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CRM: A reference material characterized by a metrologically valid procedure for one or more specified properties, accompanied by a reference material certificate that provides the value of the specified property, its associated uncertainty, and a statement of metrological traceability.

A complete listing of ERA's CRMs can be found on our Scope of Accreditation for general requirements for competence of reference material producers available at www.eraqc.com/AboutERA/Accreditations.

PT: A Proficiency Test (PT) is an analysis of what is often referred to as a blind sample or a sample with unknown concentrations of analytes for the purpose of evaluating a laboratory's analytical performance.

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QR: Similar to a Proficiency Test, a Quik Response (QR) is a sample with unknown concentrations. However, unlike a scheduled PT, QR is on-demand and available at any time. Plus, your results are returned within two business days. Quik Response can be used as a bilateral PT as referenced in the IUPAC/CITAC guide: Selection and use of PT schemes for a limited number of participants - chemical analytical labs.

RM: A material, sufficiently homogeneous and stable with respect to one or more specified properties, which has been established to be fit for its intended use in a measurement process.

All Waters ERA WS PTs open monthly (**M**), quarterly (**Q**), or biannually (**B**) unless otherwise noted. Quarterly months are January, April, July, and October. Biannual months are January and July.

Minerals/Solids

Hardness

CRM Cat. #693	PT Cat. #555	M	QR Cat. #693QR
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One 250 mL whole-volume bottle is ready to analyze.

Calcium.....	30-90 mg/L
Calcium hardness as CaCO ₃	75-225 mg/L
Total hardness as CaCO ₃	83-307 mg/L
Magnesium.....	2-20 mg/L
Sodium.....	12-50 mg/L

Inorganics

CRM Cat. #698	PT Cat. #591	M	QR Cat. #698QR
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One 500 mL whole-volume bottle is ready to analyze. The CRM is also certified for sodium at 10-400 mg/L. For a sodium PT, order Hardness, Cat. #555.

Alkalinity as CaCO ₃	25-200 mg/L
Chloride.....	20-160 mg/L
Fluoride.....	1-8 mg/L
Nitrate as N.....	3-10 mg/L
Nitrate plus nitrite as N.....	3-10 mg/L
Potassium.....	10-40 mg/L
Specific conductance at 25 °C.....	130-1300 µmhos/cm
Sulfate.....	25-250 mg/L
Total dissolved solids (TDS) at 180 °C.....	100-1000 mg/L

Solids Concentrate

CRM Cat. #5152	PT Cat. #5150	M	QR Cat. #5152QR
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One 24 mL screw-cap vial with a powder yields 1 liter after dilution.

Total filterable residue (TDS) at 180 °C.....	100-1000 mg/L
Total solids (TS) at 105 °C.....	123-1100 mg/L
Total suspended solids (TSS).....	23-100 mg/L

The Industry Standard
for over 40 years



Trace Metals

Metals

CRM Cat. #697	PT Cat. #590	M	QR Cat. #697QR
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One 15 mL screw-cap vial yields up to 2 liters after dilution. Use with ICP-OES, ICP-MS, and AA methods.

Aluminum.....	130-1000 µg/L
Antimony.....	6-50 µg/L
Arsenic.....	5-50 µg/L
Barium.....	500-3000 µg/L
Beryllium.....	2-20 µg/L
Boron.....	800-2000 µg/L
Cadmium.....	2-50 µg/L
Chromium.....	10-200 µg/L
Copper.....	50-2000 µg/L
Iron.....	100-1800 µg/L
Lead.....	5-100 µg/L
Manganese.....	40-900 µg/L
Molybdenum.....	15-130 µg/L
Nickel.....	10-500 µg/L
Selenium.....	10-100 µg/L
Silver.....	20-300 µg/L
Thallium.....	2-10 µg/L
Vanadium.....	50-1000 µg/L
Zinc.....	200-2000 µg/L

Mercury

CRM Cat. #666	PT Cat. #551	M	QR Cat. #666QR
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One 15 mL screw-cap vial yields up to 1 liter after dilution. Use with CVAA, ICP-MS, or CVAFS methods.

