this component–  Range 0.1 µg/L to 100 000 µg/mL Relative uncertainty ± 1 %	EPA Method 300.0 – Modified	Chromatography
	Sulfate (SO <sub>4</sub> ) CRMs Containing this component –  Range 0.1 µg/L to 950 000 µg/mL Relative uncertainty ± 1 %	EPA Method 300.0 – Modified	Chromatography
	Tartrate (TRTR) CRMs Containing this component–  Range 0.1 µg/L to 100 000 µg/mL Relative uncertainty ± 1 %	EPA Method 300.0 – Modified	Chromatography
	Thiocyanate (SCN) CRMs Containing this component –  Range 0.1 µg/L to 100 000 µg/mL Relative uncertainty ± 1 %	WI-QC-29 WI-QC-48	Titrimetric

<b>Certified Reference Material</b>	<b>Concentration Ranges and Best Relative Uncertainty<sup>1</sup></b>	<b>Test, Analysis, Measurement, Methods</b>	<b>Measurement Technique(s)</b>
Ion Chromatography & Ion Selective Electrode Calibrants	Thiosulfate (S2O3) CRMs Containing this component –  Range 0.1 µg/L to 100 000 µg/mL Relative uncertainty ± 1 %	Standard Methods 4500-Cl B – Modified WI-QC-32-35	Titrimetric
	TriEthanolamine (TEA) CRMs Containing this component –  Range 0.1 µg/L to 100 000 µg/mL Relative uncertainty ± 1 %	EPA Method 300.0 – Modified	Chromatography
	TriEthylamine (TA) CRMs Containing this component –  Range 0.1 µg/L to 100 000 µg/mL Relative uncertainty ± 1 %	EPA Method 300.0 – Modified	Chromatography
	TriMethylamine (TMA) CRMs Containing this component –  Range 0.1 µg/L to 100 000 µg/mL Relative uncertainty ± 1 %	EPA Method 300.0 – Modified	Chromatography
	TetraMethylammonium (TMAH) CRMs Containing this component –  Range 0.1 µg/L to 100 000 µg/mL Relative uncertainty ± 1 %	EPA Method 300.0 – Modified	Chromatography
Waters	Filterable, Non-Filterable, and Total Solids CRMs Total Solids Range (140 to 800) mg/L Non-filterable Solids (20 to 100) mg/L Dissolved Solids (140 to 800) mg/L Best Relative uncertainty ± 10 %	Modified Standard Methods 2540C, 2540D, 2540B respectively	Gravimetric
	Oil & Grease CRMs Range (20 to 200) mg/L Relative uncertainty ± 5 %	Standard Methods 5520B - Modified	Gravimetric

Certified Reference Material	Concentration Ranges and Best Relative Uncertainty <sup>1</sup>	Test, Analysis, Measurement, Methods	Measurement Technique(s)
Waters	Cation CRMs Ca <sup>+2</sup> Range (3.5 to 110 mg/L) K <sup>+1</sup> Range (4 to 40 mg/L) Mg <sup>+2</sup> Range (2 to 40 mg/L) Na <sup>+1</sup> Range (6 to 100 mg/L) Relative uncertainty ± 1 %	EPA Method 200.7 – Modified	Spectroscopy
	Chromium <sup>+6</sup> CRMs Cr <sup>+6</sup> Range (45 to 900 µg/L) Relative uncertainty ± 1%	Standard Methods 3500-Cr B Modified EPA Method 200.7 – Modified; EPA Method 300.0 – Modified;	Colorimetric Spectroscopy Chromatography
	Cyanide CRMs Containing this chemical – Range (0.1 to 10 000) µg/mL Relative uncertainty ± 5 %	Standard Methods 4500-CN·D – Modified; WI-QC Appendix A CN	Titrimetric
	Hg CRMs Hg Range (2 to 30 µg /L) Relative uncertainty ± 1%	EPA Method 200.7 – Modified	Spectroscopy
	Metals CRMs Ag Range (26 to 1000 µg/L) Al Range (200 to 4000 µg/L) As Range (70 to 900 µg/L) Ba Range (100 to 2500 µg/L) Be Range (8 to 900 µg/L) Ca Range (3.5 to 100 mg/L) Cd Range (8 to 1000µg/L) Cr Range (17 to 1000 µg/L) Cu Range (40 to 1000 µg/L) Fe Range (200 to 4000 µg/L) Mn Range (70 to 4000 µg/L) Ni Range (80 to 3000 µg/L) Pb Range (70 to 3000 µg/L) Sb Range (90 to 900 µg/L) Se Range (90 to 2000 µg/L) Tl Range (60 to 900 µg/L) Zn Range (100 to 2000 µg/L) Relative uncertainty ± 1 %	EPA Method 200.7 – Modified	Spectroscopy
	Nitrite CRMs Nitrite as Nitrogen Range (0.4 to 4 mg/L) Relative uncertainty ± 1%	EPA Method 300.0 – Modified	Chromatography

