ILLINOIS POLLUTION CONTROL BOARD
February 8, 2018

IN THE MATTER OF:	)	
SDWA UPDATE, USEPA AMENDMENTS	)	R18-9
(July 1, 2017 through December 31, 2017)	)	(Identical-in-Substance
	)	Rulemaking - Public Water Supply)

Proposed Rule. Proposal for Public Comment.

OPINION AND ORDER OF THE BOARD (by C.M. Santos):

SUMMARY OF THIS ACTION

The Board today proposes amendments to Illinois regulations that are "identical in substance" (IIS) to drinking water regulations adopted by the United States Environmental Protection Agency (USEPA) in the second half of 2017. USEPA did not amend the federal National Primary Drinking Water Regulations (NPDWRs) during this period, but it granted summary approval to 16 additional equivalent methods for analyzing contaminants in drinking water. The Board includes these additional methods in its drinking water monitoring provisions and corrects numerous provisions. The Board discusses the proposed revisions below.

Sections 7.2 and 17.5 of the Illinois Environmental Protection Act (Act) (415 ILCS 5/7.2 and 17.5 (2016)) provide for quick adoption by the Board of regulations that are identical in substance to regulations that USEPA adopts to implement Sections 1412(b), 1414(c), 1417(a), and 1445(a) of the federal Safe Drinking Water Act (SDWA) (42 U.S.C. §§ 300g-1(a), 300g-3(c), 300g-6(a), and 300j-4(a) (2016)). The NPDWRs implement these sections of SDWA. SDWA regulations are found at 40 C.F.R. 141 through 143. Section 17.5 of the Act also provides that Title VII of the Act and Section 5 of the Illinois Administrative Procedure Act (APA) (5 ILCS 100/5-35 and 5-40 (2016)) do not apply to the Board's adoption of identical-in-substance regulations.

The Board will cause the proposed amendments to be published in the *Illinois Register* and will receive public comments for at least 45 days after publication. The Board expects to adopt final rules by the statutory due date of July 27, 2018. The Board specifically requests public comment on eliminating obsolete provisions and past implementation dates from the rules.

This opinion has three main segments. First, the Board provides its timetable for completing this rulemaking. Second, the Board identifies USEPA's actions that resulted in this rulemaking and discusses the proposed amendments. Third, the Board invites public comment on the proposed amendments. The text of the Board's proposed amendments is appended to the order following this opinion.

TIMETABLE FOR COMPLETION OF THIS RULEMAKING

Under Section 7.2(b) of the Act (415 ILCS 5/7.2(b) (2016)), the Board must complete this rulemaking within one year after the corresponding federal action. Based on the date

USEPA approved additional methods, the Board's deadline to adopt final rules in this docket is July 27, 2018.

Adopting this proposal for public comment today will allow the Board to complete this rulemaking by early May 2018, barring unforeseen delays. The Board intends to adhere the following schedule:

Board order proposing amendments:	**February 8, 2018**
Submission for *Illinois Register* publication:	February 20, 2018
Estimated *Illinois Register* publication:	March 2, 2018
Estimated End of 45-day public comment period:	April 16, 2018
Board order adopting amendments:	**April 26, 2018**
Estimate of when rules take effect:	**May 7, 2018**
Estimated *Illinois Register* publication:	May 18, 2018

This timetable includes a slight amount of extra time to allow for unforeseen delays. Thus, the Board may adopt these amendments as final rules well ahead of the statutory due date.

DISCUSSION

The discussion includes two segments. In the first segment, the Board considers incorporating into the Illinois Primary Drinking Water Regulations analytical methods recently granted expedited approval by USEPA. In the second segment, the Board considers stylistic revisions and corrections to the analytical methods and incorporations by reference.

Incorporation of Newly Approved Analytical Methods

Section 1401(1) of SDWA authorizes USEPA to summarily approve alternative analytical procedures for demonstrating compliance with the NPDWRs. SDWA requires that the alternative equivalent methods be equally effective as methods USEPA already approved by rulemaking. *See* 42 U.S.C. § 300f(1) (2016). USEPA lists the alternative analytical procedures in an appendix to the rules and not in the regulations adopted by rulemaking. On July 27, 2017, USEPA granted expedited approval to 16 additional methods for analysis of contaminants in drinking water on July 27, 2017 (82 Fed. Reg. 34861): seven methods for eight inorganic contaminants and pH, three methods for three radioactive contaminants and parameters, three methods for a raw water parameter used to determine formation of disinfection byproducts, one method for disinfection byproducts, and one new method for two microbiological contaminants. USEPA also revised the statement of availability of one method and made minor format revisions to the appendix that lists the alternative analytical procedures.

The Board includes the newly approved methods in the regulations with methods USEPA adopted by rulemaking. The Board does not deviate from the substance of the USEPA's approval of the methods. The Board revised the format of the methods' names to make them

consistent with existing rules and adds short-form names for several of the methods. Adding the methods requires adding incorporations by reference. Where applicable in the incorporations, the Board adds cross-references to substantive monitoring provisions using the incorporated methods.

Three tables appear in the Identical-in-Substance Rulemaking Addendum—Proposed (IIS-RA(P)) for this proceeding. Table 1 lists USEPA revisions that the Board does not make in this proceeding. Table 2 lists deviations from the literal text of the USEPA revisions. The IIS-RA(P) is in the docket for this proceeding, available to review and download on the Board's website (www.ipcb.state.il.us) through the Clerk's Office On-Line (COOL).

This opinion includes no further explanation of the listed revisions, except for the following:

USEPA Method 150.3

USEPA approved its own Method 150.3, dated 2017, for electrometric measurement of pH. The name the Board applies to this newly approved method differs from the names applied to two previously approved USEPA methods for pH numbered "150.1" and 150.2." In endnote 48 to appendix A to subpart C of 40 C.F.R. 141, USEPA calls the newly approved method "EPA Method 150.3." Correspondingly, the Board refers to the method as "USEPA Method 150.3."

USEPA Methods 150.1 and 150.2 are listed in the table of methods for inorganic contaminants and parameters in 40 C.F.R. § 141.23(k)(1). Those methods are available in the USEPA document, "Methods for Chemical Analysis of Water and Wastes," (March 1983), document number EPA/600/4-79/020. The Board refers to that document as "USEPA Inorganic Methods." Thus, the previously approved USEPA methods for pH are called "USEPA Inorganic Methods, Method 150.1" and "USEPA Inorganic Methods, Method 150.2" in the Illinois rules. Method 150.1 is dated 1971, and Method 150.2 is dated 1982.

Presumably, USEPA Method 150.3 is an updated version of the previously approved methods. The Board's naming scheme for methods facilitates identifying their sources, but the scheme forces a different name format for the newly approved version.