Total mercury.....	0.5-10 µg/L
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Hexavalent Chromium

CRM Cat. #658	PT Cat. #854	Q	QR Cat. #658QR
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One 15 mL screw-cap vial yields up to 2 liters after dilution.

Hexavalent chromium.....	5-50 µg/L
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Uranium

CRM Cat. #930	PT Cat. #858	Q	QR Cat. #930QR
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One 15 mL screw-cap vial yields up to 2 liters after dilution. Use with ICP-MS methods.

Uranium.....	3-104 µg/L
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Vanadium

CRM Cat. #660	PT Cat. #856	Q	QR Cat. #660QR
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One 15 mL screw-cap vial yields up to 2 liters after dilution. Designed to meet California ELAP requirements.

Vanadium.....	5-50 µg/L
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Disinfection By-Products

Nutrients

Chloral Hydrate

CRM Cat. #676	PT Cat. #853	B	QR Cat. #676QR
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One 2 mL flame-sealed ampule yields in excess of 200 mL after dilution. Use with EPA Method 551, or other applicable method. Includes chloral hydrate at 4–30 µg/L.

B Waters ERA WS Chloral Hydrate PTs open in January and July.

Haloacetic Acids (HAA)

CRM Cat. #684	PT Cat. #852	M	QR Cat. #684QR
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One 2 mL flame-sealed ampule yields up to 2 liters after dilution. Use with EPA Method 552, or other applicable method. Includes all the analytes below at 5–50 µg/L.

Bromochloroacetic acid	Dichloroacetic acid	Monochloroacetic acid
Dibromoacetic acid	Monobromoacetic acid	Trichloroacetic acid

Inorganic Disinfection #1

CRM Cat. #5272	PT Cat. #5270	M	QR Cat. #5272QR
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One 24 mL screw-cap vial yields up to 4 liters after dilution.

Chlorate.....60–180 µg/L
Chlorite.....100–1000 µg/L

Inorganic Disinfection #2

CRM Cat. #5262	PT Cat. #5260	M	QR Cat. #5262QR
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One 24 mL screw-cap vial yields up to 4 liters after dilution.

Bromate.....7–50 µg/L
Bromide.....50–300 µg/L

Ammonia as N

CRM Cat. #1359	PT Cat. #1319	B	QR Cat. #1359QR
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One 15 mL screw-cap vial yields up to 1 liter after dilution.

Ammonia as N.....0.1–1 mg/L

B Waters ERA WS Ammonia as N PTs open in January and July.

Nitrite

CRM Cat. #695	PT Cat. #594	M	QR Cat. #695QR
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One 15 mL screw-cap vial yields up to 2 liters after dilution.

Nitrite as N.....0.4–2 mg/L

o-Phosphate Nutrients

CRM Cat. #667	PT Cat. #558	M	QR Cat. #667QR
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One 15 mL screw-cap vial yields up to 2 liters after dilution.

ortho-Phosphate as P.....0.5–5.5 mg/L

Miscellaneous Inorganic

Residual Chlorine

CRM Cat. #696	PT Cat. #593	M	QR Cat. #696QR
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One 2 mL flame-sealed ampule yields up to 2 liters after dilution.

Total residual chlorine.....0.5–3 mg/L
Free residual chlorine.....0.5–3 mg/L

Cyanide

CRM Cat. #983	PT Cat. #556	M	QR Cat. #983QR
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One 15 mL screw-cap vial yields up to 2 liters after dilution. Source material is free cyanide.

Free cyanide.....0.1–0.5 mg/L
Total cyanide.....0.1–0.5 mg/L
Cyanide.....0.1–0.5 mg/L

CRM – Certified Reference Material
PT – Proficiency Testing
QR – QuiK Response

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Darren Sauer
Senior Customer Service
Representative



Miscellaneous Inorganic (continued)

Organic Carbon

CRM
Cat. #669PT
Cat. #557

M

QR
Cat. #669QR

One 15 mL screw-cap vial yields up to 1 liter after dilution.

Total organic carbon.....1.3-13 mg/L
 Dissolved organic carbon.....1.3-13 mg/L

Perchlorate

CRM
Cat. #910PT
Cat. #903

Q

QR
Cat. #910QR

One 15 mL screw-cap vial yields up to 2 liters after dilution.

