

Wisconsin Department of Natural Resources Laboratory Certification Program

Approved Proficiency Testing Samples for the Aqueous Matrix *(Effective December 1, 2008)*

The following proficiency testing samples are required for all applications and annual renewal for WDNR certification or registration. These PTs must be from a Water Pollution (WP) study. Laboratories that are certified in the aqueous matrix must submit one acceptable PT result, where required, for each analytical technique/analyte combination. If a laboratory maintains certification or registration for the same analyte but multiple analytical techniques, they must analyze the PT by each technique, but can use the same PT sample for each analytical technique. PT samples for each analytical technique/analyte combination in the solid matrix are not required at this time. There are no PT requirements for certification in the Waste Characterization Assays and Extractions analytical technique.

All metals analyte PTs are listed, by provider, in Table 22, at the end of this document.

**TABLE 9
COLD VAPOR ATOMIC ABSORPTION OR GASEOUS HYDRIDE SPECTROPHOTOMETRY**

Analytical Technique	Class	Analyte	PT	Req'd	Absolute	ERA	NSI	NYDoH	RTC	Wibby	WSLH
Cold Vapor or Gaseous Hydride Atomic Absorption Spectrophotometry											
Metals											
		Antimony	TABLE 22	Yes	-Y-	-Y-	-Y-	-Y-	-Y-	-Y-	-Y-
		Arsenic	TABLE 22	Yes	-Y-	-Y-	-Y-	-Y-	-Y-	-Y-	-Y-
		Mercury	TABLE 22	Yes	-Y-	-Y-	-Y-	-Y-	-Y-	-Y-	-Y-
		Selenium	TABLE 22	Yes	-Y-	-Y-	-Y-	-Y-	-Y-	-Y-	-Y-

**TABLE 10
FLAME ATOMIC ABSORPTION SPECTROPHOTOMETRY**

Proficiency testing samples for metals by flame atomic absorption spectrophotometry are exempted from PT requirements in s. NR 149.22 (3)(a) 1. Laboratories certified or registered for analytes by flame AA must analyze quality control samples (QCS) 3 times per year at evenly spaced intervals in lieu of PTs.

Required Proficiency Testing Samples for Metallic Analytes

**TABLE 11
GRAPHITE FURNACE ATOMIC ABSORPTION SPECTROPHOTOMETRY**

Analytical Technique	Class	Analyte	PT	Req'd	Absolute	ERA	NSI	NYDoH	RTC	Wibby	WSLH
Graphite Furnace Atomic Absorption Spectrophotometry											
	Metals										
		Aluminum	TABLE 22	Yes	-Y-	-Y-	-Y-	-Y-	-Y-	-Y-	-Y-
		Antimony	TABLE 22	Yes	-Y-	-Y-	-Y-	-Y-	-Y-	-Y-	-Y-
		Arsenic	TABLE 22	Yes	-Y-	-Y-	-Y-	-Y-	-Y-	-Y-	-Y-
		Barium	TABLE 22	Yes	-Y-	-Y-	-Y-	-Y-	-Y-	-Y-	-Y-
		Beryllium	TABLE 22	Yes	-Y-	-Y-	-Y-	-Y-	-Y-	-Y-	-Y-
		Cadmium	TABLE 22	Yes	-Y-	-Y-	-Y-	-Y-	-Y-	-Y-	-Y-
		Chromium, Total	TABLE 22	Yes	-Y-	-Y-	-Y-	-Y-	-Y-	-Y-	-Y-
		Cobalt	TABLE 22	Yes	-Y-	-Y-	-Y-	-Y-	-Y-	-Y-	-Y-
		Copper	TABLE 22	Yes	-Y-	-Y-	-Y-	-Y-	-Y-	-Y-	-Y-
		Iron	TABLE 22	Yes	-Y-	-Y-	-Y-	-Y-	-Y-	-Y-	-Y-
		Lead	TABLE 22	Yes	-Y-	-Y-	-Y-	-Y-	-Y-	-Y-	-Y-
		Manganese	TABLE 22	Yes	-Y-	-Y-	-Y-	-Y-	-Y-	-Y-	-Y-
		Molybdenum	TABLE 22	Yes	-Y-	-Y-	-Y-	-Y-	-Y-	-Y-	-Y-
		Nickel	TABLE 22	Yes	-Y-	-Y-	-Y-	-Y-	-Y-	-Y-	-Y-
		Selenium	TABLE 22	Yes	-Y-	-Y-	-Y-	-Y-	-Y-	-Y-	-Y-
		Silver	TABLE 22	Yes	-Y-	-Y-	-Y-	-Y-	-Y-	-Y-	-Y-
		Thallium	TABLE 22	Yes	-Y-	-Y-	-Y-	-Y-	-Y-	-Y-	-Y-
		Tin	TABLE 22	Yes	-Y-	-Y-	-Y-	-Y-	-Y-	-Y-	-Y-
		Titanium	TABLE 22	Yes	-Y-	-Y-	-Y-	-Y-	-Y-	-Y-	-Y-
		Vanadium	TABLE 22	Yes	-Y-	-Y-	-Y-	-Y-	-Y-	-Y-	-Y-
		Zinc	TABLE 22	Yes	-Y-	-Y-	-Y-	-Y-	-Y-	-Y-	-Y-