Standard Methods Online, Methods 7110 D-17 and 7500-Ra E

USEPA approved two new radioactivity methods available from Standard Methods Online. Method 7110 D-17 is for gross alpha and beta radiation, and Method 7500-Ra E-07 is for Radium-226 and -228. The Board refers to Method 7110 D-17 by that name. The 2007 version of Method 7500-Ra E appears in the 22nd edition of *Standard Methods for the Examination of Water and Wastewater*. Thus, the Board refers to Method 7500-Ra E-07 as "Standard Methods, 22nd ed., Method 7500-Ra E."

The Board does not list methods as available from Standard Methods Online if the same version appears in a printed edition of *Standard Methods*. All current versions of methods from the Standard Methods Organization are available from Standard Methods Online. When ordering any method singly, Standard Methods Online is their only source. The Board considers

the printed version in the latest edition of *Standard Methods* and the online version from Standard Methods Online as the same methods. A Board note for Standard Methods Online in 35 Ill. Adm. Code 611.102(b) states this. A listing for each method under Standard Methods Online would be redundant.

TECTA EC/TC P-A Test

USEPA approved an updated version of the TECTA presence-absence test for *E. coli* and total coliforms.[1] In the tables for 40 C.F.R. § 141.402(c)(2) and 40 C.F.R. § 141.852(a)(5) in appendix A to subpart C of 40 C.F.R. 141, USEPA accomplished this by adding a second footnote to each listing for the method. The existing footnote refers to "version 1.0, May 2014." The added footnote refers to "version 2.0, February 2017."

The Board lists each version of the method separately under the source in the incorporation by reference. In the text that prescribes approved methods, the Board adds "ver. 1.0 or 2.0" offset by a comma in 35 Ill. Adm. Code 611.802(c)(2)(D)(vii) and 611.1052(a)(5)(C)(vii) and (a)(5)(G)(vii).

Errors in the Federal Text

The Board does not revise the Illinois rules to replicate obvious errors in the federal text's format of method designations. The Board notes the following errors:

USEPA Error	Correct Format	Description
4500-NO_{3-} and 4500-NO_{2-} (each three times)	4500-NO_3^- and 4500-NO_2^-	USEPA added the dash for ionization state in the subscript with the atomic quantity. USEPA should have superscripted the dash.
7500-^{3}"H and 7500-^{3} H (once)	7500-^{3}H	No space or symbol is appropriate between the mas number and the element symbol.

Corrections to Existing Analytical Methods and Incorporations by Reference

The Board corrects numerous approved analytical methods. In the IIS-RA(P) for this proceeding. Table 3 lists Board housekeeping revisions that are not derived from current USEPA amendments.

[1] USEPA also changed the availability from "Veolia Water Solutions and Technologies, Inc." to "Pathogen Detection Systems, Inc.," including a change of address.

This opinion includes no further explanation of the listed revisions, except for the following:

Standardizing Use of Methodology Names

The listings of methods in 35 Ill. Adm. Code 611.381, 611.531, 611.611, and 611.1052 are formatted so that the methodology name is stated, then the short-form method name follows, separated by a colon. The Board omitted the methodology names from 35 Ill. Adm. Code 611.720 when adopting the original SDWA rules in Safe Drinking Water Act Regulations, R88-26 (Aug. 9, 1990). The Board used commas instead of colons between the methodology names and method names in 35 Ill. Adm. Code 611.802 when adopting the Groundwater Rule in SDWA Update, USEPA Amendments (January 1, 2006 through June 30, 2006), R07-2, SDWA Update, USEPA Amendments (July 1, 2006 through December 31, 2006), R07-1 (July 26, 2007) (consol.).

The Board adds methodology names to the listings of methods in 35 Ill. Adm. Code 611.720. The Board also reformats the methodology names to replace commas with colons in the listings in 35 Ill. Adm. Code 611.802. This makes the format of methods listings consistent in the provisions open in this rulemaking.[2]

PUBLIC COMMENTS

The Board requests comments on the proposed amendments. The Board specifically requests comment on whether the proposed amendments ensure that Illinois' primary drinking water regulations remain consistent with the NPDWRs.

The Board will receive public comments on this proposal for 45 days following its publication in the *Illinois Register*. After that time, the Board will immediately consider adopting final amendments, making any necessary changes made evident through the public comments. The Board expects to file any adopted rules with the Secretary of State immediately after adoption, likely by May 7, 2018, but no later than July 27, 2018.

ORDER

The Board directs the Clerk to append to provide notice in the *Illinois Register* of the

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[2] This does not include the methods listings for State-only maximum contaminant levels (MCLs) in 35 Ill. Adm. Code 611.612 or those for organic contaminants in 35 Ill. Adm. Code 611.645. The existing format of the tables of methods for secondary inorganic MCLs in 40 C.F.R. 143.4 and those for organic contaminants in 40 C.F.R. 141.24(a) do not state methodology names. Revising 35 Ill. Adm. Code 611.612 to add methodology names would be a simple matter. The format of 35 Ill. Adm. Code 611.645 makes it difficult to add methodology names. The Board defers considering adding these names beyond the provisions open in this rulemaking.

appended proposed amendments to the Illinois Primary Drinking Water Regulations.

I, Don A. Brown, Clerk of the Illinois Pollution Control Board, certify that the Board adopted the above opinion on February 8, 2018, by a vote of 5-0.

Don A. Brown, Clerk
Illinois Pollution Control Board

TITLE 35: ENVIRONMENTAL PROTECTION
SUBTITLE F: PUBLIC WATER SUPPLIES
CHAPTER I: POLLUTION CONTROL BOARD

PART 611
PRIMARY DRINKING WATER STANDARDS

SUBPART A: GENERAL

Section

SUBPART B: FILTRATION AND DISINFECTION

Section

SUBPART C: USE OF NON-CENTRALIZED TREATMENT DEVICES

SUBPART D: TREATMENT TECHNIQUES

SUBPART F: MAXIMUM CONTAMINANT LEVELS (MCLs) AND MAXIMUM RESIDUAL DISINFECTANT LEVELS (MRDLs)