Perchlorate.....4-20 µg/L

pH

CRM
Cat. #779PT
Cat. #552

M

QR
Cat. #779QR

One 250 mL whole-volume bottle is ready to analyze.

pH.....5-10 units

Silica

CRM
Cat. #785PT
Cat. #902

Q

QR
Cat. #785QR

One 60 mL poly bottle yields 1 liter after dilution.

Silica as SiO₂.....5-75 mg/L

Surfactants-MBAS

CRM
Cat. #784PT
Cat. #901

Q

QR
Cat. #784QR

One 15 mL screw-cap vial yields up to 2 liters after dilution.

Surfactants-MBAS.....0.1-1 mg/L

Physical Property

Color

CRM
Cat. #661PT
Cat. #859

Q

QR
Cat. #661QR

One 125 mL whole-volume bottle is ready to analyze.

Color.....10-75 PC units

Corrosivity

CRM
Cat. #980PT
Cat. #900

Q

QR
Cat. #980QR

One 500 mL whole-volume bottle is ready to analyze for corrosivity, calcium carbonate saturation, and Langelier Saturation Index.

Corrosivity.....-4 to +4 SI units

Turbidity

CRM
Cat. #699PT
Cat. #592

M

QR
Cat. #699QR

One 15 mL screw-cap vial yields up to 1 liter after dilution. Use with nephelometric methods.

Turbidity.....0.5-8 NTU

UV 254 Absorbance

CRM
Cat. #662PT
Cat. #904

Q

QR
Cat. #662QR

One 15 mL screw-cap vial yields up to 1 liter after dilution.

UV 254 absorbance.....0.05-0.7 cm⁻¹

Learn more about WS products

Volatile Organics

1,4-Dioxane

NEW PRODUCT

CRM Cat. #689	PT Cat. #272	B	QR Cat. #689QR
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One 2 mL flame-sealed ampule yields 500 mL after dilution. Use with EPA method 522.

1,4-Dioxane.....0.1-10 µg/L

Gasoline Additives

CRM Cat. #909	PT Cat. #905	Q	QR Cat. #909QR
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One 2 mL flame-sealed ampule yields in excess of 200 mL after dilution. Use with EPA Method 524.2, or other applicable method for gasoline additives/oxygenates. Contains all of the analytes below at 5-50 µg/L.

tert-Amyl methyl ether (TAME)	Ethyl tert-butyl ether (ETBE)	Trichlorofluoromethane
tert-Butyl alcohol	Methyl tert-butyl ether (MTBE)	(Freon® 11)
Di-isopropylether (DIPE)		Trichlorotrifluoroethane
		(Freon 113)

Halomethanes (THMs)

CRM Cat. #702	PT Cat. #842	M	QR Cat. #702QR
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One 2 mL flame-sealed ampule yields in excess of 200 mL after dilution. Use with EPA Methods 502.2, 524.2, 551, or other applicable method. Contains all of the analytes below at 5-50 µg/L.

Bromodichloromethane	Chlorodibromomethane	Chloroform
Bromoform		

Regulated Volatiles

CRM Cat. #703	PT Cat. #840	M	QR Cat. #703QR
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One 2 mL flame-sealed ampule yields in excess of 200 mL after dilution. Use with EPA Methods 502.2, 524.2, or other applicable method. Contains all of the analytes below at 2-50 µg/L.

Benzene	cis-1,2-Dichloroethylene	Toluene
Carbon tetrachloride	trans-1,2-Dichloroethylene	1,2,4-Trichlorobenzene
Chlorobenzene	1,2-Dichloropropane	1,1,1-Trichloroethane
1,2-Dichlorobenzene	Ethylbenzene	1,1,2-Trichloroethane
1,4-Dichlorobenzene	Methylene chloride	Trichloroethylene
1,2-Dichloroethane	Styrene	Vinyl chloride
1,1-Dichloroethylene	Tetrachloroethylene	Xylenes, total

Unregulated Volatiles

CRM Cat. #683	PT Cat. #841	M	QR Cat. #683QR
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One 2 mL flame-sealed ampule yields in excess of 200 mL after dilution. Use with EPA Methods 502.2, 524.2, or other applicable method. Contains at least 60% of the analytes randomly selected from the list below at 2-50 µg/L.

