

40 C.F.R. § 136.3

Identification of test procedures.

(a) Parameters or pollutants, for which methods are approved, are listed together with test procedure descriptions and references in Tables IA, IB, IC, ID, IE, IF, IG, and IH of this section. The methods listed in Tables IA, IB, IC, ID, IE, IF, IG, and IH are incorporated by reference, see paragraph (b) of this section, with the exception of EPA Methods 200.7, 601-613, 624.1, 625.1, 1613, 1624, and 1625. The full texts of Methods 601-613, 624.1, 625.1, 1613, 1624, and 1625 are printed in appendix A of this part, and the full text of Method 200.7 is printed in appendix C of this part. The full text for determining the method detection limit when using the test procedures is given in appendix B of this part. In the event of a conflict between the reporting requirements of 40 CFR parts 122 and 125 and any reporting requirements associated with the methods listed in these tables, the provisions of 40 CFR parts 122 and 125 are controlling and will determine a permittee's reporting requirements. The full texts of the referenced test procedures are incorporated by reference into Tables IA, IB, IC, ID, IE, IF, IG, and IH. The date after the method number indicates the latest editorial change of the method. The discharge parameter values for which reports are required must be determined by one of the standard analytical test procedures incorporated by reference and described in Tables IA, IB, IC, ID, IE, IF, IG, and IH or by any alternate test procedure which has been approved by the Administrator under the provisions of paragraph (d) of this section and §§ 136.4 and 136.5. Under certain circumstances (paragraph (c) of this section, § 136.5(a) through (d) or 40 CFR 401.13,) other additional or alternate test procedures may be used.

Table IA—List of Approved Biological Methods for Wastewater and Sewage Sludge

Parameter and units	Method ¹	EPA	Standard methods	AOAC, ASTM, USGS	Other
Bacteria					
1. Coliform (fecal), number per gram dry weight	Most Probable Number (MPN), 5 tube, 3 dilution, or	p. 132 3, 1680 ¹¹¹⁵ , 1681. ¹¹²⁰	9221 E-2014.		
	Membrane filter (MF) ²⁵ , single step	p. 124 3	9222 D-2015. ²⁹		
2. Coliform (fecal), number per 100 mL	MPN, 5 tube, 3 dilution, or	p. 132 3	9221 E-2014, 9221 F-2014. ³³		

	Multiple tube/multiple well, or				Colilert-18®. 131828
	MF 25, single step 5	p. 124 3	9222 D- 2015. 29	B- 0050- 85. 4	
3. Coliform (total), number per 100 mL	MPN, 5 tube, 3 dilution, or	p. 114 3	9221 B- 2014.		
	MF 25, single step or	p. 108 3	9222 B- 2015. 30	B- 0025- 85. 4	
	MF 25, two step with enrichment	p. 111 3	9222 B- 2015. 30		
4. <i>E. coli</i> , number per 100 mL	MPN 6816 multiple tube, or		9221 B2014/9221 F-2014. 121433		
	multiple tube/multiple well, or		9223 B- 2016. 13	991.15 10	Colilert®. 1318 Colilert-18®. 131718
	MF 25678, two step, or		9222 B- 2015/9222 I-2015. 31		
	Single step	1603.1 21			m- ColiBlue24®. 19
5. Fecal streptococci, number per 100 mL	MPN, 5 tube, 3 dilution, or	p. 139 3	9230 B- 2013.		
	MF 2, or	p. 136 3	9230 C- 2013 32	B- 0055- 85. 4	
	Plate count	p. 143 3			
6. Enterococci, number per 100 mL	MPN, 5 tube, 3 dilution, or	p. 139 3	9230 B- 2013.		
	MPN 68, multiple tube/multiple well, or		9230 D- 2013	D6503- 99 9	Enterolert®. 1323

	MF 25678 single step or	1600.1 24	9230 C- 2013. 32		
	Plate count	p. 143. 3			
7. <i>Salmonella</i> , number per gram dry weight ¹¹	MPN multiple tube	1682 22			
Aquatic Toxicity					
8. Toxicity, acute, fresh water organisms, LC50, percent effluent	Water flea, <i>Cladoceran</i> , <i>Ceriodaphnia dubia</i> acute	2002.0. 25			
	Water flea, <i>Cladocerans</i> , <i>Daphnia pulex</i> and <i>Daphnia magna</i> acute	2021.0. 25			
	Fish, Fathead minnow, <i>Pimephales promelas</i> , and Bannerfin shiner, <i>Cyprinella leedsii</i> , acute	2000.0. 25			
	Fish, Rainbow trout, <i>Oncorhynchus mykiss</i> , and brook trout, <i>Salvelinus fontinalis</i> , acute	2019.0. 25			
9. Toxicity, acute, estuarine and marine organisms of the Atlantic Ocean and Gulf of Mexico, LC50, percent effluent	Mysid, <i>Mysidopsis bahia</i> , acute	2007.0. 25			
	Fish, Sheepshead minnow, <i>Cyprinodon variegatus</i> , acute	2004.0. 25			
	Fish, Silverside, <i>Menidia beryllina</i> , <i>Menidia menidia</i> , and <i>Menidia peninsulae</i> , acute	2006.0. 25			
10. Toxicity, chronic, fresh water organisms, NOEC or IC25, percent effluent	Fish, Fathead minnow, <i>Pimephales promelas</i> , larval survival and growth	1000.0. 26			
	Fish, Fathead minnow, <i>Pimephales promelas</i> , embryo-larval survival and teratogenicity	1001.0. 26			
	Water flea, <i>Cladoceran</i> , <i>Ceriodaphnia dubia</i> , survival and reproduction	1002.0. 26			
	Green alga, <i>Selenastrum capricornutum</i> , growth	1003.0. 26			
11. Toxicity, chronic, estuarine and marine organisms of the Atlantic Ocean and Gulf of Mexico, NOEC or IC25, percent effluent	Fish, Sheepshead minnow, <i>Cyprinodon variegatus</i> , larval survival and growth	1004.0. 27			

	Fish, Sheepshead minnow, <i>Cyprinodon variegatus</i> , embryo-larval survival and teratogenicity	1005.0. 27			
	Fish, Inland silverside, <i>Menidia beryllina</i> , larval survival and growth	1006.0. 27			
	Mysid, <i>Mysidopsis bahia</i> , survival, growth, and fecundity	1007.0. 27			
	Sea urchin, <i>Arbacia punctulata</i> , fertilization	1008.0. 27			

Table IA notes:

¹ The method must be specified when results are reported.

² A 0.45-µm membrane filter (MF) or other pore size certified by the manufacturer to fully retain organisms to be cultivated and to be free of extractables which could interfere with their growth.

³ Microbiological Methods for Monitoring the Environment, Water and Wastes, EPA/600/8-78/017. 1978. US EPA.