SUBPART G: LEAD AND COPPER

SUBPART I: DISINFECTANT RESIDUALS, DISINFECTION BYPRODUCTS, AND DISINFECTION BYPRODUCT PRECURSORS

SUBPART K: GENERAL MONITORING AND ANALYTICAL REQUIREMENTS

SUBPART L: MICROBIOLOGICAL MONITORING AND ANALYTICAL REQUIREMENTS

SUBPART M: TURBIDITY MONITORING AND ANALYTICAL REQUIREMENTS

Section

SUBPART N: INORGANIC MONITORING AND ANALYTICAL REQUIREMENTS

Section

SUBPART O: ORGANIC MONITORING AND ANALYTICAL REQUIREMENTS

Section

SUBPART P: THM MONITORING AND ANALYTICAL REQUIREMENTS

SUBPART Q: RADIOLOGICAL MONITORING AND ANALYTICAL REQUIREMENTS

SUBPART R: ENHANCED FILTRATION AND DISINFECTION:
SYSTEMS THAT SERVE 10,000 OR MORE PEOPLE

SUBPART S: GROUNDWATER RULE

SUBPART T: REPORTING AND RECORDKEEPING

SUBPART U: CONSUMER CONFIDENCE REPORTS

SUBPART V: PUBLIC NOTIFICATION OF DRINKING WATER VIOLATIONS

SUBPART W: INITIAL DISTRIBUTION SYSTEM EVALUATIONS

SUBPART X: ENHANCED FILTRATION AND DISINFECTION – SYSTEMS SERVING FEWER THAN 10,000 PEOPLE

SUBPART Y: STAGE 2 DISINFECTION BYPRODUCTS REQUIREMENTS

SUBPART Z: ENHANCED TREATMENT FOR CRYPTOSPORIDIUM

Section

SUBPART AA: REVISED TOTAL COLIFORM RULE

	Inactivation Credit
611.TABLE Z	Federal Effective Dates

AUTHORITY: Implementing Sections 7.2, 17, and 17.5 and authorized by Section 27 of the Environmental Protection Act [415 ILCS 5/7.2, 17, 17.5, and 27].

SOURCE: Adopted in R88-26 at 14 Ill. Reg. 16517, effective September 20, 1990; amended in R90-21 at 14 Ill. Reg. 20448, effective December 11, 1990; amended in R90-13 at 15 Ill. Reg. 1562, effective January 22, 1991; amended in R91-3 at 16 Ill. Reg. 19010, effective December 1, 1992; amended in R92-3 at 17 Ill. Reg. 7796, effective May 18, 1993; amended in R93-1 at 17 Ill. Reg. 12650, effective July 23, 1993; amended in R94-4 at 18 Ill. Reg. 12291, effective July 28, 1994; amended in R94-23 at 19 Ill. Reg. 8613, effective June 20, 1995; amended in R95-17 at 20 Ill. Reg. 14493, effective October 22, 1996; amended in R98-2 at 22 Ill. Reg. 5020, effective March 5, 1998; amended in R99-6 at 23 Ill. Reg. 2756, effective February 17, 1999; amended in R99-12 at 23 Ill. Reg. 10348, effective August 11, 1999; amended in R00-8 at 23 Ill. Reg. 14715, effective December 8, 1999; amended in R00-10 at 24 Ill. Reg. 14226, effective September 11, 2000; amended in R01-7 at 25 Ill. Reg. 1329, effective January 11, 2001; amended in R01-20 at 25 Ill. Reg. 13611, effective October 9, 2001; amended in R02-5 at 26 Ill. Reg. 3522, effective February 22, 2002; amended in R03-4 at 27 Ill. Reg. 1183, effective January 10, 2003; amended in R03-15 at 27 Ill. Reg. 16447, effective October 10, 2003; amended in R04-3 at 28 Ill. Reg. 5269, effective March 10, 2004; amended in R04-13 at 28 Ill. Reg. 12666, effective August 26, 2004; amended in R05-6 at 29 Ill. Reg. 2287, effective January 28, 2005; amended in R06-15 at 30 Ill. Reg. 17004, effective October 13, 2006; amended in R07-2/R07-11 at 31 Ill. Reg. 11757, effective July 27, 2007; amended in R08-7/R08-13 at 33 Ill. Reg. 633, effective December 30, 2008; amended in R10-1/R10-17/R11-6 at 34 Ill. Reg. 19848, effective December 7, 2010; amended in R12-4 at 36 Ill. Reg. 7110, effective April 25, 2012; amended in R13-2 at 37 Ill. Reg. 1978, effective February 4, 2013; amended in R14-8 at 38 Ill. Reg. 3608, effective January 27, 2014; amended in R14-9 at 38 Ill. Reg. 9792, effective April 21, 2014; amended in R15-6 at 39 Ill. Reg. 3713, effective February 24, 2015; amended in R15-23 at 39 Ill. Reg. 15144, effective November 9, 2015; amended in R16-4 at 39 Ill. Reg. 15352, effective November 13, 2015; amended in R17-12 at 42 Ill. Reg. 1140, effective January 4, 2018; amended in R18-9 at 43 Ill. Reg. _____, effective _____.

SUBPART A: GENERAL

Section 611.102 Incorporations by Reference

a) Abbreviations and short-name listing of references. The following names and abbreviated names, presented in alphabetical order, are used in this Part to refer to materials incorporated by reference:

"AMI Turbiwell Method" means "Continuous Measurement of Turbidity Using a SWAN AMI Turbiwell Turbidimeter", available from NEMI or from SWAN Analytische Instrumente AG.

"Aqueous Radiochemical Procedures" means "Procedures for Radiochemical Analysis of Nuclear Reactor Aqueous Solutions", available from NTIS; USEPA, EMSL; and USEPA, NSCEP.

"ASTM Method" means a method published by and available from the American Society for Testing and Materials (ASTM).

"Charm Fast Phage" means "Fast Phage Test Procedure. Presence/Absence for Coliphage in Ground Water with Same Day Positive Prediction", ver. ~~version~~ 009 (Nov. 2012), available from Charm Sciences Inc.

"ChlordioX Plus Test" means "Chlorine Dioxide and Chlorite in Drinking Water by Amperometry using Disposable Sensors", available from Palintest Ltd.

"Chromocult®~~®~~ Method" means "Chromocult®~~®~~ Coliform Agar Presence/Absence Membrane Filter Test Method for Detection and Identification of Coliform Bacteria and Escherichia coli in Finished Waters", available from EMD Millipore.

"Dioxin and Furan Method 1613" means "Tetra- through Octa-Chlorinated Dioxins and Furans by Isotope-Dilution HRGC/HRMS", available from NTIS.

"E*Colite Test" means "Charm E*Colite Presence/Absence Test for Detection and Identification of Coliform Bacteria and Escherichia coli in Drinking Water", available from Charm Sciences, Inc. and USEPA, Water Resource Center.

"EML Procedures Manual" means "EML Procedures Manual, HASL 300", available from USDOE, EML.

"Enterolert" means "Evaluation of Enterolert for Enumeration of Enterococci in Recreational Waters", available from American Society for Microbiology.

"Georgia Radium Method" means "The Determination of Radium-226 and Radium-228 in Drinking Water by Gamma-ray Spectrometry Using HPGE or Ge(Li) Detectors", rev. ~~Revision~~ 1.2, December 2004, available from the Georgia Tech Research Institute.

"GLI Method 2" means GLI Method 2, "Turbidity", Nov. 2, 1992, available from Great Lakes Instruments, Inc.

"Guidance Manual for Filtration and Disinfection" means "Guidance Manual for Compliance with the Filtration and Disinfection Requirements for Public Water Systems using Surface Water Sources", March 1991, available from USEPA, NSCEP.