Certified Reference Material	Concentration Ranges and Best Relative Uncertainty <sup>1</sup>	Test, Analysis, Measurement, Methods	Measurement Technique(s)
Waters	Simple Nutrients CRMs Phosphate as Phosphorous Range (0.5 to 5.5 mg/L) Nitrate as Nitrogen Range (0.25 to 40 mg/L) Ammonium as Nitrogen Range (0.65 to 20 mg/L) Relative uncertainty $\pm 1\%$	EPA Method 300.0 – Modified	Chromatography
	pH CRMs pH Range (5 to 10 units @ $x$ °C) Absolute Uncertainty $\pm 0.05$ pH units	Standard Methods 4500 – H+ – Modified WI-QC-Appendix A_pH	Electrometric
	Simulated Rainwater CRMs $Ca^{+2}$ Range (3.5 to 110 mg/L) $Cl^-$ Range (35 to 275 mg/L) $F^-$ Range (0.3 to 4 mg/L) $K^+$ Range (4 to 40 mg/L) $Mg^{+2}$ Range (2 to 40 mg/L) pH Range (5 to 10 units @ $x$ °C) Conductivity Range (200 to 1200 $\mu$ mhos @ $x$ °C) $Na^+$ Range (6 to 100 mg/L) $NH_4^+$ Range (0.79 to 24 mg/L) $NO_3^-$ Range (1.1 to 177 mg/L) $SO_4^{2-}$ Range (5 to 125 mg/L) Relative uncertainty $\pm 2\%$	EPA Method 200.7- Modified EPA Method 300.0 – Modified Standard Methods 4500 – H+ – Modified WI-QC- AppendixA_pH Standard Methods 2510B – Modified WI-QC-Appendix A_Conductance	Spectroscopy Chromatography Electrometric
	Trace Metals CRMs Ag Range (26 to 1000 $\mu$ g/L) Al Range (200 to 4000 $\mu$ g/L) As Range (70 to 900 $\mu$ g/L) B Range (800 to 2000 $\mu$ g/L) Ba Range (100 to 2500 $\mu$ g/L) Be Range (8 to 900 $\mu$ g/L) Cd Range (8 to 1000 $\mu$ g/L) Co Range (28 to 1000 $\mu$ g/L) Cr Range (17 to 1000 $\mu$ g/L) Cu Range (140 to 1000 $\mu$ g/L) Fe Range (200 to 4000 $\mu$ g/L) Mn Range (70 to 4000 $\mu$ g/L) Mo Range (60 to 600 $\mu$ g/L) Ni Range (80 to 3000 $\mu$ g/L) Pb Range (70 to 3000 $\mu$ g/L) Sb Range (90 to 900 $\mu$ g/L) Se Range (90 to 2000 $\mu$ g/L) Sr Range (30 to 500 $\mu$ g/L) Tl Range (60 to 900 $\mu$ g/L) V Range (50 to 2000 $\mu$ g/L) Zn Range (100 to 2000 $\mu$ g/L) Relative uncertainty $\pm 1\%$	EPA Method 200.7 – Modified	Spectroscopy