Required Proficiency Testing Samples for Metallic Analytes

TABLE 12
INDUCTIVELY COUPLED PLASMA EMISSION SPECTROPHOTOMETRY

Analytical Technique	Class	Analyte	PT	Req'd	Absolute	ERA	NSI	NYDoH	RTC	Wibby	WSLH
Inductively Coupled Plasma Emission Spectrophotometry											
	Metals										
		Aluminum	TABLE 22	Yes	-Y-	-Y-	-Y-	-Y-	-Y-	-Y-	-Y-
		Antimony	TABLE 22	Yes	-Y-	-Y-	-Y-	-Y-	-Y-	-Y-	-Y-
		Arsenic	TABLE 22	Yes	-Y-	-Y-	-Y-	-Y-	-Y-	-Y-	-Y-
		Barium	TABLE 22	Yes	-Y-	-Y-	-Y-	-Y-	-Y-	-Y-	-Y-
		Beryllium	TABLE 22	Yes	-Y-	-Y-	-Y-	-Y-	-Y-	-Y-	-Y-
		Boron	TABLE 22	Yes	-Y-	-Y-	-Y-	-Y-	-Y-	-Y-	-Y-
		Cadmium	TABLE 22	Yes	-Y-	-Y-	-Y-	-Y-	-Y-	-Y-	-Y-
		Calcium	TABLE 22	Yes	-Y-	-Y-	-Y-	-Y-	-Y-	-Y-	-Y-
		Chromium, Total	TABLE 22	Yes	-Y-	-Y-	-Y-	-Y-	-Y-	-Y-	-Y-
		Cobalt	TABLE 22	Yes	-Y-	-Y-	-Y-	-Y-	-Y-	-Y-	-Y-
		Copper	TABLE 22	Yes	-Y-	-Y-	-Y-	-Y-	-Y-	-Y-	-Y-
		Iron	TABLE 22	Yes	-Y-	-Y-	-Y-	-Y-	-Y-	-Y-	-Y-
		Lead	TABLE 22	Yes	-Y-	-Y-	-Y-	-Y-	-Y-	-Y-	-Y-
		Magnesium	TABLE 22	Yes	-Y-	-Y-	-Y-	-Y-	-Y-	-Y-	-Y-
		Manganese	TABLE 22	Yes	-Y-	-Y-	-Y-	-Y-	-Y-	-Y-	-Y-
		Molybdenum	TABLE 22	Yes	-Y-	-Y-	-Y-	-Y-	-Y-	-Y-	-Y-
		Nickel	TABLE 22	Yes	-Y-	-Y-	-Y-	-Y-	-Y-	-Y-	-Y-
		Potassium	TABLE 22	Yes	-Y-	-Y-	-Y-	-Y-	-Y-	-Y-	-Y-
		Selenium	TABLE 22	Yes	-Y-	-Y-	-Y-	-Y-	-Y-	-Y-	-Y-
		Silver	TABLE 22	Yes	-Y-	-Y-	-Y-	-Y-	-Y-	-Y-	-Y-
		Sodium	TABLE 22	Yes	-Y-	-Y-	-Y-	-Y-	-Y-	-Y-	-Y-
		Strontium	TABLE 22	Yes	-Y-	-Y-	-Y-	-Y-	-Y-	-Y-	-Y-
		Thallium	TABLE 22	Yes	-Y-	-Y-	-Y-	-Y-	-Y-	-Y-	-Y-
		Tin	TABLE 22	Yes	-Y-	-Y-	-Y-	-Y-	-Y-	-Y-	-Y-
		Titanium	TABLE 22	Yes	-Y-	-Y-	-Y-	-Y-	-Y-	-Y-	-Y-
		Vanadium	TABLE 22	Yes	-Y-	-Y-	-Y-	-Y-	-Y-	-Y-	-Y-
		Zinc	TABLE 22	Yes	-Y-	-Y-	-Y-	-Y-	-Y-	-Y-	-Y-