"Hach FilterTrak Method 10133" means "Determination of Turbidity by Laser Nephelometry", available from Hach Co.

"Hach Method 8026" means "Spectrophotometric Measurement of Copper in Finished Drinking Water", December 2015, rev. ~~Revision~~ 1.2, available from the Hach Company.

"Hach Method 10241" means "Spectrophotometric Measurement of Free Chlorine (Cl_2) in Finished Drinking Water", November 2015, rev. ~~Revision~~ 1.2, available from the Hach Company.

"Hach Method 10258" means "Determination of Turbidity by 360° Nephelometry", January 2016, available from the Hach Company.

"Hach Method 10260" means "Hach Method 10260—Determination of Chlorinated Oxidants (Free and Total) in Water Using Disposable Planar Reagent-filled Cuvettes and Mesofluic Channel Colorimetry", available from the Hach Company.

"Hach Method 10261" means "Total Organic Carbon in Finished Drinking Water by Catalyzed Ozone Hydroxyl Radical Oxidation Infrared Analysis", December 2015, rev. ~~Revision~~ 1.2, available from the Hach Company.

"Hach Method 10267" means "Spectrophotometric Measurement of Total Organic Carbon (TOC) in Finished Drinking Water", December 2015, rev. ~~Revision~~ 1.2, available from the Hach Company.

"Hach Method 10272" means "Spectrophotometric Measurement of Copper in Finished Drinking Water", December 2015, rev. ~~Revision~~ 1.2, available from the Hach Company.

"Hach SPDANS 2 Method 10225" means "Hach Company SPADNS 2 (Arsenic-free) Fluoride Method 10225—Spectrophotometric Measurement of Fluoride in Water and Wastewater", available from the Hach Co.

"Hach TNTplus 835/836 Method 10206" means "Hach Company TNTplus 835/836 Nitrate Method 10206—Spectrophotometric Measurement of Nitrate in Water and Wastewater", available from the

Hach Co.

"ITS Method D99-003" means Method D99-003, rev. ~~Revision~~ 3.0, "Free Chlorine Species ($HOCl^-$ and OCl^-) by Test Strip", available from Industrial Test Systems, Inc.

"Kelada 01" means "Kelada Automated Test Methods for Total Cyanide, Acid Dissociable Cyanide, and Thiocyanate", rev. ~~Revision~~ 1.2, available from NTIS.

"Lovibond PTV 1000" means "Continuous Measurement of Drinking Water Turbidity Using a Lovibond PTV 1000 White Light LED Turbidimeter," December 2016. Revision 1.0, available from Tintometer, Inc.

"Lovibond PTV 2000" means "Continuous Measurement of Drinking Water Turbidity Using a Lovibond PTV 2000 660-nm LED Turbidimeter," December 2016. Revision 1.0, available from Tintometer, Inc.

"Lovibond PTV 6000" means "Continuous Measurement of Drinking Water Turbidity Using a Lovibond PTV 6000 Laser Turbidimeter," December 2016. Revision 1.0, available from Tintometer, Inc.

"m-ColiBlue24 Test" means "Total Coliforms and E. coli Membrane Filtration Method with m-ColiBlue24®~~®~~ Broth", available from USEPA, Water Resource Center and Hach Company.

"Method ME355.01" means "Determination of Cyanide in Drinking Water by GC/MS Headspace Analysis", available from NEMI or from H&E Testing Laboratory.

"Mitchell Method M5271, rev. 1.1" means "Determination of Turbidity by Laser Nephelometry", available from NEMI and Leck Mitchell, PhD.

"Mitchell Method M5331, rev. 1.1" means "Determination of Turbidity by LED Nephelometry", available from NEMI and Leck Mitchell, PhD.

"Mitchell Method M5331, rev. 1.2" means "Determination of Turbidity by LED or Laser Nephelometry", available from NEMI and Leck Mitchell, PhD.

"Modified Colitag™ Test" means "Modified Colitag™ Test Method for Simultaneous Detection of E. coli and other Total Coliforms in Water",

available from NEMI and CPI International.

“NBS Handbook 69” means “Maximum Permissible Body Burdens and Maximum Permissible Concentrations of Radionuclides in Air and in Water for Occupational Exposure”, available from IAEA and ORAU.

“NECi Nitrate-Reductase Method” means Nitrate Elimination Company~~,~~ Inc. (NECi), “Method for Nitrate Reductase Nitrate-Nitrogen Analysis of Drinking Water”, ver. 1.0, rev. 2.0, February 2016, available from Superior Enzymes~~,~~ Inc.

“New Jersey Radium Method” means “Determination of Radium 228 in Drinking Water”, available from the New Jersey Department of Environmental Protection.

“New York Radium Method” means “Determination of Ra-226 and Ra-228 (Ra-02)”, available from the New York Department of Public Health.

“OI Analytical Method OIA-1677” means “Method OIA-1677, DW Available Cyanide by Flow Injection, Ligand Exchange, and Amperometry”, available from ALPKEM, Division of OI Analytical.

“Orion Method AQ4500” means “Determination of Turbidity by LED Nephelometry”, available from Thermo Scientific.

“Palintest ChloroSense” means “Measurement of Free and Total Chlorine in Drinking Water by Palintest ChloroSense”, available from NEMI or Palintest Ltd.

“Palintest Method 1001” means “‘Lead in Drinking Water by Differential Pulse Anodic Stripping Voltammetry,’ Method Number 1001”, available from Palintest, Ltd. or the Hach Company.

“QuikChem Method 10–204–00–1-X” means “Digestion and distillation of total cyanide in drinking and wastewaters using MICRO DIST and determination of cyanide by flow injection analysis”, available from Lachat Instruments.

“Readycult®~~®~~ 2007” means “Readycult®~~®~~ Coliforms 100 Presence/Absence Test for Detection and Identification of Coliform Bacteria and Escherichia coli in Finished Waters”, v. 1.1, available from EMD Millipore.

“SimPlate Method” means “IDEXX SimPlate TM HPC Test Method for

Heterotrophs in Water", available from IDEXX Laboratories, Inc.

"Standard Methods" means "Standard Methods for the Examination of Water and Wastewater", available from the American Public Health Association or the American Waterworks Association.

"Standard Methods Online" means the website maintained by the Standard Methods Organization (at www.standardmethods.org) for purchase of the latest versions of methods in an electronic format.

"Syngenta AG-625" means "Atrazine in Drinking Water by Immunoassay", February 2001 is available from Syngenta Crop Protection, Inc.

"Systea Easy (1-Reagent)" means "Systea Easy (1-Reagent) Nitrate Method", available from NEMI or Systea Scientific LLC.

"Technical Bulletin 601" means "Technical Bulletin 601, Standard Method of Testing for Nitrate in Drinking Water", July 1994, available from Thermo Scientific.