Certified Reference Material	Concentration Ranges and Best Relative Uncertainty <sup>1</sup>	Test, Analysis, Measurement, Methods	Measurement Technique(s)
Waters	Water Hardness CRMs Ca: Range (8.7 to 275 mg/L) Mg: Range (2.9 to 92 mg/L) Hardness as CaCO <sub>3</sub> : Range (17 to 440 mg/L) Relative uncertainty 1 %	EPA Method 200.7 – Modified Standard Methods 2340 B – Modified	Spectroscopy
	Minerals CRMs Cl <sup>-</sup> Range (35 to 275 mg/L) F <sup>-</sup> Range (0.3 to 4 mg/L) K <sup>+</sup> Range (4 to 40 mg/L) Nitrate as Nitrogen Range (0.25 to 40 mg/L) Conductivity Range (200 to 1200 µmhos @ x °C) Alkalinity Range (10 to 400 mg/L) Na <sup>+</sup> Range (6 to 100 mg/L) SO <sub>4</sub> <sup>-2</sup> Range (5 to 125 mg/L) Relative uncertainty ± 1 %	EPA Method 200.7 – Modified EPA Method 300.0 – Modified Standard Methods 2510B – Modified WI-QC_ Appendix A_ Conductance Standard Methods 2320B – Modified WI-QC- Appendix A_ Alkalinity	Spectroscopy Chromatography Electrometric Titrimetric
	Carbon CRMs Total Organic Carbon Containing this element  Range 0.1 µg/mL to 100,000 µg/mL Relative uncertainty ± 1 %	WI-QC-45	Titrimetric  Spectroscopy
	Total Alkalinity CRMs Range 1 µg/mL to 20 000 µg/mL Relative uncertainty ± 1 %	WI-QC-Appendix A_ Alkalinity EPA Method 200.7 – Modified	Titrimetric Spectroscopy
	Bicarbonate CRMs Range 1 µg/mL to 50,000 µg/mL Relative uncertainty ± 1 %	WI-QC-18.1 WI-QC-33	Titrimetric Spectroscopy
	pH Standards	pH 0.5 CRMs Range (0.48 to 0.52 pH units @ x °C) Absolute uncertainty ± 0.05 pH units	Standard Methods 4500H <sup>+</sup> - Modified WI-QC Appendix A_pH
pH 1.68 CRMs Range (1.61 to 1.77 pH units @ x °C) Absolute uncertainty ± 0.05 pH units		Standard Methods 4500H <sup>+</sup> - Modified WI-QC Appendix A_pH	Electrometric
pH 2 CRMs Range (1.92 to 2.08 pH units @ x °C) Absolute uncertainty ± 0.05 pH units		Standard Methods 4500H <sup>+</sup> - Modified WI-QC Appendix A_pH	Electrometric
pH 3 CRMs Range (2.90 to 3.10 pH units @ x °C) Absolute uncertainty ± 0.05 pH units		Standard Methods 4500H <sup>+</sup> - Modified WI-QC Appendix A_pH	Electrometric