Required Proficiency Testing Samples for Metallic Analytes

Analytical Technique	Class	Analyte	PT	Req'd	Absolute	ERA	NSI	NYDoH	RTC	Wibby	WSLH
Inductively Coupled Plasma Emission Spectrophotometry											
	General Chemistry										
		Hardness, Total as CaCO ₃	TABLE 22	Yes	-Y-	-Y-	-Y-	-Y-	-Y-	-Y-	-Y-
		Silica	SILICA	Yes	-Y-	-Y-	-Y-	-Y-	-Y-	-Y-	-N-

**TABLE 13
INDUCTIVELY COUPLED PLASMA –MASS SPECTROMETRY**

Analytical Technique	Class	Analyte	PT	Req'd	Absolute	ERA	NSI	NYDoH	RTC	Wibby	WSLH
Inductively Coupled Plasma–Mass Spectrometry											
	Metals										
		Aluminum	TABLE 22	Yes	-Y-	-Y-	-Y-	-Y-	-Y-	-Y-	-Y-
		Antimony	TABLE 22	Yes	-Y-	-Y-	-Y-	-Y-	-Y-	-Y-	-Y-
		Arsenic	TABLE 22	Yes	-Y-	-Y-	-Y-	-Y-	-Y-	-Y-	-Y-
		Barium	TABLE 22	Yes	-Y-	-Y-	-Y-	-Y-	-Y-	-Y-	-Y-
		Beryllium	TABLE 22	Yes	-Y-	-Y-	-Y-	-Y-	-Y-	-Y-	-Y-
		Cadmium	TABLE 22	Yes	-Y-	-Y-	-Y-	-Y-	-Y-	-Y-	-Y-
		Calcium	TABLE 22	Yes	-Y-	-Y-	-Y-	-Y-	-Y-	-Y-	-Y-
		Chromium, Total	TABLE 22	Yes	-Y-	-Y-	-Y-	-Y-	-Y-	-Y-	-Y-
		Cobalt	TABLE 22	Yes	-Y-	-Y-	-Y-	-Y-	-Y-	-Y-	-Y-
		Copper	TABLE 22	Yes	-Y-	-Y-	-Y-	-Y-	-Y-	-Y-	-Y-
		Iron	TABLE 22	Yes	-Y-	-Y-	-Y-	-Y-	-Y-	-Y-	-Y-
		Lead	TABLE 22	Yes	-Y-	-Y-	-Y-	-Y-	-Y-	-Y-	-Y-
		Magnesium	TABLE 22	Yes	-Y-	-Y-	-Y-	-Y-	-Y-	-Y-	-Y-
		Manganese	TABLE 22	Yes	-Y-	-Y-	-Y-	-Y-	-Y-	-Y-	-Y-
		Mercury	TABLE 22	Yes	-Y-	-Y-	-Y-	-Y-	-Y-	-Y-	-Y-
		Molybdenum	TABLE 22	Yes	-Y-	-Y-	-Y-	-Y-	-Y-	-Y-	-Y-
		Nickel	TABLE 22	Yes	-Y-	-Y-	-Y-	-Y-	-Y-	-Y-	-Y-
		Potassium	TABLE 22	Yes	-Y-	-Y-	-Y-	-Y-	-Y-	-Y-	-Y-
		Selenium	TABLE 22	Yes	-Y-	-Y-	-Y-	-Y-	-Y-	-Y-	-Y-
		Sodium	TABLE 22	Yes	-Y-	-Y-	-Y-	-Y-	-Y-	-Y-	-Y-

Required Proficiency Testing Samples for Metallic Analytes

Analytical Technique	Class	Analyte	PT	Req'd	Absolute	ERA	NSI	NYDoH	RTC	Wibby	WSLH
Inductively Coupled Plasma–Mass Spectrometry											
		Silver	TABLE 22	Yes	-Y-	-Y-	-Y-	-Y-	-Y-	-Y-	-Y-
		Thallium	TABLE 22	Yes	-Y-	-Y-	-Y-	-Y-	-Y-	-Y-	-Y-
		Vanadium	TABLE 22	Yes	-Y-	-Y-	-Y-	-Y-	-Y-	-Y-	-Y-
		Zinc	TABLE 22	Yes	-Y-	-Y-	-Y-	-Y-	-Y-	-Y-	-Y-