"Technicon Methods" means "Fluoride in Water and Wastewater", available from Bran + Luebbe.

"Tecta EC/TC P-A Test" means "TECTA™ EC/TC medium and the TECTA™ Instrument: a Presence/Absence Method for Simultaneous Detection of Total Coliforms and Escherichia coli (E. coli) in Drinking Water", ver. 1.0 or 2.0, available from Pathogen Detection Systems, Inc. ~~Veolia Water Solutions and Technologies~~.

"Thermo-Fisher Discrete Analyzer" means "Drinking Water Orthophosphate for Thermo Scientific Gallery discrete analyzer", available from Thermo-Fisher Scientific.

"Thermo-Fisher Method 557.1" means "Thermo Fisher Method 557.1: Determination of Haloacetic Acids in Drinking Water using Two-Dimensional Ion Chromatography with Suppressed Conductivity Detection," January 2017. ver. 1.0, available from Thermo-Fisher Scientific.

"USEPA Asbestos Method 100.1" means Method 100.1, "Analytical Method for Determination of Asbestos Fibers in Water", September 1983, available from NTIS.

"USEPA Asbestos Method 100.2" means Method 100.2, "Determination of Asbestos Structures over 10-mm in Length in Drinking Water", June 1994, available from NTIS.

"USEPA Environmental Inorganic Methods" means "Methods for the Determination of Inorganic Substances in Environmental Samples", August 1993, available from NTIS.

"USEPA Environmental Metals Methods" means "Methods for the Determination of Metals in Environmental Samples", available from NTIS.

"USEPA Inorganic Methods" means "Methods for Chemical Analysis of Water and Wastes", March 1983, available from NTIS.

"USEPA Interim Radiochemical Methods" means "Interim Radiochemical Methodology for Drinking Water", EPA 600/4-75/008 (revised), March 1976 (pages 1-3, 4-5, 6-8, 9-12, 13-15, 16-23, 24-28, 29-33, and 34-37 only). Available from NTIS; USEPA, EMSL; and USEPA, NSCEP.

"USEPA Method 150.3" means "Determination of pH in Drinking Water", February 2017, ver. 1.0, EPA 815/B-17/001, available from USEPA, NSCEP.

"USEPA Method 1600" means "Method 1600: Enterococci in Water by Membrane Filtration Using Membrane-Enterococcus Indoxyl–b–D–Glucoside Agar (mEI)", available from NEMI; USEPA, NSCEP; and USEPA, Water Resource Center.

"USEPA Method 1601" means "Method 1601: Male-specific (F^+) and Somatic Coliphage in Water by Two-step Enrichment Procedure", available from NEMI; USEPA, NSCEP; and USEPA, Water Resource Center.

"USEPA Method 1602" means "Method 1602: Male-specific (F^+) and Somatic Coliphage in Water by Single Agar Layer (SAL) Procedure", available from NEMI; USEPA, NSCEP; and USEPA, Water Resource Center.

"USEPA Method 1604" means "Method 1604: Total Coliforms and Escherichia coli in Water by Membrane Filtration Using a Simultaneous Detection Technique (MI Medium)", available from NEMI; USEPA, NSCEP; and USEPA, Water Resource Center.

"USEPA NERL Method 200.5 (rev. 4.2)" means Method 200.5, rev. ~~Revision~~ 4.2, "Determination of Trace Elements in Drinking Water by Axially Viewed Inductively Coupled Plasma-Atomic Emission Spectrometry", October 2003, EPA 600/R-06/115. Available from USEPA, ORD.

"USEPA NERL Method 415.3 (rev. 1.1)" means Method 415.3, rev. ~~Revision~~ 1.1, "Determination of Total Organic Carbon and Specific UV Absorbance at 254 nm in Source Water and Drinking Water", USEPA, February 2005, EPA 600/R-05/055. Available from USEPA, NSCEP and USEPA, ORD.

"USEPA NERL Method 415.3 (rev. 1.2)" means Method 415.3, rev. ~~Revision~~ 1.2, "Determination of Total Organic Carbon and Specific UV Absorbance at 254 nm in Source Water and Drinking Water", USEPA, September 2009, EPA 600/R-09/122. Available from NEMI; USEPA, NSCEP; and USEPA, ORD.

"USEPA NERL Method 525.3 (ver. 1.0)" means Method 525.3, Version 1.0, "Determination of Total Semivolatile Organic Chemicals in Drinking Water by Solid Phase Extraction and Capillary Column Gas Chromatography/Mass Spectrometry (GC/MS)", USEPA, February 2012, EPA 600/R-12/010. Available from USEPA, NSCEP and USEPA, ORD.

"USEPA NERL Method 549.2" means Method 549.2, rev. ~~Revision~~ 1.0, "Determination of Diquat and Paraquat in Drinking Water by Liquid-Solid Extraction and High Performance Liquid Chromatography with Ultraviolet Detection", June 1997. Available from NEMI and USEPA, ORD.

"USEPA OGWDW Methods" means the methods listed as available from the USEPA, Office of Ground Water and Drinking Water (Methods 302.0, 317.0 (rev. 2.0), 326.0 (rev. 1.0), 327.0 (rev. 1.1), 334.0, 515.4 (rev. 1.0), 523 (rev. 1.0), 524.3 (rev. 1.0), 524.4, 531.2 (rev. 1.0), 536 (rev. 1.0), 552.3 (rev. 1.0), 557, 1622 (99), 1622 (01), 1622 (05), 1623 (99), 1623 (01), 1623 (05), and 1623.1). Available from NEMI (Methods 302.0, 317.0, 326.0, 327.0, 334.0, 515.4, 524.3, 531.2, 552.3, 557, 1622 (01), and 1623 (01) only); USEPA, NSCEP; and USEPA, OGWDW.

"USEPA Organic Methods" means "Methods for the Determination of Organic Compounds in Drinking Water", December 1988 (revised July 1991) (Methods 508A (rev. 1.0) and 515.1 (rev. 4.0)); "Methods for the Determination of Organic Compounds in Drinking Water—Supplement I", July 1990 (Methods 547, 550, and 550.1); "Methods for the

Determination of Organic Compounds in Drinking Water—Supplement II", August 1992 (Methods 548.1 (rev. 1.0), 552.1 (rev. 1.0), and 555 (rev. 1.0)); and "Methods for the Determination of Organic Compounds in Drinking Water—Supplement III", August 1995 (Methods 502.2 (rev. 2.1), 504.1 (rev. 1.1), 505 (rev. 2.1), 506 (rev. 1.1), 507 (rev. 2.1), 508 (rev. 3.1), 508.1 (rev. 2.0), 515.2 (rev. 1.1), 524.2 (rev. 4.1), 525.2 (rev. 2.0), 531.1 (rev. 3.1), 551.1 (rev. 1.0), and 552.2 (rev. 1.0)). Available from NEMI; NTIS; USEPA, NSCEP; and USEPA, EMSL.