⁴ U.S. Geological Survey Techniques of Water-Resource Investigations, Book 5, Laboratory Analysis, Chapter A4, Methods for Collection and Analysis of Aquatic Biological and Microbiological Samples. 1989. USGS.

⁵ Because the MF technique usually yields low and variable recovery from chlorinated wastewaters, the Most Probable Number method will be required to resolve any controversies.

⁶ Tests must be conducted to provide organism enumeration (density). Select the appropriate configuration of tubes/filtrations and dilutions/volumes to account for the quality, character, consistency, and anticipated organism density of the water sample.

⁷ When the MF method has been used previously to test waters with high turbidity, large numbers of noncoliform bacteria, or samples that may contain organisms stressed by chlorine, a parallel test should be conducted with a multiple-tube technique to demonstrate applicability and comparability of results.

⁸ To assess the comparability of results obtained with individual methods, it is suggested that side-by-side tests be conducted across seasons of the year with the water samples routinely tested in accordance with the most current *Standard Methods for the Examination of Water and Wastewater* or EPA alternate test procedure (ATP) guidelines.

⁹ Annual Book of ASTM Standards—Water and Environmental Technology, Section 11.02. 2000, 1999, 1996. ASTM International.

¹⁰ Official Methods of Analysis of AOAC International. 16th Edition, 4th Revision, 1998. AOAC International.

¹¹ Recommended for enumeration of target organism in sewage sludge.

¹² The multiple-tube fermentation test is used in 9221B.2-2014. Lactose broth may be used in lieu of lauryl tryptose broth (LTB), if at least 25 parallel tests are conducted between this broth and LTB using the water samples normally tested, and this comparison demonstrates that the false-positive rate and false-negative rate for total coliform using lactose broth is less than 10 percent. No requirement exists to run the completed phase on 10 percent of all total coliform-positive tubes on a seasonal basis.

¹³ These tests are collectively known as defined enzyme substrate tests.

¹⁴ After prior enrichment in a presumptive medium for total coliform using 9221B.2-2014, all presumptive tubes or bottles showing any amount of gas, growth or acidity within 48 h ± 3 h of incubation shall be submitted to 9221F-2014. Commercially available EC-MUG media or EC media supplemented in the laboratory with 50 µg/mL of MUG may be used.

¹⁵ Method 1680: Fecal Coliforms in Sewage Sludge (Biosolids) by Multiple-Tube Fermentation Using Lauryl-Tryptose Broth (LTB) and EC Medium, EPA-821-R-14-009. September 2014. U.S. EPA.

¹⁶ Samples shall be enumerated by the multiple-tube or multiple-well procedure. Using multiple-tube procedures, employ an appropriate tube and dilution configuration of the sample as needed and report the Most Probable Number (MPN). Samples tested with Colilert® may be enumerated with the multiple-well procedures, Quanti-Tray® or Quanti-Tray®/2000 and the MPN calculated from the table provided by the manufacturer.

¹⁷ Colilert-18® is an optimized formulation of the Colilert® for the determination of total coliforms and *E. coli* that provides results within 18 h of incubation at 35 °C rather than the 24 h required for the Colilert® test and is recommended for marine water samples.

¹⁸ Descriptions of the Colilert®, Colilert-18®, Quanti-Tray®, and Quanti-Tray®/2000 may be obtained from IDEXX Laboratories, Inc.

¹⁹ A description of the mColiBlue24® test is available from Hach Company.

²⁰ Method 1681: Fecal Coliforms in Sewage Sludge (Biosolids) by Multiple-Tube Fermentation Using A-1 Medium, EPA-821-R-06-013. July 2006. U.S. EPA.

²¹ Method 1603.1: *Escherichia coli* (*E. coli*) in Water by Membrane Filtration Using Modified membrane-Thermotolerant *Escherichia coli* Agar (Modified mTEC), EPA-821-R-23-008. September 2023. U.S. EPA.

²² Method 1682: *Salmonella* in Sewage Sludge (Biosolids) by Modified Semisolid Rappaport-Vassiliadis (MSRV) Medium, EPA-821-R-14-012. September 2014. U.S. EPA.

²³ A description of the Enterolert® test may be obtained from IDEXX Laboratories Inc.

²⁴ Method 1600.1: Enterococci in Water by Membrane Filtration Using Membrane-Enterococcus Indoxyl-β-D-Glucoside Agar (mEI), EPA-821-R-23-006. September 2023. U.S. EPA.

²⁵ Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms, EPA-821-R-02-012. Fifth Edition, October 2002. U.S. EPA; and U.S. EPA Whole Effluent Toxicity Methods Errata Sheet, EPA 821-R-02-012-ES. December 2016.

²⁶ Short-term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater

Organisms, EPA-821-R-02-013. Fourth Edition, October 2002. U.S. EPA; and U.S. EPA Whole Effluent Toxicity Methods Errata Sheet, EPA 821-R-02-012-ES. December 2016.

²⁷ Short-term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Marine and Estuarine Organisms, EPA-821-R-02-014. Third Edition, October 2002. U.S. EPA; and U.S. EPA Whole Effluent Toxicity Methods Errata Sheet, EPA 821-R-02-012-ES. December 2016.

²⁸ To use Colilert-18® to assay for fecal coliforms, the incubation temperature is 44.5 ± 0.2 °C, and a water bath incubator is used.

²⁹ On a monthly basis, at least ten blue colonies from positive samples must be verified using Lauryl Tryptose Broth and EC broth, followed by count adjustment based on these results; and representative non-blue colonies should be verified using Lauryl Tryptose Broth. Where possible, verifications should be done from randomized sample sources.

³⁰ On a monthly basis, at least ten sheen colonies from positive samples must be verified using lauryl tryptose broth and brilliant green lactose bile broth, followed by count adjustment based on these results; and representative non-sheen colonies should be verified using lauryl tryptose broth. Where possible, verifications should be done from randomized sample sources.

³¹ Subject coliform positive samples determined by 9222 B-2015 or other membrane filter procedure to 9222 I-2015 using NA-MUG media.

³² Verification of colonies by incubation of BHI agar at 10 ± 0.5 °C for 48 ± 3 h is optional. As per the Errata to the 23rd Edition of *Standard Methods for the Examination of Water and Wastewater* “Growth on a BHI agar plate incubated at 10 ± 0.5 °C for 48 ± 3 h is further verification that the colony belongs to the genus *Enterococcus*.”

³³ 9221F. 2-2014 allows for simultaneous detection of *E. coli* and thermotolerant fecal coliforms by adding inverted vials to EC-MUG; the inverted vials collect gas produced by thermotolerant fecal coliforms.