**TABLE 14
ULTRA–LOW LEVEL METALS ANALYSIS**

Analytical Technique	Class	Analyte	PT	Req'd	Absolute	ERA	NSI	NYDoH	RTC	Wibby	WSLH
Ultra–Low Level Metals Analysis											
	Metals ¹										
		Mercury	EXEMPT	Exempt	-E-	-E-	-E-	-E-	-E-	-E-	-E-

¹Proficiency testing samples for mercury by ultra-low level metals analysis are exempted from PT requirements in s. NR 149.22 (3)(b). Laboratories certified for this test must analyze quality control standards (QCS) 3 times per year at evenly spaced intervals in lieu of PTs. Quality control standards must be diluted to fall within the working concentration of the analytical technique.

Table 22: PT Sample Formulations- Metals

Each approved proficiency testing provider offers metallic analytes in mixes or as individual analytes. This table identifies the PT in which each of these analytes is available.

Analyte	Absolute	ERA	NSI	NY DoH	RTC	WIBBY	WSLH
Chromium (Hexavalent)	Hex Chrome	Hex Chrome	Hex Chrome	Hex Chrome	Hex Chrome	Hex Chrome	Not Avail
Hardness, Total as CaCO ₃	Minerals #1	Hardness	Hardness	Minerals II	Minerals	Minerals	Hardness Metals A
Aluminum	Trace #1	Trace	Trace	Metals I & II	Trace #1	Trace	Metals C
Antimony	Trace #2	Trace	Trace	Metals I & II	Trace #2	Trace	Metals B
Arsenic	Trace #1	Trace	Trace	Metals I & II	Trace #1	Trace	Metals A
Barium	Trace #2	Trace	Trace	Metals I & II	Barium & Tin	Trace	Metals C
Beryllium	Trace #2	Trace	Trace	Metals I & II	Trace #1	Trace	Metals E
Boron	Trace #2	Trace	Boron	Metals I & II	Trace #2 Boron	Trace	Metals A
Cadmium	Trace #1	Trace	Trace	Metals I & II	Trace #1	Trace	Metals A
Calcium	Minerals #1	Hardness	Hardness	Minerals II	Minerals	Minerals	Metals A
Chromium (Total)	Trace #1	Trace	Trace	Metals I & II	Trace #1	Trace	Metals A
Cobalt	Trace #1	Trace	Trace	Metals I & II	Trace #1	Trace	Metals A
Copper	Trace #1	Trace	Trace	Metals I & II	Trace #1	Trace	Metals A
Iron	Trace #1	Trace	Trace	Metals I & II	Trace #1	Trace	Metals A
Lead	Trace #1	Trace	Trace	Metals I & II	Trace #1	Trace	Metals A
Magnesium	Minerals #1	Hardness	Hardness	Minerals II	Minerals	Minerals	Metals A
Manganese	Trace #1	Trace	Trace	Metals I & II	Trace #1	Trace	Metals A
Mercury	Trace #1	Trace	Mercury	Metals III	Trace #1 Mercury	Trace	Metals B
Molybdenum	Trace #2	Trace	Trace	Metals III	Trace #2	Trace	Metals C
Nickel	Trace #1	Trace	Trace	Metals I & II	Trace #1	Trace	Metals A
Potassium	Minerals #2	Minerals	Minerals	Minerals II	Minerals	Minerals	Metals A
Selenium	Trace #1	Trace	Trace	Metals I & II	Trace #1	Trace	Metals B
Silver	Trace #2	Trace	Trace	Metals I & II	Trace #2	Trace	Metals A
Sodium	Minerals #2	Minerals	Minerals	Minerals II	Minerals	Minerals	Metals A
Strontium	Trace #2	Trace	Trace	Metals I & II	Trace #2	Trace	Metals C
Thallium	Trace #2	Trace	Trace	Metals I & II	Trace #2	Trace	Metals C
Tin	Tin	Tin-Titanium	Trace	Metals III	Barium & Tin	Trace	Metals E
Titanium	Trace #2	Tin-Titanium	Trace	Metals III	Trace #2	Trace	Metals D
Vanadium	Trace #1	Trace	Trace	Metals I & II	Trace #1	Trace	Metals C
Zinc	Trace #1	Trace	Trace	Metals I & II	Trace #1	Trace	Metals A