<b>Certified Reference Material</b>	<b>Concentration Ranges and Best Relative Uncertainty<sup>1</sup></b>	<b>Test, Analysis, Measurement, Methods</b>	<b>Measurement Technique(s)</b>
pH Standards	pH 4 CRMs Range (3.90 to 4.10 pH units @ x °C) Absolute uncertainty ± 0.05 pH units	Standard Methods 4500H <sup>+</sup> - Modified WI-QC Appendix A_pH	Electrometric
	pH 5 CRMs Range (4.90 to 5.10 pH units @ x °C) Absolute uncertainty ± 0.05 pH units	Standard Methods 4500H <sup>+</sup> - Modified WI-QC Appendix A_pH	Electrometric
	pH 6 CRMs Range (5.70 to 6.30 pH units @ x °C) Absolute uncertainty ± 0.05 pH units	Standard Methods 4500H <sup>+</sup> - Modified WI-QC Appendix A_pH	Electrometric
	pH 6.86 CRMs Range (6.75 to 7.00 pH units @ x °C) Absolute uncertainty ± 0.05 pH units	Standard Methods 4500H <sup>+</sup> - Modified WI-QC Appendix A_pH	Electrometric
	pH 7 CRMs Range (6.90 to 7.10 pH units @ x °C) Absolute uncertainty ± 0.05 pH units	Standard Methods 4500H <sup>+</sup> Modified WI-QC Appendix_A_pH	Electrometric
	pH 8 CRMs Range (7.85 to 8.15 pH units @ x °C) Absolute uncertainty ± 0.05 pH units	Standard Methods 4500H <sup>+</sup> Modified WI-QC Appendix_A_pH	Electrometric
	pH 9 CRMs Range (8.65 to 9.35 pH units @ x °C) Absolute uncertainty ± 0.05 pH units	Standard Methods 4500H <sup>+</sup> Modified WI-QC Appendix_A_pH	Electrometric
	pH 9.18 CRMs Range (8.85 to 9.51 pH units @ x °C) Absolute uncertainty ± 0.05 pH units	Standard Methods 4500H <sup>+</sup> Modified WI-QC Appendix_A_pH	Electrometric
	pH 10 CRMs Range (9.65 to 10.35 pH units @ x °C) Absolute uncertainty ± 0.05 pH units	Standard Methods 4500H <sup>+</sup> Modified WI-QC Appendix_A_pH	Electrometric
	pH 11 CRMs Range (10.25 – 11.75 pH units @ x °C) Absolute uncertainty ± 0.05 pH units	Standard Methods 4500H <sup>+</sup> Modified WI-QC Appendix_A_pH	Electrometric
	pH 12 CRMs Range (10.75 to 12.75 pH units @ x °C) Absolute uncertainty ± 0.05 pH units	Standard Methods 4500H <sup>+</sup> Modified WI-QC Appendix_A_pH	Electrometric
	pH 12.47 CRMs Range (11.35 to 13.20 pH units @ x °C) Absolute uncertainty ± 0.05 pH units	Standard Methods 4500H <sup>+</sup> Modified WI-QC Appendix_A_pH	Electrometric
	Custom pH CRMs Range (0.1 to 13.3 pH units @ x °C) Absolute uncertainty ± 0.05 pH units	Standard Methods 4500H <sup>+</sup> Modified WI-QC Appendix_A_pH	Electrometric

Certified Reference Material	Concentration Ranges and Best Relative Uncertainty <sup>1</sup>	Test, Analysis, Measurement, Methods	Measurement Technique(s)
Titrants	Titrant 0.1M Hydrochloric Acid CRMs Range (0.098 to 0.102) M Relative uncertainty $\pm 1\%$	WI-QC-47	Titrimetric
	Titrant 1.0M Hydrochloric Acid CRMs Range (0.980 to 1.020) M Relative uncertainty $\pm 1\%$	WI-QC-47	Titrimetric
	Titrant 0.1M Nitric Acid CRMs Range (0.098 to 0.102) M Relative uncertainty $\pm 1\%$	WI-QC-47	Titrimetric
	Titrant 1.0M Nitric Acid CRMs Range (0.980 to 1.020) M Relative uncertainty $\pm 1\%$	WI-QC-47	Titrimetric
	Titrant 0.1M Perchloric Acid CRMs Range (0.098 to 0.102) M Relative uncertainty $\pm 1\%$	WI-QC-47	Titrimetric
	Titrant 0.1M Sodium Hydroxide CRMs Range (0.098 to 0.102) M Relative uncertainty $\pm 1\%$	WI-QC-47	Titrimetric
	Titrant 1.0M Sodium Hydroxide CRMs Range (0.980 to 1.020) M Relative uncertainty $\pm 1\%$	WI-QC-47	Titrimetric
	Titrant 0.05M EDTA CRMs Range (0.049 to 0.051) M Relative uncertainty $\pm 1\%$	WI-QC-47	Titrimetric
	Titrant 0.5M EDTA CRMs Range (0.490 to 0.510) M Relative uncertainty $\pm 1\%$	WI-QC-47	Titrimetric
	Titrant 0.1N AGNO <sub>3</sub> CRMs Range (0.098 to 0.102) N Relative uncertainty $\pm 1\%$	WI-QC-47	Titrimetric
	Titrant 0.1N NA <sub>2</sub> S <sub>2</sub> O <sub>3</sub> CRMs Range (0.098 to 0.102) N Relative uncertainty $\pm 1\%$	WI-QC-47	Titrimetric
	Custom Titrants CRMs Range (0.0001 to 50) N Relative uncertainty $\pm 1\%$	WI-QC-47 WI- QC-21 Standard Methods 4500H <sup>+</sup> Modified Standard Methods 4500-CN- D- Modified; WI-QC_Appendix_ A_CN WI-QC-32 WI-QC-27	Titrimetric Electrometric