Table IB—List of Approved Inorganic Test Procedures

Parameter	Methodology ⁵⁸	EPA ⁵²	Standard methods ⁸⁴	ASTM	USGS/AOAC/Other
1. Acidity (as CaCO ₃), mg/L	Electrometric endpoint or phenolphthalein endpoint		2310 B-2020	D1067-16	I-1020-85.2
2. Alkalinity (as CaCO ₃), mg/L	Electrometric or Colorimetric titration to pH 4.5, Manual		2320 B-2021	D1067-16	973.43 3, I-1030-85.2
	Automatic	310.2 (Rev. 1974) ¹			I-2030-85.2
3. Aluminum—Total, ⁴ mg/L	Digestion, ⁴ followed by any of the following:				

	AA direct aspiration ³⁶		3111 D-2019 or 3111 E-2019		I-3051-85. 2
	AA furnace		3113 B-2020.		
	STGFAA	200.9 Rev. 2.2 (1994).			
	ICP/AES ³⁶	200.5 Rev 4.2 (2003) ⁶⁸ , 200.7 Rev. 4.4 (1994)	3120 B-2020	D1976-20	I-4471-97. 5 ⁰
	ICP/MS	200.8, Rev. 5.4 (1994)	3125 B-2020	D5673-16	993.14 3, I-4472-97. 8 ¹
	Direct Current Plasma (DCP) ³⁶			D4190-15	See footnote. 34
	Colorimetric (Eriochrome cyanine R)		3500-Al B-2020.		
4. Ammonia (as N), mg/L	Manual distillation ⁶ or gas diffusion (pH > 11), followed by any of the following:	350.1 Rev. 2.0 (1993)	4500-NH ₃ B-2021		973.49. 3
	Nesslerization			D1426-15 (A)	973.49 3, I-3520-85. 2
	Titration		4500-NH ₃ C-2021.		
	Electrode		4500-NH ₃ D-2021 or E-2021	D1426-15 (B)	
	Manual phenate, salicylate, or other substituted phenols in Berthelot reaction-based methods		4500-NH ₃ F-2021		See footnote. 6 ⁰
	Automated phenate, salicylate, or other substituted phenols in Berthelot reaction-based methods	350.1 ³⁰ Rev. 2.0 (1993)	4500-NH ₃ G-2021, 4500-NH ₃ H-2021		I-4523-85 2, I-2522-90. 8 ⁰
	Automated electrode				See footnote. 7

	Ion Chromatography			D6919-17	
	Automated gas diffusion, followed by conductivity cell analysis				Timberline Ammonia-001. 74
	Automated gas diffusion followed by fluorescence detector analysis				FIALab100. 82
5. Antimony— Total, 4 mg/L	Digestion, 4 followed by any of the following:				
	AA direct aspiration 36		3111 B-2019.		
	AA furnace		3113 B-2020.		
	STGFAA	200.9 Rev. 2.2 (1994).			
	ICP/AES 36	200.5 Rev 4.2 (2003) ⁶⁸ , 200.7 Rev. 4.4 (1994)	3120 B-2020	D1976-20.	
	ICP/MS	200.8, Rev. 5.4 (1994)	3125 B-2020	D5673-16	993.14 3, I-4472-97. 81
6. Arsenic— Total, 4 mg/L	Digestion, 4 followed by any of the following:	206.5 (Issued 1978). ¹			
	AA gaseous hydride		3114 B-2020 or 3114 C-2020	D2972-15 (B)	I-3062-85. 2
	AA furnace		3113 B-2020	D2972-15 (C)	I-4063-98. 49
	STGFAA	200.9 Rev. 2.2 (1994).			
	ICP/AES 36	200.5, Rev 4.2 (2003) ⁶⁸ , 200.7 Rev. 4.4 (1994)	3120 B-2020	D1976-20.	
	ICP/MS	200.8, Rev. 5.4 (1994)	3125 B-2020	D5673-16	993.14 3, I-4020-05. 70
	Colorimetric (SDDC)		3500-As B-2020	D2972-15 (A)	I-3060-85. 2
7. Barium— Total, 4 mg/L	Digestion, 4 followed by any of the following:				

	AA direct aspiration ³⁶		3111 D-2019		I-3084-85. ²
	AA furnace		3113 B-2020	D4382-18.	
	ICP/AES ³⁶	200.5, Rev 4.2 (2003) ⁶⁸ , 200.7 Rev. 4.4 (1994)	3120 B-2020		I-4471-97. ⁵⁰
	ICP/MS	200.8 Rev. 5.4 (1994)	3125 B-2020	D5673-16	993.14 ³ , I-4472-97. ⁸¹
	DCP ³⁶				See footnote. ³⁴
8. Beryllium— Total, 4 mg/L	Digestion, ⁴ followed by any of the following:				
	AA direct aspiration		3111 D-2019 or 3111 E-2019	D3645-15 (A)	I-3095-85. ²
	AA furnace		3113 B-2020	D3645-15 (B).	
	STGFAA	200.9, Rev. 2.2 (1994).			
	ICP/AES	200.5 Rev 4.2 (2003) ⁶⁸ , 200.7 Rev. 4.4 (1994)	3120 B-2020	D1976-20	I-4471-97. ⁵⁰
	ICP/MS	200.8 Rev. 5.4 (1994)	3125 B-2020	D5673-16	993.14 ³ , I-4472-97. ⁸¹
	DCP			D4190-15	See footnote. ³⁴
	Colorimetric (aluminon)		See footnote ⁶¹		
9. Biochemical oxygen demand (BOD ₅), mg/L	Dissolved Oxygen Depletion		5210 B-2016 ⁸⁵		973.44 ³ p. 17 ⁹ , I-1578-78 ⁸ , see footnote. ¹⁰⁶³
10. Boron— Total, 37 mg/L	Colorimetric (curcumin)		4500-B B-2011		I-3112-85. ²
	ICP/AES	200.5 Rev 4.2 (2003) ⁶⁸ , 200.7 Rev. 4.4 (1994)	3120 B-2020	D1976-20	I-4471-97. ⁵⁰

	ICP/MS	200.8 Rev. 5.4 (1994)	3125 B-2020	D5673-16	993.14. 3
	DCP			D4190-15	See footnote. 34
11. Bromide, mg/L	Electrode			D1246-16	I-1125-85. 2
	Ion Chromatography	300.0 Rev 2.1 (1993), and 300.1 Rev 1.0 (1997)	4110 B-2020, C-2020 or D-2020	D4327-17	993.30 3, I-2057-85. 79
	CIE/UV		4140 B-2020	D6508-15	D6508 Rev. 2. 54
12. Cadmium— Total, 4 mg/L	Digestion, 4 followed by any of the following:				
	AA direct aspiration 36		3111 B-2019 or 3111 C-2019	D3557-17 (A or B)	974.27 3 p. 379, I-3135-85 2 or I-3136-85. 2
	AA furnace		3113 B-2020	D3557-17 (D)	I-4138-89. 51
	STGFAA	200.9 Rev. 2.2 (1994)			
	ICP/AES 36	200.5 Rev 4.2 (2003) ⁶⁸ , 200.7 Rev. 4.4 (1994)	3120 B-2020	D1976-20	I-1472-85 2 or I-4471-97. 50
	ICP/MS	200.8, Rev. 5.4 (1994)	3125 B-2020	D5673-16	993.14 3, I-4472-97. 81
	DCP 36			D4190-15	See footnote. 34
	Voltammetry 11			D3557-17 (C).	
	Colorimetric (Dithizone)		3500-Cd D-1990.		
13. Calcium— Total, 4 mg/L	Digestion 4 followed by any of the following:				