"USEPA Organic and Inorganic Methods" means "Methods for the Determination of Organic and Inorganic Compounds in Drinking Water, Volume 1", EPA 815/R-00/014, PB2000-106981, August 2000 (Methods 300.1 (rev. 1.0), 321.8 (rev. 1.0), and 515.3 (rev. 1.0) only). Available from NEMI; NTIS; and USEPA, NSCEP.

"USEPA Radioactivity Methods" means "Prescribed Procedures for Measurement of Radioactivity in Drinking Water", EPA 600/4-80/032, August 1980 (Methods 900.0, 901.0, 901.1, 902.0, 903.0, 903.1, 904.0, 905.0, 906.0, 908.0, and 908.1). Available from NEMI (Methods 900.0, 901.1, 903.0, 903.1, and 908.0 only); NTIS; and USEPA, NSCEP.

"USEPA Radiochemical Analyses" means "Radiochemical Analytical Procedures for Analysis of Environmental Samples", March 1979 (pages 1-5, 19-32, 33-48, 65-73, 87-91, and 92-95 only). Available from NTIS and USEPA, NSCEP.

"USEPA Radiochemistry Procedures" means "Radiochemistry Procedures Manual", EPA 520/5-84/006, December 1987 (Methods 00-01, 00-02, 00-07, H-02, Ra-03, Ra-04, Ra-05, Sr-04). Available from NEMI; NTIS; and USEPA, NSCEP.

"USEPA Technical Notes" means "Technical Notes on Drinking Water Methods", available from NTIS and USEPA, NSCEP.

"USGS Method" means the designated method in "Methods of Analysis by the U.S. Geological Survey National Water Quality Laboratory—Determination of Inorganic and Organic Constituents in Water and Fluvial Sediments", available from NTIS and USGS.
BOARD NOTE: The USGS Methods are available in three volumes published in 1977, 1989, and 1993, as outlined in subsection (b).

"Waters Method B-1011" means "Waters Test Method for the Determination of Nitrite/Nitrate in Water Using Single Column Ion Chromatography", available from Waters Corporation, Technical Services

Division.

b) The Board incorporates the following publications by reference:

ALPKEM, Division of OI Analytical, P.O. Box 9010, College Station, TX 77842-9010, telephone: 979-690-1711, Internet: www.oico.com.

OI Analytical Method OIA-1677, "Method OIA-1677 DW, Available Cyanide by Flow Injection, Ligand Exchange, and Amperometry", EPA 821/R-04/001, January 2004, referenced in Section 611.611.

BOARD NOTE: Also available online for download from www.epa.gov/waterscience/methods/method/cyanide/1677-2004.pdf.

APHA. American Public Health Association, 800 I ~~1015 Fifteenth~~ Street NW, Washington, DC 20005 202-777-2742.

Standard Methods, 16th ed., "Standard Methods for the Examination of Water and Wastewater", 16th Edition, 1985. See the methods listed separately for the same references under American Waterworks Association.

Standard Methods, 17th ed., "Standard Methods for the Examination of Water and Wastewater", 17th Edition, 1989. See the methods listed separately for the same references under American Waterworks Association.

Standard Methods, 18th ed., "Standard Methods for the Examination of Water and Wastewater", 18th Edition, 1992, including "Supplement to the 18th Edition of Standard Methods for the Examination of Water and Wastewater", 1994. See the methods listed separately for the same references under American Waterworks Association.

Standard Methods, 19th ed., "Standard Methods for the Examination of Water and Wastewater", 19th Edition, 1995, including "Supplement to the 19th Edition of Standard Methods for the Examination of Water and Wastewater", 1996. See the methods listed separately for the same references under American Waterworks Association.

Standard Methods, 20th ed., "Standard Methods for the

Examination of Water and Wastewater", 20th Edition, 1998. See the methods listed separately for the same references under American Waterworks Association.

Standard Methods, 21st ed., "Standard Methods for the Examination of Water and Wastewater", 21st Edition, 2005. See the methods listed separately for the same references under American Waterworks Association.

Standard Methods, 22nd ed., "Standard Methods for the Examination of Water and Wastewater", 22nd Edition, 2012. See the methods listed separately for the same references under American Waterworks Association.

American Society for Microbiology, 1752 N Street N.W., Washington, DC 20036, 202-737-3600:

Enterolert, "Evaluation of Enterolert for Enumeration of Enterococci in Recreational Waters", Applied and Environmental Microbiology, Oct. 1996, vol. 62, no. 10, p. 3881, referenced in Section 611.802.

BOARD NOTE: At the table to 40 CFR 141.402(c)(2), USEPA approved the method as described in the above literature review. The method itself is embodied in the printed instructions to the proprietary kit available from IDEXX Laboratories, Inc. (accessible on-line and available by download from www.asm.org, as "Enterolert™ Procedure"). ASTM approved the method as "Standard Test Method for Enterococci in Water Using Enterolert™", which is available in two versions from ASTM: ASTM Method D6503-99 (superseded) and ASTM Method D6503-99. While it is more conventional to incorporate the method as presented in the kit instructions or as approved by ASTM by reference, the Board is constrained to incorporate the version that appears in the technical literature by reference, which is the version that USEPA has explicitly approved.

AWWA. American Water Works Association et al., 6666 West Quincy Ave., Denver, CO 80235 (303-794-7711).

Standard Methods, 13th ed., "Standard Methods for the Examination of Water and Wastewater", 13th Edition, 1971.

Method 302, Gross Alpha and Gross Beta Radioactivity in

Water (Total, Suspended, and Dissolved), referenced in Section 611.720.

Method 303, Total Radioactive Strontium and Strontium 90 in Water, referenced in Section 611.720.

Method 304, Radium in Water by Precipitation, referenced in Section 611.720.

Method 305, Radium 226 by Radon in Water (Soluble, Suspended, and Total), referenced in Section 611.720.

Method 306, Tritium in Water, referenced in Section 611.720.

Standard Methods, 17th ed., "Standard Methods for the Examination of Water and Wastewater", 17th Edition, 1989.

Method 7110 B, Gross Alpha and Gross Beta Radioactivity in Water (Total, Suspended, and Dissolved), referenced in Section 611.720.

Method 7500-Cs B, Radioactive Cesium, Precipitation Method, referenced in Section 611.720.

Method 7500-^{3}H B, Tritium in Water, referenced in Section 611.720.

Method 7500-I B, Radioactive Iodine, Precipitation Method, referenced in Section 611.720.

Method 7500-I C, Radioactive Iodine, Ion-Exchange Method, referenced in Section 611.720.

Method 7500-I D, Radioactive Iodine, Distillation Method, referenced in Section 611.720.

Method 7500-Ra B, Radium in Water by Precipitation, referenced in Section 611.720.