Certified Reference Material	Concentration Ranges and Best Relative Uncertainty <sup>1</sup>	Test, Analysis, Measurement, Methods	Measurement Technique(s)
Conductivity Standards	2 µmhos/cm Conductivity CRMs Range (1.50 to 2.50) µmhos/cm @ x °C Relative uncertainty ± 10%	Standard Methods 2510B Modified WI-QC_AppendixA_ Conductance	Electrometric
	5 µmhos/cm Conductivity CRMs Range (4.50 to 5.50) µmhos/cm @ x °C Relative uncertainty ± 10%	Standard Methods 2510B Modified WI-QC_AppendixA_ Conductance	Electrometric
	10 µmhos/cm Conductivity CRMs Range (9.0 to 11.0) µmhos/cm @ x °C Relative uncertainty ± 2%	Standard Methods 2510B Modified WI-QC_AppendixA_ Conductance	Electrometric
	20 µmhos/cm Conductivity CRMs Range (18.0 to 22.0) µmhos/cm @ x °C Relative uncertainty ± 2%	Standard Methods 2510B Modified WI-QC_AppendixA_ Conductance	Electrometric
	75 µmhos/cm Conductivity CRMs Range (67.0 to 78.0) µmhos/cm @ x °C Relative uncertainty ± 1 %	Standard Methods 2510B Modified WI-QC_AppendixA_ Conductance	Electrometric
	84 µmhos/cm Conductivity CRMs Range (75.0 to 87.0) µmhos/cm @ x °C Relative uncertainty ± 1 %	Standard Methods 2510B Modified WI-QC_AppendixA_ Conductance	Electrometric
	100 µmhos/cm Conductivity CRMs Range (90.0 to 102.2) µmhos/cm @ x °C Relative uncertainty ± 1 %	Standard Methods 2510B Modified WI-QC_AppendixA_ Conductance	Electrometric
	147 µmhos/cm Conductivity CRMs Range (130.0 to 150.0) µmhos/cm @ x °C Relative uncertainty ± 1 %	Standard Methods 2510B Modified WI-QC_AppendixA_ Conductance	Electrometric
	250 µmhos/cm Conductivity CRMs Range (225 to 255) µmhos/cm @ x °C Relative uncertainty ± 1 %	Standard Methods 2510B Modified WI-QC_AppendixA_ Conductance	Electrometric
	500 µmhos/cm Conductivity CRMs Range (– 450 to 505) µmhos/cm @ x °C Relative uncertainty ± 1 %	Standard Methods 2510B Modified WI-QC_AppendixA_ Conductance	Electrometric