	AA direct aspiration		3111 B-2019 or 3111 D-2019	D511-14 (B)	I-3152-85. 2
	ICP/AES	200.5 Rev 4.2 (2003) ⁶⁸ , 200.7 Rev. 4.4 (1994)	3120 B-2020		I-4471-97.5 ⁰
	ICP/MS	200.8, Rev. 5.4 (1994)	3125 B-2020	D5673-16	993.14. 3
	DCP				See footnote. 34
	Titrimetric (EDTA)		3500-Ca B-2020	D511-14 (A).	
	Ion Chromatography			D6919-17.	
14. Carbonaceous biochemical oxygen demand (CBOD ₅), mg/L ¹²	Dissolved Oxygen Depletion with nitrification inhibitor		5210 B-2016 ⁸⁵		See footnotes. 35 63
15. Chemical oxygen demand (COD), mg/L	Titrimetric	410.3 (Rev. 1978) ¹	5220 B-2011 or C-2011	D1252-06(12) (A)	973.46 3 p. 179, I-3560-85. 2
	Spectrophotometric, manual or automatic	410.4 Rev. 2.0 (1993)	5220 D-2011	D1252-06(12) (B)	See footnotes 13483, I-3561-85. 2
16. Chloride, mg/L	Titrimetric: (silver nitrate)		4500-Cl-B-2021	D512-12 (B)	I-1183-85. 2
	(Mercuric nitrate)		4500-Cl-C-2021	D512-12 (A)	973.51 3, I-1184-85. 2
	Colorimetric: manual				I-1187-85. 2
	Automated (ferricyanide)		4500-Cl-E-2021		I-2187-85. 2
	Potentiometric Titration		4500-Cl-D-2021.		

	Ion Selective Electrode			D512-12 (C).	
	Ion Chromatography	300.0 Rev 2.1 (1993), and 300.1 Rev 1.0 (1997)	4110 B-2020 or 4110 C-2020	D4327-17	993.303, I-2057-90. 51
	CIE/UV		4140 B-2020	D6508-15	D6508, Rev. 2. 54
17. Chlorine— Total residual, mg/L	Amperometric direct		4500-Cl D-2011	D1253-14.	
	Amperometric direct (low level)		4500-Cl E-2011.		
	Iodometric direct		4500-Cl B-2011.		
	Back titration ether end-point ¹⁵		4500-Cl C-2011.		
	DPD-FAS		4500-Cl F-2011.		
	Spectrophotometric, DPD		4500-Cl G-2011.		
	Electrode				See footnote. ¹⁶
17A. Chlorine —Free Available, mg/L	Amperometric direct		4500-Cl D-2011	D1253-14	
	Amperometric direct (low level)		4500-Cl E-2011.		
	DPD-FAS		4500-Cl F-2011.		
	Spectrophotometric, DPD		4500-Cl G-2011.		
18. Chromium VI dissolved, mg/L	0.45-micron filtration followed by any of the following:				

	AA chelation-extraction		3111 C-2019		I-1232-85. 2
	Ion Chromatography	218.6 Rev. 3.3 (1994)	3500-Cr C-2020	D5257-17	993.23. 3
	Colorimetric (diphenyl-carbazide)		3500-Cr B-2020	D1687-17 (A)	I-1230-85. 2
19. Chromium—Total, 4 mg/L	Digestion, 4 followed by any of the following:				
	AA direct aspiration 36		3111 B-2019	D1687-17 (B)	974.27 3, I-3236-85. 2
	AA chelation-extraction		3111 C-2019.		
	AA furnace		3113 B-2020	D1687-17 (C)	I-3233-93. 46
	STGFAA	200.9 Rev. 2.2 (1994).			
	ICP/AES 36	200.5 Rev 4.2 (2003) ⁶⁸ , 200.7 Rev. 4.4 (1994)	3120 B-2020	D1976-20.	
	ICP/MS	200.8 Rev. 5.4 (1994)	3125 B-2020	D5673-16	993.14 3, I-4020-05 70 I-4472-97. 81
	DCP 36			D4190-15	See footnote. 34
	Colorimetric (diphenyl-carbazide)		3500-Cr B-2020.		
20. Cobalt—Total, 4 mg/L	Digestion, 4 followed by any of the following:				
	AA direct aspiration		3111 B-2019 or 3111 C-2019	D3558-15 (A or B)	p. 379, I-323985. 2
	AA furnace		3113 B-2020	D3558-15 (C)	I-4243-89. 51
	STGFAA	200.9 Rev. 2.2 (1994).			

	ICP/AES	200.7 Rev. 4.4 (1994)	3120 B-2020	D1976-20	I-4471-97.50
	ICP/MS	200.8 Rev. 5.4 (1994)	3125 B-2020	D5673-16	993.14 3, I-4020-05 70 I-4472-97.81
	DCP			D4190-15	See footnote. 34
21. Color, platinum cobalt units or dominant wavelength, hue, luminance purity	Colorimetric (ADMI)		2120 F-2021. 78		
	Platinum cobalt visual comparison		2120 B-2021		I-1250-85. 2
	Spectrophotometric				See footnote. 18
22. Copper— Total, 4 mg/L	Digestion, 4 followed by any of the following:				
	AA direct aspiration 36		3111 B-2019 or 3111 C-2019	D1688-17 (A or B)	974.27 3 p. 379, I-3270-85 2 or I-3271-85. 2
	AA furnace		3113 B-2020	D1688-17 (C)	I-4274-89. 51
	STGFAA	200.9 Rev. 2.2 (1994).			
	ICP/AES 36	200.5 Rev 4.2 (2003), 68 200.7 Rev. 4.4 (1994)	3120 B-2020	D1976-20	I-4471-97.50
	ICP/MS	200.8 Rev. 5.4 (1994)	3125 B-2020	D5673-16	993.14 3, I-4020-05 70, I-4472-97.81
	DCP 36			D4190-15	See footnote. 34
	Colorimetric (Neocuproine)		3500-Cu B-2020.		