Bromobenzene	1,3-Dichlorobenzene	4-Isopropyltoluene
Bromochloromethane	Dichlorodifluoromethane	Methyl tert-butyl ether (MTBE)
Bromomethane	1,1-Dichloroethane	Naphthalene
n-Butylbenzene	1,3-Dichloropropane	n-Propylbenzene
sec-Butylbenzene	2,2-Dichloropropane	1,1,1,2-Tetrachloroethane
tert-Butylbenzene	1,1-Dichloropropene	1,1,2,2-Tetrachloroethane
Chloroethane	cis-1,3-Dichloropropene	1,2,3-Trichlorobenzene
Chloromethane	trans-1,3-Dichloropropene	1,2,3-Trichloropropane
2-Chlorotoluene	Fluorotrichloromethane	1,2,4-Trimethylbenzene
4-Chlorotoluene	Hexachlorobutadiene	1,3,5-Trimethylbenzene
Dibromomethane	Isopropylbenzene	

CRM – Certified Reference Material
PT – Proficiency Testing
QR – QuiK Response

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Per- and Polyfluoroalkyl Substances (PFAS)

PFAS Drinking Water

NEW ANALYTES

CRM Cat. #735	PT Cat. #960	Q	QR Cat. #735QR
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One 2 mL flame sealed ampule yields in excess of 1.5 L after dilution. Use with EPA method 537. The diluted standard will contain 6-8 analytes in each lot selected from the list below.

11-chloroicosafauro-3-oxaundecane-1-sulfonic acid (11CI-PF3OUdS).....	50-500 ng/L
9-chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9CI-PF3ONS).....	50-500 ng/L
N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA).....	50-500 ng/L
4,8-dioxa-3H-perfluorononanoic acid (DONA).....	50-500 ng/L
Hexafluoropropylene oxide dimer acid (HFPO-DA).....	100-1000 ng/L
N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA).....	50-500 ng/L
Perfluorobutanesulfonic acid (PFBS).....	100-1000 ng/L
Perfluorodecanoic acid (PFDA).....	50-500 ng/L
Perfluorododecanoic acid (PFDoA).....	50-500 ng/L
Perfluoroheptanoic acid (PFHpA).....	50-500 ng/L
Perfluorohexanesulfonic acid (PFHxS).....	50-500 ng/L
Perfluorohexanoic acid (PFHxA).....	50-500 ng/L
Perfluorononanoic acid (PFNA).....	50-500 ng/L
Perfluorooctanesulfonic acid (PFOS).....	50-500 ng/L
Perfluorooctanoic acid (PFOA).....	50-500 ng/L
Perfluorotetradecanoic acid (PFTDA).....	50-500 ng/L
Perfluorotridecanoic acid (PFTrDA).....	50-500 ng/L
Perfluoroundecanoic acid (PFUnDA).....	50-500 ng/L

PFAS Ground Water & Surface Water

NEW ANALYTES

CRM Cat. #731	PT Cat. #929	Q	QR Cat. #731QR
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One 2 mL flame sealed ampule yields in excess of 1.5 L after dilution. Design is suitable for methods analyzing ground water or surface water. Use with LC-MS/MS techniques. The diluted standard will contain 6-12 analytes in each lot selected from the list below.