Method 7500-Ra C, Radium 226 by Radon in Water (Soluble, Suspended, and Total), referenced in Section 611.720.

Method 7500-Ra D, Radium, Sequential Precipitation

Method (Proposed), referenced in Section 611.720.

Method 7500-Sr B, Total Radioactive Strontium and Strontium 90 in Water, referenced in Section 611.720.

Method 7500-U B, Uranium, Radiochemical Method (Proposed), referenced in Section 611.720.

Method 7500-U C, Uranium, Isotopic Method (Proposed), referenced in Section 611.720.

Standard Methods, 18th ed., "Standard Methods for the Examination of Water and Wastewater", 18th Edition, 1992.

Method 2130 B, Turbidity, Nephelometric Method, referenced in Section 611.531.

Method 2320 B, Alkalinity, Titration Method, referenced in Section 611.611.

Method 2510 B, Conductivity, Laboratory Method, referenced in Section 611.611.

Method 2550, Temperature, Laboratory and Field Methods, referenced in Section 611.611.

Method 3111 B, Metals by Flame Atomic Absorption Spectrometry, Direct Air-Acetylene Flame Method, referenced in Sections 611.611 and 611.612.

Method 3111 D, Metals by Flame Atomic Absorption Spectrometry, Direct Nitrous Oxide-Acetylene Flame Method, referenced in Section 611.611.

Method 3112 B, Metals by Cold-Vapor Atomic Absorption Spectrometry, Cold-Vapor Atomic Absorption Spectrometric Method, referenced in Section 611.611.

Method 3113 B, Metals by Electrothermal Atomic Absorption Spectrometry, Electrothermal Atomic Absorption Spectrometric Method, referenced in Sections 611.611 and 611.612.

Method 3114 B, Metals by Hydride Generation/Atomic

Absorption Spectrometry, Manual Hydride Generation/Atomic Absorption Spectrometric Method, referenced in Section 611.611.

Method 3120 B, Metals by Plasma Emission Spectroscopy, Inductively Coupled Plasma (ICP) Method, referenced in Sections 611.611 and 611.612.

Method 3500-Ca D, Calcium, EDTA Titrimetric Method, referenced in Section 611.611.

Method 3500-Mg E, Magnesium, Calculation Method, referenced in Section 611.611.

Method 4110 B, Determination of Anions by Ion Chromatography, Ion Chromatography with Chemical Suppression of Eluent Conductivity, referenced in Section 611.611.

Method 4500-Cl D, Chlorine, Amperometric Titration Method, referenced in Section 611.531.

Method 4500-Cl E, Chlorine, Low-Level Amperometric Titration Method, referenced in Section 611.531.

Method 4500-Cl F, Chlorine, DPD Ferrous Titrimetric Method, referenced in Section 611.531.

Method 4500-Cl G, Chlorine, DPD Colorimetric Method, referenced in Section 611.531.

Method 4500-Cl H, Chlorine, Syringaldazine (FACTS) Method, referenced in Section 611.531.

Method 4500-Cl I, Chlorine, Iodometric Electrode Method, referenced in Section 611.531.

Method 4500-ClO_2 C, Chlorine Dioxide, Amperometric Method I, referenced in Section 611.531.

Method 4500-ClO_2 D, Chlorine Dioxide, DPD Method, referenced in Section 611.531.

Method 4500-ClO_2 E, Chlorine Dioxide, Amperometric

Method II (Proposed), referenced in Section 611.531.

Method 4500-CN^- C, Cyanide, Total Cyanide after Distillation, referenced in Section 611.611.

Method 4500-CN^- E, Cyanide, Colorimetric Method, referenced in Section 611.611.

Method 4500-CN^- F, Cyanide, Cyanide-Selective Electrode Method, referenced in Section 611.611.

Method 4500-CN^- G, Cyanide, Cyanides Amenable to Chlorination after Distillation, referenced in Section 611.611.

Method 4500-F^- B, Fluoride, Preliminary Distillation Step, referenced in Section 611.611.

Method 4500-F^- C, Fluoride, Ion-Selective Electrode Method, referenced in Section 611.611.

Method 4500-F^- D, Fluoride, SPADNS Method, referenced in Section 611.611.

Method 4500-F^- E, Fluoride, Complexone Method, referenced in Section 611.611.

Method 4500-H^+ B, pH Value, Electrometric Method, referenced in Section 611.611.

Method 4500-NO_2^- B, Nitrogen (Nitrite), Colorimetric Method, referenced in Section 611.611.

Method 4500-NO_3^- D, Nitrogen (Nitrate), Nitrate Electrode Method, referenced in Section 611.611.

Method 4500-NO_3^- E, Nitrogen (Nitrate), Cadmium Reduction Method, referenced in Section 611.611.

Method 4500-NO_3^- F, Nitrogen (Nitrate), Automated Cadmium Reduction Method, referenced in Section 611.611.

Method 4500-O_3 B, Ozone (Residual) (Proposed), Indigo Colorimetric Method, referenced in Section 611.531.

Method 4500-P E, Phosphorus, Ascorbic Acid Method, referenced in Section 611.611.

Method 4500-P F, Phosphorus, Automated Ascorbic Acid Reduction Method, referenced in Section 611.611.

Method 4500-Si D, Silica, Molybdosilicate Method, referenced in Section 611.611.

Method 4500-Si E, Silica, Heteropoly Blue Method, referenced in Section 611.611.

Method 4500-Si F, Silica, Automated Method for Molybdate-Reactive Silica, referenced in Section 611.611.

Method 6651 B, Glyphosate Herbicide (Proposed), referenced in Section 611.645.

Method 7110 B, Gross Alpha and Beta Radioactivity (Total, Suspended, and Dissolved), Evaporation Method for Gross Alpha-Beta, referenced in Section 611.720.

Method 7110 C, Gross Alpha and Beta Radioactivity (Total, Suspended, and Dissolved), Coprecipitation Method for Gross Alpha Radioactivity in Drinking Water (Proposed), referenced in Section 611.720.

Method 7500-Cs B, Radioactive Cesium, Precipitation Method, referenced in Section 611.720.

Method 7500-^{3}H B, Tritium, Liquid Scintillation Spectrometric Method, referenced in Section 611.720.

Method 7500-I B, Radioactive Iodine, Precipitation Method, referenced in Section 611.720.

Method 7500-I C, Radioactive Iodine, Ion-Exchange Method, referenced in Section 611.720.

Method 7500-I D, Radioactive Iodine, Distillation Method, referenced in Section 611.720.

Method 7500-Ra B, Radium, Precipitation Method, referenced in Section 611.720.

Method 7500-Ra C, Radium, Emanation Method, referenced in Section 611.720.

Method 7500-Ra D, Radium, Sequential Precipitation Method (Proposed), referenced in Section 611.720.

Method 7500-Sr B, Total Radioactive Strontium and Strontium 90, Precipitation Method, referenced in Section 611.720.