	Colorimetric (Bathocuproine)		3500-Cu C-2020		See footnote. 19
23. Cyanide— Total, mg/L	Automated UV digestion/distillation and Colorimetry				Kelada-01. 55
	Segmented Flow Injection, In-Line Ultraviolet Digestion, followed by gas diffusion amperometry		4500- CN- P- 2021	D7511- 12 (17).	
	Manual distillation with MgCl ₂ , followed by any of the following:	335.4 Rev. 1.0 (1993) ⁵⁷	4500- CN- B- 2021 and C-2021	D2036- 09(15) (A), D7284- 20	10-204-00-1-X. 56
	Flow Injection, gas diffusion amperometry			D2036- 09(15) (A) D7284- 20.	
	Titrimetric		4500- CN- D- 2021	D2036- 09(15) (A)	See footnote 9 p. 22.
	Spectrophotometric, manual		4500- CN- E- 2021	D2036- 09(15) (A)	I-3300-85. 2
	Semi-Automated ²⁰	335.4 Rev. 1.0 (1993) ⁵⁷	4500- CN- N- 2021		10-204-00-1-X 56, I-4302-85. 2
	Ion Chromatography			D2036- 09(15) (A).	
	Ion Selective Electrode		4500- CN- F- 2021	D2036- 09(15) (A).	
24. Cyanide— Available, mg/L	Cyanide Amenable to Chlorination (CATC); Manual distillation with MgCl ₂ , followed by Titrimetric or Spectrophotometric		4500- CN- G- 2021	D2036- 09(15) (B).	
	Flow injection and ligand exchange, followed by gas diffusion amperometry ⁵⁹		4500- CN- Q- 2021	D6888- 16	OIA-1677-09. 44

	Automated Distillation and Colorimetry (no UV digestion)				Kelada-01. 55
24A. Cyanide— Free, mg/L	Flow Injection, followed by gas diffusion amperometry		4500- CN- R- 2021	D7237- 18 (A)	OIA-1677-09. 44
	Manual micro-diffusion and colorimetry			D4282- 15.	
25. Fluoride— Total, mg/L	Manual distillation, 6 followed by any of the following:		4500-F- B-2021	D1179- 16 (A).	
	Electrode, manual		4500-F- C-2021	D1179- 16 (B).	
	Electrode, automated		4500-F- G-2021		I-4327-85. 2
	Colorimetric, (SPADNS)		4500-F- D-2021.		
	Automated complexone		4500-F- E-2021.		
	Ion Chromatography	300.0 Rev 2.1 (1993) and 300.1 Rev 1.0 (1997)	4110 B- 2020 or C-2020	D4327- 17	993.30. 3
	CIE/UV		4140 B- 2020	D6508- 15	D6508, Rev. 2. 54
26. Gold— Total, 4 mg/L	Digestion, 4 followed by any of the following:				
	AA direct aspiration		3111 B- 2019.		
	AA furnace	231.2 (Issued 1978) ¹	3113 B- 2020.		
	ICP/MS	200.8, Rev. 5.4 (1994)	3125 B- 2020	D5673- 16	993.14. 3
	DCP				See footnote. 34
27. Hardness— Total (as CaCO ₃), mg/L	Automated colorimetric	130.1 (Issued 1971). ¹			

	Titrimetric (EDTA)		2340 C-2021	D1126-17	973.52B 3, I-1338-85. 2
	Ca plus Mg as their carbonates, by any approved method for Ca and Mg (See Parameters 13 and 33), provided that the sum of the lowest point of quantitation for Ca and Mg is below the NPDES permit requirement for Hardness.		2340 B-2021.		
28. Hydrogen ion (pH), pH units	Electrometric measurement		4500-H + B-2021	D1293-18 (A or B)	973.41 3, I-1586-85. 2
	Automated electrode	150.2 (Dec. 1982) ¹			See footnote ²¹ I-2587-85. 2
29. Iridium— Total, 4 mg/L	Digestion, 4 followed by any of the following:				
	AA direct aspiration		3111 B-2019.		
	AA furnace	235.2 (Issued 1978). ¹			
	ICP/MS		3125 B-2020.		
30. Iron— Total, 4 mg/L	Digestion, 4 followed by any of the following:				
	AA direct aspiration ³⁶		3111 B-2019 or 3111 C-2019	D1068-15 (A)	974.27 3, I-3381-85. 2
	AA furnace		3113 B-2020	D1068-15 (B).	
	STGFAA	200.9, Rev. 2.2 (1994).			
	ICP/AES ³⁶	200.5 Rev. 4.2 (2003) ⁶⁸ , 200.7 Rev. 4.4 (1994)	3120 B-2020	D1976-20	I-4471-97.5 ⁰
	ICP/MS	200.8, Rev. 5.4 (1994)	3125 B-2020	D5673-16	993.14. 3
	DCP ³⁶			D4190-15	See footnote. ³⁴

	Colorimetric (Phenanthroline)		3500-Fe B-2011	D1068-15 (C)	See footnote. 22
31. Kjeldahl Nitrogen 5— Total (as N), mg/L	Manual digestion ²⁰ and distillation or gas diffusion, followed by any of the following:		4500-Norg B-2021 or C-2021 and 4500-NH3 B-2021	D3590-17 (A)	I-4515-91. 45
	Titration		4500-NH3 C-2021		973.48. 3
	Nesslerization			D1426-15 (A).	
	Electrode		4500-NH3 D-2021 or E-2021	D1426-15 (B).	
	Semi-automated phenate	350.1 Rev. 2.0 (1993)	4500-NH3 G-2021 or 4500-NH3 H-2021.		
	Manual phenate, salicylate, or other substituted phenols in Berthelot reaction based methods		4500-NH3 F-2021		See footnote. 60
	Automated gas diffusion, followed by conductivity cell analysis				Timberline Ammonia-001. 74
	Automated gas diffusion followed by fluorescence detector analysis				FIALab 100. 82
Automated Methods for TKN that do not require manual distillation					

		Automated phenate, salicylate, or other substituted phenols in Berthelot reaction-based methods colorimetric (auto digestion and distillation)	351.1 (Rev. 1978) ¹			I-4551-78.8
	Semi-automated block digester colorimetric (distillation not required)	351.2 Rev. 2.0 (1993)	4500-Norg D-2021	D3590-17 (B)	I-4515-91.45	
	Block digester, followed by Auto distillation and Titration				See footnote. 39	
	Block digester, followed by Auto distillation and Nesslerization				See footnote. 40	
	Block Digester, followed by Flow injection gas diffusion (distillation not required)				See footnote. 41	
	Digestion with peroxdisulfate, followed by Spectrophotometric (2,6-dimethyl phenol)				Hach 10242. 76	
	Digestion with persulfate, followed by Colorimetric				NCASI TNTP W10900. 77	
32. Lead— Total, 4 mg/L	Digestion, ⁴ followed by any of the following:					
	AA direct aspiration ³⁶		3111 B-2019 or 3111 C-2019	D3559-15 (A or B)	974.273, I-3399-85. 2	
	AA furnace		3113 B-2020	D3559-15 (D)	I-4403-89. 51	
	STGFAA	200.9 Rev. 2.2 (1994).				
	ICP/AES ³⁶	200.5 Rev. 4.2 (2003) ⁶⁸ , 200.7 Rev. 4.4 (1994)	3120 B-2020	D1976-20	I-4471-97.50	
	ICP/MS	200.8 Rev. 5.4 (1994)	3125 B-2020	D5673-16	993.143, I-4472-97. 81	