11-chloroicosafauro-3-oxaundecane-1-sulfonic acid (11CI-PF3OUdS).....	100-500 ng/L
9-chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9CI-PF3ONS).....	100-500 ng/L
4,8-dioxa-3H-perfluorononanoic acid (DONA).....	100-500 ng/L
N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA).....	100-500 ng/L
1H, 1H, 2H, 2H-Perfluorodecanesulfonic acid (8:2 FTS).....	100-500 ng/L
1H, 1H, 2H, 2H-Perfluorohexanesulfonic acid (4:2 FTS).....	100-500 ng/L
1H, 1H, 2H, 2H-Perfluorooctanesulfonic acid (6:2 FTS).....	100-500 ng/L
Hexafluoropropylene oxide dimer acid (HFPO-DA).....	100-500 ng/L
N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA).....	100-500 ng/L
Perfluorobutanesulfonic acid (PFBS).....	100-500 ng/L
Perfluorobutanoic acid (PFBA).....	100-500 ng/L
Perfluorodecane sulfonic acid (PFDS).....	100-500 ng/L
Perfluorodecanoic acid (PFDA).....	100-500 ng/L
Perfluorododecanoic acid (PFDoA).....	100-500 ng/L
Perfluoroheptane sulfonic acid (PFHpS).....	100-500 ng/L
Perfluoroheptanoic acid (PFHpA).....	100-500 ng/L
Perfluorohexanesulfonic acid (PFHxS).....	100-500 ng/L
Perfluorohexanoic acid (PFHxA).....	100-500 ng/L
Perfluorononane sulfonic acid (PFNS).....	100-500 ng/L
Perfluorononanoic acid (PFNA).....	100-500 ng/L
Perfluorooctane sulfonamide (PFOSAm).....	100-500 ng/L
Perfluorooctanesulfonic acid (PFOS).....	100-500 ng/L
Perfluorooctanoic acid (PFOA).....	100-500 ng/L
Perfluoropentanoic acid (PFPeA).....	100-500 ng/L
Perfluoropentane sulfonic acid (PFPeS).....	100-500 ng/L
Perfluorotetradecanoic acid (PFTDA).....	100-500 ng/L
Perfluorotridecanoic acid (PFTrDA).....	100-500 ng/L
Perfluoroundecanoic acid (PFUnDA).....	100-500 ng/L
Nonafluoro-3,6-dioxahexanoic acid (NFDHA).....	100-500 ng/L
Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA).....	100-500 ng/L
Perfluoro-3-methoxypropanoic acid (PFMPA).....	100-500 ng/L
Perfluoro-4-methoxybutanoic acid (PFMBA).....	100-500 ng/L

Pesticides

Pesticides

CRM Cat. #709	PT Cat. #850	M	QR Cat. #709QR
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One 2 mL flame-sealed ampule yields up to 2 liters after dilution. Use with EPA Methods 505, 507, 508, 525, or other applicable method for organochlorine, nitrogen, and organophosphorus pesticides. Each standard contains at least 14 analytes randomly selected from the list below at 0.2-20 µg/L.

Alachlor	Heptachlor	Metribuzin
Aldrin	Heptachlor epoxide (beta)	Molinate (ordram)
Atrazine	Hexachlorobenzene	Prometon
Bromacil	Hexachlorocyclopentadiene	Propachlor
Butachlor	Lindane (gamma-BHC)	Simazine
Diazinon	Methoxychlor	Thiobencarb
Dieldrin	Metolachlor	Trifluralin
Endrin		

Carbamate/Carbamoyloxime Pesticides

CRM Cat. #707	PT Cat. #846	M	QR Cat. #707QR
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One 2 mL flame-sealed ampule yields up to 2 liters after dilution. Use with EPA Methods 531.1, 531.2, 632, or other applicable method. Each standard contains at least 8 of the analytes below at 15-150 µg/L.

Aldicarb	Carbaryl	Methiocarb
Aldicarb sulfone	Carbofuran	Methomyl
Aldicarb sulfoxide	3-Hydroxycarbofuran	Oxamyl
Baygon		

Chlordane

CRM Cat. #705	PT Cat. #845	M	QR Cat. #705QR
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One 2 mL flame-sealed ampule yields up to 2 liters after dilution. Use with EPA Methods 505, 508, 525, or other applicable method. Each standard contains technical chlordane at 2-20 µg/L.

Toxaphene

CRM Cat. #700	PT Cat. #844	M	QR Cat. #700QR
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One 2 mL flame-sealed ampule yields up to 2 liters after dilution. Use with EPA Methods 505, 508, 525, or other applicable method. Each standard contains toxaphene at 2-20 µg/L.



Brian Miller
Product Line Manager

Pesticides (continued)

EDB/DBCP/TCP

CRM Cat. #706	PT Cat. #847	M	QR Cat. #706QR
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One 2 mL flame-sealed ampule yields in excess of 200 mL after dilution. Use with EPA Methods 504, 551, or other applicable method. Each lot contains all analytes below at 0.05–2 µg/L.