Certified Reference Material	Concentration Ranges and Best Relative Uncertainty <sup>1</sup>	Test, Analysis, Measurement, Methods	Measurement Technique(s)
Conductivity Standards	1000 µmhos/cm Conductivity CRMs Range (900 to 1010) µmhos/cm @ x °C Relative uncertainty ± 1 %	Standard Methods 2510B Modified WI-QC_AppendixA_ Conductance	Electrometric
	1200 µmhos/cm Conductivity CRMs Range (1080 to 1220) µmhos/cm @ x °C Relative uncertainty ± 1 %	Standard Methods 2510B Modified WI-QC_AppendixA_ Conductance	Electrometric
	1400 µmhos/cm Conductivity CRMs Range (1260 to 1414) µmhos/cm @ x °C Relative uncertainty ± 1 %	Standard Methods 2510B Modified WI-QC_AppendixA_ Conductance	Electrometric
	1413 µmhos/cm Conductivity CRMs Range (1270 to 1427) µmhos/cm @ x °C Relative uncertainty ± 1 %	Standard Methods 2510B Modified WI-QC_AppendixA_ Conductance	Electrometric
	1430 µmhos/cm Conductivity CRMs Range (1285 to 1444) µmhos/cm @ x °C Relative uncertainty ± 1 %	Standard Methods 2510B Modified WI-QC_AppendixA_ Conductance	Electrometric
	10,000 µmhos/cm Conductivity CRMs Range (9000 to 10 100) µmhos/cm @ x °C Relative uncertainty ± 1 %	Standard Methods 2510B Modified WI-QC_AppendixA_ Conductance	Electrometric
	12856 µmhos/cm Conductivity CRMs Range (11 600 to 12 980) µmhos/cm @ x °C Relative uncertainty ± 1 %	Standard Methods 2510B Modified WI-QC_AppendixA_ Conductance	Electrometric
	20000 µmhos/cm Conductivity CRMs Range (18 000 to 20 200) µmhos/cm @ x °C Relative uncertainty ± 1 %	Standard Methods 2510B Modified WI-QC_AppendixA_ Conductance	Electrometric
	30000 µmhos/cm Conductivity CRMs Range (27 000 to 30 300) µmhos/cm @ x °C Relative uncertainty ± 1 %	Standard Methods 2510B Modified WI-QC_AppendixA_ Conductance	Electrometric
	40000 µmhos/cm Conductivity CRMs Range (35 600 to 40 400) µmhos/cm @ x °C Relative uncertainty ± 1 %	Standard Methods 2510B Modified WI-QC_AppendixA_ Conductance	Electrometric

<b>Certified Reference Material</b>	<b>Concentration Ranges and Best Relative Uncertainty<sup>1</sup></b>	<b>Test, Analysis, Measurement, Methods</b>	<b>Measurement Technique(s)</b>
Conductivity Standards	50000 µmhos/cm Conductivity CRMs Range (44 500 to 50 500) µmhos/cm @ x °C Relative uncertainty ± 1%	Standard Methods2510B Modified WI-QC_AppendixA_ Conductance	Electrometric
	58650 µmhos/cm Conductivity CRMs Range (52 200 to 59 200) µmhos/cm @ x °C Relative uncertainty ± 1%	Standard Methods2510B Modified WI-QC_AppendixA_ Conductance	Electrometric
	70000 µmhos/cm Conductivity CRMs Range (63 000 to 70 700) µmhos/cm @ x °C Relative uncertainty ± 1%	Standard Methods2510B Modified WI-QC_AppendixA_ Conductance	Electrometric
	100,000 µmhos/cm Conductivity CRMs Range (90 500 to 101 000) µmhos/cm @ x °C Relative uncertainty ± 1%	Standard Methods2510B Modified WI-QC_AppendixA_ Conductance	Electrometric
	175000 µmhos/cm Conductivity CRMs Range (159 000 to 176 750) µmhos/cm @ x °C Relative uncertainty ± 1 %	Standard Methods2510B Modified WI-QC_AppendixA_ Conductance	Electrometric
	Custom Conductivity CRMs Range (1.0 to 250 000) µmhos/cm @ x °C Relative uncertainty ± 1 to 10 %	Standard Methods2510B Modified WI-QC_AppendixA_ Conductance	Electrometric