	DCP ³⁶			D4190-15	See footnote. ³⁴
	Voltammetry ¹¹			D3559-15 (C).	
	Colorimetric (Dithizone)		3500-Pb B-2020.		
33. Magnesium —Total, 4 mg/L	Digestion, ⁴ followed by any of the following:				
	AA direct aspiration		3111 B-2019	D511-14 (B)	974.273, I-3447-85. ²
	ICP/AES	200.5 Rev. 4.2 (2003) ⁶⁸ , 200.7 Rev. 4.4 (1994)	3120 B-2020	D1976-20	I-4471-97. ⁵⁰
	ICP/MS	200.8 Rev. 5.4 (1994)	3125 B-2020	D5673-16	993.14. ³
	DCP				See footnote. ³⁴
	Ion Chromatography			D6919-17.	
34. Manganese —Total, 4 mg/L	Digestion, ⁴ followed by any of the following:				
	AA direct aspiration ³⁶		3111 B-2019 or 3111 C-2019	D858-17 (A or B)	974.273, I-3454-85. ²
	AA furnace		3113 B-2020	D858-17 (C).	
	STGFAA	200.9 Rev. 2.2 (1994).			
	ICP/AES ³⁶	200.5, Rev. 4.2 (2003) ⁶⁸ ; 200.7, Rev. 4.4 (1994)	3120 B-2020	D1976-20	I-4471-97. ⁵⁰
	ICP/MS	200.8 Rev. 5.4 (1994)	3125 B-2020	D5673-16	993.14 ³ , I-4472-97. ⁸¹
	DCP ³⁶			D4190-15	See footnote. ³⁴

	Colorimetric (Persulfate)		3500-Mn B-2020		920.203. 3
	Colorimetric (Periodate)				See footnote. 23
35. Mercury— Total, mg/L	Cold vapor, Manual	245.1 Rev. 3.0 (1994)	3112 B- 2020	D3223- 17	977.22 3, I-3462- 85. 2
	Cold vapor, Automated	245.2 (Issued 1974). ¹			
	Cold vapor atomic fluorescence spectrometry (CVAFS)	245.7 Rev. 2.0 (2005) ¹⁷			I-4464-01. 7 ¹
	Purge and Trap CVAFS	1631E. 43			
36. Molybdenum —Total, 4 mg/L	Digestion, 4 followed by any of the following:				
	AA direct aspiration		3111 D- 2019		I-3490-85. 2
	AA furnace		3113 B- 2020		I-3492-96. 47
	ICP/AES	200.7 Rev. 4.4 (1994)	3120 B- 2020	D1976- 20	I-4471-97. 5 ⁰
	ICP/MS	200.8 Rev. 5.4 (1994)	3125 B- 2020	D5673- 16	993.14 3, I-4472- 97. 8 ¹
	DCP				See footnote. 34
37. Nickel— Total, 4 mg/L	Digestion, 4 followed by any of the following:				
	AA direct aspiration ³⁶		3111 B- 2019 or 3111 C- 2019	D1886- 14 (A or B)	I-3499-85. 2
	AA furnace		3113 B- 2020	D1886- 14 (C)	I-4503-89. 5 ¹
	STGFAA	200.9 Rev. 2.2 (1994).			
	ICP/AES ³⁶	200.5 Rev. 4.2 (2003) ⁶⁸ , 200.7 Rev. 4.4 (1994)	3120 B- 2020	D1976- 20	I-4471-97. 5 ⁰

	ICP/MS	200.8, Rev. 5.4 (1994)	3125 B-2020	D5673-16	993.14 3, I-4020-05 70, I-4472-97.81
	DCP 36			D4190-15	See footnote. 34
38. Nitrate (as N), mg/L	Ion Chromatography	300.0 Rev. 2.1 (1993) and 300.1 Rev. 1.0 (1997)	4110 B-2020 or C-2020	D4327-17	993.30.3
	CIE/UV		4140 B-2020	D6508-15	D6508, Rev. 2. 54
	Ion Selective Electrode		4500-NO3- D-2019.		
	Colorimetric (Brucine sulfate)	352.1 (Issued 1971) 1			973.50 3, 419D 86, p. 28. 9
	Spectrophotometric (2,6-dimethylphenol)				Hach 10206. 75
	Nitrate-nitrite N minus Nitrite N (see parameters 39 and 40).				
39. Nitrate-nitrite (as N), mg/L	Cadmium reduction, Manual		4500-NO3- E-2019	D3867-16 (B).	
	Cadmium reduction, Automated	353.2 Rev. 2.0 (1993)	4500-NO3- F-2019 or 4500-NO3- I-2019	D3867-16 (A)	I-2545-90. 51
	Automated hydrazine		4500-NO3- H-2019.		
	Reduction/Colorimetric				See footnote. 62
	Ion Chromatography	300.0 Rev. 2.1 (1993) and 300.1 Rev. 1.0 (1997)	4110 B-2020 or C-2020	D4327-17	993.30.3
	CIE/UV		4140 B-2020	D6508-15	D6508, Rev. 2. 54

	Enzymatic reduction, followed by automated colorimetric determination			D7781-14	I-2547-1172, I-2548-1172, N07-0003.73
	Enzymatic reduction, followed by manual colorimetric determination		4500-NO3- J-2018.		
	Spectrophotometric (2,6-dimethylphenol)				Hach 10206.75
40. Nitrite (as N), mg/L	Spectrophotometric: Manual		4500-NO2- B-2021		See footnote. 25
	Automated (Diazotization)				I-4540-85.2 see footnote 62, I-2540-90.80
	Automated (*bypass cadmium reduction)	353.2 Rev. 2.0 (1993)	4500-NO3- F-2019, 4500-NO3- I-2019	D3867-16 (A)	I-4545-85.2
	Manual (*bypass cadmium or enzymatic reduction)		4500-NO3- E-2019, 4500-NO3- J-2018	D3867-16 (B).	
	Ion Chromatography	300.0 Rev. 2.1 (1993) and 300.1 Rev. 1.0 (1997)	4110 B-2020 or C-2020	D4327-17	993.30.3
	CIE/UV		4140 B-2020	D6508-15	D6508, Rev. 2.54
	Automated (*bypass Enzymatic reduction)			D7781-14	I-2547-1172, I-2548-1172, N07-0003.73
41. Oil and grease—Total recoverable, mg/L	Hexane extractable material (HEM): <i>n</i> -Hexane extraction and gravimetry	1664 Rev. A 1664 Rev. B 42	5520 B or G-2021. 38		