1,2-Dibromo-3-chloropropane (DBCP) 1,2,3-Trichloropropane (1,2,3-TCP)
Ethylene dibromide (EDB)

Low-Level 1,2,3-TCP

CRM Cat. #682	PT Cat. #596	B	QR Cat. #682QR
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One 2 mL flame-sealed ampule yields 100 mL after dilution. Use with California method SRL 524M, or other applicable method. Each standard contains 1,2,3-Trichloropropane (TCP) at 5–100 ng/L after dilution.

B Low-Level 1,2,3-TCP available in January and July.

Semivolatile Organics

Dioxin

CRM Cat. #663	PT Cat. #857	Q	QR Cat. #663QR
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One 2 mL flame-sealed ampule yields up to 2 liters after dilution. Use with EPA Methods 613, 1613, 8280, 8290, or other applicable method. Each standard contains 2,3,7,8-TCDD at 20–100 pg/L.

PCBs as Decachlorobiphenyl

CRM Cat. #708	PT Cat. #839	Q	QR Cat. #708QR
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One 2 mL flame-sealed ampule yields up to 2 liters after dilution. Use with EPA Quantitative Method 508A. This standard can also be used for aroclor identification and quantification using EPA Methods 505, 508, 508.1, or other applicable method. Includes an aroclor randomly selected from the list below at 0.5–5 µg/L as decachlorobiphenyl.

Aroclor 1016 Aroclor 1242 Aroclor 1254
Aroclor 1221 Aroclor 1248 Aroclor 1260
Aroclor 1232

Semivolatile Organics (continued)

Semivolatiles #1

CRM Cat. #690	PT Cat. #848	M	QR Cat. #690QR
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One 2 mL flame-sealed ampule yields up to 2 liters after dilution. Use with EPA Methods 506, 525, 550, or other applicable method for PAHs, phthalates, and adipates. Each standard contains benzo(a)pyrene, bis(2-ethylhexyl)adipate, and bis(2-ethylhexyl)phthalate plus at least 13 additional analytes, selected from the list below, at 0.2–50 µg/L.

Acenaphthene	Butyl benzyl phthalate	bis(2-Ethylhexyl)phthalate
Acenaphthylene	Chrysene	Fluoranthene
Anthracene	Dibenz(a,h)anthracene	Fluorene
Benzo(a)anthracene	Di-n-butyl phthalate	Indeno(1,2,3-cd)pyrene
Benzo(b)fluoranthene	Diethyl phthalate	Naphthalene
Benzo(k)fluoranthene	Dimethyl phthalate	Phenanthrene
Benzo(g,h,i)perylene	Di-n-octyl phthalate	Pyrene
Benzo(a)pyrene	bis(2-Ethylhexyl)adipate	

Naphthalene is not within the EPA/NELAC range. Use the Unregulated Volatiles standard (page 27 for this compound in the EPA/NELAC range.

Herbicides

Chlorinated Acid Herbicides

CRM Cat. #704	PT Cat. #851	M	QR Cat. #704QR
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One 2 mL flame-sealed ampule yields up to 2 liters after dilution. Use with EPA Methods 515.1, 515.2, 515.3, 515.4, 555, or other applicable method. All lots include at least 10 analytes from the list below at 1–120 µg/L.

Acifluorfen	Dalapon	4-Nitrophenol
Bentazon	Dicamba	Pentachlorophenol
Chloramben	3,5-Dichlorobenzoic acid	Picloram
2,4-D	Dichlorprop	2,4,5-T
2,4-DB	Dinoseb	2,4,5-TP (silvex)
Dacthal diacid (DCPA)		

Semivolatiles #2 Herbicides

CRM Cat. #691	PT Cat. #849	M	QR Cat. #691QR
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One 2 mL flame-sealed ampule yields up to 2 liters after dilution. Use with EPA Methods 547, 548, 549, or other applicable method. Each standard contains all the analytes below at 8–800 µg/L.

Diquat	Glyphosate	Paraquat
Endothall		

CRM – Certified Reference Material

PT – Proficiency Testing

QR – QuiK Response

All Waters ERA WS PTs open monthly (**M**), quarterly (**Q**), or biannually (**B**) unless otherwise noted. Quarterly months are January, April, July, and October.