<b>Reference Material</b>	<b>Concentration Ranges and Best Relative Uncertainty<sup>1</sup></b>	<b>Test, Analysis, Measurement, Methods</b>	<b>Measurement Technique(s)</b>
Releasing Agent	Lanthanum Releasing Agent RMs Range (100 µg/mL to 100 000 µg/mL) Relative Uncertainty ± 1 %	WI-QC-19 WI-QC-18.1	Spectroscopy
Eluent	Carbonate Eluent RMs Containing this component - Range (0.0005M to 3M) Relative Uncertainty ± 0.5 %	WI-QC-33 WI-QC-28	Titrimetric
	Bicarbonate Eluent RMs Containing this component - Range (0.0005M to 3M) Relative Uncertainty ± 0.5 %	WI-QC-33 WI-QC-28	Titrimetric
	Methanesulfonate Eluent RMs Range (0.1M to 5M) Relative Uncertainty ± 0.5 %	WI-QC-46	Titrimetric

Reference Material	Concentration Ranges and Best Relative Uncertainty <sup>1</sup>	Test, Analysis, Measurement, Methods	Measurement Technique(s)
Ionization Buffer	Cesium Ionization Buffer RMs Range (100 µg/mL to 100 000 µg/mL) Relative Uncertainty ± 1 %	WI-QC-19 WI-QC-22 WI-QC-18.1	Spectroscopy Gravimetric

Reference Material	Concentration Ranges and Best Relative Uncertainty <sup>1</sup>	Test, Analysis, Measurement, Methods	Measurement Technique(s)
Ionization Buffer	Lithium Ionization Buffer RMs Range (100 µg/mL to 100 000 µg/mL) Relative Uncertainty ± 1 %	WI-QC-19 WI-QC-18.1	Spectroscopy
Matrix Modifier	Magnesium Matrix Modifier RMs Range (100 µg/mL to 100 000 µg/mL) Relative Uncertainty ± 1 %	WI-QC-19 WI-QC-18.1	Spectroscopy
	Phosphate Matrix Modifier RMs Range (100 µg/mL to 100 000 µg/mL) Relative Uncertainty ± 1 %	WI-QC-19 WI-QC-18.1	Spectroscopy
	Palladium Matrix Modifier RMs Range (100 µg/mL to 100 000 µg/mL) Relative Uncertainty ± 1 %	WI-QC-19 WI-QC-18.1	Spectroscopy
	Palladium and Magnesium Matrix Modifier RMs Range (100 µg/mL to 10 000 µg/mL) Relative Uncertainty ± 1 %	WI-QC-18.1	Spectroscopy

<sup>1</sup> An absolute uncertainty estimate may be determined by multiplying the stated Relative uncertainty by the reported certified reference material value on the certificate. The absolute uncertainty estimate will thus be represented in the units of the value provided on the certified reference material certificate. Uncertainties are reported as the maximum expected for each material.



# Accredited Reference Material Producer

A2LA has accredited

## I.V. LABS, INC DBA INORGANIC VENTURES

Christiansburg, VA

This accreditation covers the specific materials listed on the agreed upon Scope of Accreditation. This producer meets the requirements of ISO 17034:2016 *General Requirements for the Competence of Reference Material Producers*. This accreditation demonstrates technical competence for a defined scope and the operation of a quality management system.

Presented this 27<sup>th</sup> day of February 2023.

A blue ink signature of Mr. Trace McInturff, written in a cursive style.

Mr. Trace McInturff, Vice President, Accreditation Services  
For the Accreditation Council  
Certificate Number 883.02  
Valid to July 31, 2024



*For reference materials to which this accreditation applies, please refer to the reference material producer's Scope of Accreditation.*