	Silica gel treated HEM (SGT-HEM): Silica gel treatment and gravimetry	1664 Rev. A, 1664 Rev. B 42	5520 B or G-2021 38 and 5520 F- 2021. 38		
42. Organic carbon—Total (TOC), mg/L	Combustion		5310 B- 2014	D7573- 18a e1	973.47 3, p. 14 ²⁴
	Heated persulfate or UV persulfate oxidation		5310 C- 2014, 5310 D- 2011	D4839- 03(17)	973.47 3, p. 14 ²⁴
43. Organic nitrogen (as N), mg/L	Total Kjeldahl N (Parameter 31) minus ammonia N (Parameter 4).				
44. Ortho- phosphate (as P), mg/L	Ascorbic acid method:				
	Automated	365.1 Rev. 2.0 (1993)	4500-P F-2021 or G-2021		973.56 3, I-4601- 85 2, I-2601-90. 80
	Manual, single-reagent		4500-P E-2021	D515- 88 (A)	973.55.3
	Manual, two-reagent	365.3 (Issued 1978). ¹			
	Ion Chromatography	300.0 Rev. 2.1 (1993) and 300.1 Rev. 1.0 (1997)	4110 B- 2020 or C-2020	D4327- 17	993.30. 3
	CIE/UV		4140 B- 2020	D6508- 15	D6508, Rev. 2. 54
45. Osmium— Total 4, mg/L	Digestion, 4 followed by any of the following:				
	AA direct aspiration		3111 D- 2019.		
	AA furnace	252.2 (Issued 1978). ¹			
46. Oxygen, dissolved, mg/L	Winkler (Azide modification)		4500-O (B-F)- 2021	D888- 18 (A)	973.45B 3, I-1575- 78. 8

	Electrode		4500-O G-2021	D888- 18 (B)	I-1576-78. 8
	Luminescence-Based Sensor		4500-O H-2021	D888- 18 (C)	See footnotes. 63, 64
47. Palladium —Total, 4 mg/L	Digestion, 4 followed by any of the following:				
	AA direct aspiration		3111 B- 2019.		
	AA furnace	253.2 (Issued 1978). ¹			
	ICP/MS		3125 B- 2020.		
	DCP				See footnote. 34
48. Phenols, mg/L	Manual distillation, ²⁶ followed by any of the following:	420.1 (Rev. 1978) ¹	5530 B- 2021	D1783- 01(12)	
	Colorimetric (4AAP) manual	420.1 (Rev. 1978) ¹	5530 D- 2021 ²⁷	D1783- 01(12) (A or B).	
	Automated colorimetric (4AAP)	420.4 Rev. 1.0 (1993).			
49. Phosphorus (elemental), mg/L	Gas-liquid chromatography				See footnote. 28
50. Phosphorus —Total, mg/L	Digestion, ²⁰ followed by any of the following:		4500-P B (5)-2021		973.55. 3
	Manual	365.3 (Issued 1978) ¹	4500-P E-2021	D515- 88 (A).	
	Automated ascorbic acid reduction	365.1 Rev. 2.0 (1993)	4500-P (F-H)- 2021		973.56 3, I-4600- 85. 2
	ICP/AES ⁴³⁶	200.7 Rev. 4.4 (1994)	3120 B- 2020		I-4471-97.5 ⁰

	Semi-automated block digester (TKP digestion)	365.4 (Issued 1974) ¹		D515-88 (B)	I-4610-91.4 ⁸
	Digestion with persulfate, followed by Colorimetric				NCASI TNTP W10900.7 ⁷
51. Platinum—Total, 4 mg/L	Digestion, 4 followed by any of the following:				
	AA direct aspiration		3111 B-2019.		
	AA furnace	255.2 (Issued 1978). ¹			
	ICP/MS		3125 B-2020.		
	DCP				See footnote. 3 ⁴
52. Potassium—Total, 4 mg/L	Digestion, 4 followed by any of the following:				
	AA direct aspiration		3111 B-2019		973.5 3, I-3630-85.2
	ICP/AES	200.7 Rev. 4.4 (1994)	3120 B-2020.		
	ICP/MS	200.8, Rev. 5.4 (1994)	3125 B-2020	D5673-16	993.14.3
	Flame photometric		3500-K B-2020.		
	Electrode		3500-K C-2020.		
	Ion Chromatography			D6919-17.	
53. Residue—Total, mg/L	Gravimetric, 103-105°		2540 B-2020		I-3750-85.2
54. Residue—filterable, mg/L	Gravimetric, 180°		2540 C-2020	D5907-18 (B)	I-1750-85.2
55. Residue—non-filterable (TSS), mg/L	Gravimetric, 103-105° post-washing of residue		2540 D-2020	D5907-18 (A)	I-3765-85.2

56. Residue— settleable, mg/L	Volumetric (Imhoff cone), or gravimetric		2540 F- 2020.		
57. Residue— Volatile, mg/L	Gravimetric, 550°	160.4 (Issued 1971) ¹	2540 E- 2020		I-3753-85. ²
58. Rhodium— Total, 4 mg/L	Digestion, 4 followed by any of the following:				
	AA direct aspiration, or		3111 B- 2019.		
	AA furnace	265.2 (Issued 1978). ¹			
	ICP/MS		3125 B- 2020.		
59. Ruthenium —Total, 4 mg/L	Digestion, 4 followed by any of the following:				
	AA direct aspiration, or		3111 B- 2019.		
	AA furnace	267.2. ¹			
	ICP/MS		3125 B- 2020.		
60. Selenium —Total, 4 mg/L	Digestion, 4 followed by any of the following:				
	AA furnace		3113 B- 2020	D3859- 15 (B)	I-4668-98. ⁴⁹
	STGFAA	200.9 Rev. 2.2 (1994).			
	ICP/AES ³⁶	200.5 Rev 4.2 (2003) ⁶⁸ , 200.7 Rev. 4.4 (1994)	3120 B- 2020	D1976- 20.	
	ICP/MS	200.8 Rev. 5.4 (1994)	3125 B- 2020	D5673- 16	993.14 ³ , I-4020- 05 ⁷⁰ I-4472-97. 81
	AA gaseous hydride		3114 B- 2020, or 3114 C- 2020	D3859- 15 (A)	I-3667-85. ²

61. Silica— Dissolved, 37 mg/L	0.45-micron filtration followed by any of the following:				
	Colorimetric, Manual		4500- SiO2 C- 2021	D859- 16	I-1700-85. 2
	Automated (Molybdosilicate)		4500- SiO2 E- 2021 or F-2021		I-2700-85. 2
	ICP/AES	200.5 Rev. 4.2 (2003), ⁶⁸ 200.7 Rev. 4.4 (1994)	3120 B- 2020		I-4471-97.5 ⁰
	ICP/MS	200.8 Rev. 5.4 (1994)	3125 B- 2020	D5673- 16	993.14. 3
62. Silver— Total, 4 31 mg/L	Digestion, 4 29 followed by any of the following:				
	AA direct aspiration		3111 B- 2019 or 3111 C- 2019		974.27 3, p. 379, I- 3720-85. 2
	AA furnace		3113 B- 2020		I-4724-89. 5 ¹
	STGFAA	200.9 Rev. 2.2 (1994).			
	ICP/AES	200.5 Rev. 4.2 (2003) ⁶⁸ , 200.7 Rev. 4.4 (1994)	3120 B- 2020	D1976- 20	I-4471-97. 5 ⁰
	ICP/MS	200.8 Rev. 5.4 (1994)	3125 B- 2020	D5673- 16	993.14 3, I-4472- 97. 8 ¹
	DCP				See footnote. 34
63. Sodium— Total, 4 mg/L	Digestion, 4 followed by any of the following:				
	AA direct aspiration		3111 B- 2019		973.54 3, I-3735- 85. 2
	ICP/AES	200.5 Rev. 4.2 (2003) ⁶⁸ , 200.7 Rev. 4.4 (1994)	3120 B- 2020		I-4471-97. 5 ⁰

	ICP/MS	200.8 Rev. 5.4 (1994)	3125 B-2020	D5673-16	993.14. 3
	DCP				See footnote. 34
	Flame photometric		3500-Na B-2020.		
	Ion Chromatography			D6919-17.	
64. Specific conductance, micromhos/cm at 25 °C	Wheatstone bridge	120.1 (Rev. 1982) ¹	2510 B-2021	D1125-95(99) (A)	973.40 3, I-2781-85. 2
65. Sulfate (as SO ₄), mg/L	Automated colorimetric	375.2 Rev. 2.0 (1993)	4500-SO ₄ ²⁻ - F-2021 or G-2021.		
	Gravimetric		4500-SO ₄ ²⁻ - C-2021 or D-2021		925.54. 3
	Turbidimetric		4500-SO ₄ ²⁻ - E-2021	D516-16.	
	Ion Chromatography	300.0 Rev. 2.1 (1993) and 300.1 Rev. 1.0 (1997)	4110 B-2020 or C-2020	D4327-17	993.30 3, I-4020-05. 70
	CIE/UV		4140 B-2020	D6508-15	D6508 Rev. 2. 54
66. Sulfide (as S), mg/L	Sample Pretreatment		4500-S ²⁻ - B, C-2021.		
	Titrimetric (iodine)		4500-S ²⁻ - F-2021		I-3840-85. 2
	Colorimetric (methylene blue)		4500-S ²⁻ - D-2021.		

	Ion Selective Electrode		4500-S 2- G- 2021	D4658- 15.	
67. Sulfite (as SO ₃), mg/L	Titrimetric (iodine-iodate)		4500- SO ₃ 2- B- 2021.		
68. Surfactants, mg/L	Colorimetric (methylene blue)		5540 C- 2021	D2330- 20.	
69. Temperature, °C	Thermometric		2550 B- 2010		See footnote. 32
70. Thallium- Total, 4 mg/L	Digestion, 4 followed by any of the following:				
	AA direct aspiration		3111 B- 2019.		
	AA furnace	279.2 (Issued 1978) ¹	3113 B- 2020.		
	STGFAA	200.9 Rev. 2.2 (1994).			
	ICP/AES	200.7 Rev. 4.4 (1994)	3120 B- 2020	D1976- 20.	
	ICP/MS	200.8, Rev. 5.4 (1994)	3125 B- 2020	D5673- 16	993.14 3, I-4471- 97 50 I-4472-97. 81
71. Tin—Total, 4 mg/L	Digestion, 4 followed by any of the following:				
	AA direct aspiration		3111 B- 2019		I-3850-78. 8
	AA furnace		3113 B- 2020.		
	STGFAA	200.9 Rev. 2.2 (1994).			
	ICP/AES	200.5 Rev. 4.2 (2003) ⁶⁸ , 200.7 Rev. 4.4 (1994).			
	ICP/MS	200.8 Rev. 5.4 (1994)	3125 B- 2020	D5673- 16	993.14. 3

72. Titanium— Total, 4 mg/L	Digestion, 4 followed by any of the following:				
	AA direct aspiration		3111 D-2019.		
	AA furnace	283.2 (Issued 1978). ¹			
	ICP/AES	200.7 Rev. 4.4 (1994).			
	ICP/MS	200.8 Rev. 5.4 (1994)	3125 B-2020	D5673-16	993.14. 3
	DCP				See footnote. 34
73. Turbidity, NTU 53	Nephelometric	180.1, Rev. 2.0 (1993)	2130 B-2020	D1889-00	I-3860-85 2, see footnotes. 656667
74. Vanadium —Total, 4 mg/L	Digestion, 4 followed by any of the following:				
	AA direct aspiration		3111 D-2019.		
	AA furnace		3113 B-2020	D3373-17.	
	ICP/AES	200.5 Rev. 4.2 (2003) ⁶⁸ , 200.7 Rev. 4.4 (1994)	3120 B-2020	D1976-20	I-4471-97. 5 ⁰
	ICP/MS	200.8 Rev. 5.4 (1994)	3125 B-2020	D5673-16	993.14 3, I-4020-05. 7 ⁰
	DCP			D4190-15	See footnote. 34
	Colorimetric (Gallic Acid)		3500-V B-2011.		
75. Zinc— Total, 4 mg/L	Digestion, 4 followed by any of the following:				
	AA direct aspiration ³⁶		3111 B-2019 or 3111 C-2019	D1691-17 (A or B)	974.27 3 p. 379, I-3900-85. 2
	AA furnace	289.2 (Issued 1978). ¹			

	ICP/AES 36	200.5 Rev. 4.2 (2003), ⁶⁸ 200.7, Rev. 4.4 (1994)	3120 B- 2020	D1976- 20	I-4471-97.5 ⁰
	ICP/MS	200.8 Rev. 5.4 (1994)	3125 B- 2020	D5673- 16	993.14 3, I-4020- 05 7 ⁰ , I-4472-97. 8 ¹
	DCP 36			D4190- 15	See footnote. 34
	Colorimetric (Zincon)		3500 Zn B-2020		See footnote. 33
76. Acid Mine Drainage		1627. 6 ⁹			

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