Method 7500-U B, Uranium, Radiochemical Method (Proposed), referenced in Section 611.720.

Method 7500-U C, Uranium, Isotopic Method (Proposed), referenced in Section 611.720.

Method 9215 B, Heterotrophic Plate Count, Pour Plate Method, referenced in Section 611.531.

Method 9221 A, Multiple-Tube Fermentation Technique for Members of the Coliform Group, Introduction, referenced in Section 611.531.

Method 9221 B, Multiple-Tube Fermentation Technique for Members of the Coliform Group, Standard Total Coliform Fermentation Technique, referenced in Section 611.531.

Method 9221 C, Multiple-Tube Fermentation Technique for Members of the Coliform Group, Estimation of Bacterial Density, referenced in Section 611.531.

Method 9221 E, Multiple-Tube Fermentation Technique for Members of the Coliform Group, Fecal Coliform Procedure, referenced in Section 611.531.

Method 9222 A, Membrane Filter Technique for Members of the Coliform Group, Introduction, referenced in Section 611.531.

Method 9222 B, Membrane Filter Technique for Members of the Coliform Group, Standard Total Coliform Membrane Filter Procedure, referenced in Section 611.531.

Method 9222 C, Membrane Filter Technique for Members of the Coliform Group, Delayed-Incubation Total Coliform Procedure, referenced in Section 611.531.

Method 9222 D, Membrane Filter Technique for Members of the Coliform Group, Fecal Coliform Membrane Filter Procedure, referenced in Section 611.531.

Method 9223, Chromogenic Substrate Coliform Test (Proposed) (also referred to as the variations "Colilert®® Test" and "Colisure™ Test"), referenced in Section 611.531.

Method 9223 B, Chromogenic Substrate Coliform Test (Proposed), referenced in Section 611.1004.

"Supplement to the 18th Edition of Standard Methods for the Examination of Water and Wastewater", American Public Health Association, 1994.

Method 6610, Carbamate Pesticide Method, referenced in Section 611.645.

Standard Methods, 19th ed., "Standard Methods for the Examination of Water and Wastewater", 19th Edition, 1995.

Method 2130 B, Turbidity, Nephelometric Method, referenced in Section 611.531.

Method 2320 B, Alkalinity, Titration Method, referenced in Section 611.611.

Method 2510 B, Conductivity, Laboratory Method, referenced in Section 611.611.

Method 2550, Temperature, Laboratory, and Field Methods, referenced in Section 611.611.

Method 3111 B, Metals by Flame Atomic Absorption Spectrometry, Direct Air-Acetylene Flame Method, referenced in Sections 611.611 and 611.612.

Method 3111 D, Metals by Flame Atomic Absorption Spectrometry, Direct Nitrous Oxide-Acetylene Flame

Method, referenced in Section 611.611.

Method 3112 B, Metals by Cold-Vapor Atomic Absorption Spectrometry, Cold-Vapor Atomic Absorption Spectrometric Method, referenced in Section 611.611.

Method 3113 B, Metals by Electrothermal Atomic Absorption Spectrometry, Electrothermal Atomic Absorption Spectrometric Method, referenced in Sections 611.611 and 611.612.

Method 3114 B, Metals by Hydride Generation/Atomic Absorption Spectrometry, Manual Hydride Generation/Atomic Absorption Spectrometric Method, referenced in Section 611.611.

Method 3120 B, Metals by Plasma Emission Spectroscopy, Inductively Coupled Plasma (ICP) Method, referenced in Sections 611.611 and 611.612.

Method 3500-Ca D, Calcium, EDTA Titrimetric Method, referenced in Section 611.611.

Method 3500-Mg E, Magnesium, Calculation Method, referenced in Section 611.611.

Method 4110 B, Determination of Anions by Ion Chromatography, Ion Chromatography with Chemical Suppression of Eluent Conductivity, referenced in Section 611.611.

Method 4500-Cl D, Chlorine, Amperometric Titration Method, referenced in Sections 611.381 and 611.531.

Method 4500-Cl E, Chlorine, Low-Level Amperometric Titration Method, referenced in Sections 611.381 and 611.531.

Method 4500-Cl F, Chlorine, DPD Ferrous Titrimetric Method, referenced in Sections 611.381 and 611.531.

Method 4500-Cl G, Chlorine, DPD Colorimetric Method, referenced in Sections 611.381 and 611.531.

Method 4500-Cl H, Chlorine, Syringaldazine (FACTS) Method, referenced in Sections 611.381 and 611.531.

Method 4500-Cl I, Chlorine, Iodometric Electrode Method, referenced in Sections 611.381 and 611.531.

Method 4500-ClO_2 C, Chlorine Dioxide, Amperometric Method I, referenced in Section 611.531.

Method 4500-ClO_2 D, Chlorine Dioxide, DPD Method, referenced in Sections 611.381 and 611.531.

Method 4500-ClO_2 E, Chlorine Dioxide, Amperometric Method II, referenced in Sections 611.381 and 611.531.

Method 4500-CN^- C, Cyanide, Total Cyanide after Distillation, referenced in Section 611.611.

Method 4500-CN^- E, Cyanide, Colorimetric Method, referenced in Section 611.611.

Method 4500-CN^- F, Cyanide, Cyanide-Selective Electrode Method, referenced in Section 611.611.

Method 4500-CN^- G, Cyanide, Cyanides Amenable to Chlorination after Distillation, referenced in Section 611.611.

Method 4500-F^- B, Fluoride, Preliminary Distillation Step, referenced in Section 611.611.

Method 4500-F^- C, Fluoride, Ion-Selective Electrode Method, referenced in Section 611.611.

Method 4500-F^- D, Fluoride, SPADNS Method, referenced in Section 611.611.

Method 4500-F^- E, Fluoride, Complexone Method, referenced in Section 611.611.

Method 4500-H^+ B, pH Value, Electrometric Method, referenced in Section 611.611.

Method 4500-NO_2^- B, Nitrogen (Nitrite), Colorimetric Method, referenced in Section 611.611.

Method 4500-NO_3^- D, Nitrogen (Nitrate), Nitrate Electrode Method, referenced in Section 611.611.

Method 4500-NO_3^- E, Nitrogen (Nitrate), Cadmium Reduction Method, referenced in Section 611.611.

Method 4500-NO_3^- F, Nitrogen (Nitrate), Automated Cadmium Reduction Method, referenced in Section 611.611.

Method 4500-O_3 B, Ozone (Residual) (Proposed), Indigo Colorimetric Method, referenced in Section 611.531.

Method 4500-P E, Phosphorus, Ascorbic Acid Method, referenced in Section 611.611.

Method 4500-P F, Phosphorus, Automated Ascorbic Acid Reduction Method, referenced in Section 611.611.

Method 4500-Si D, Silica, Molybdosilicate Method, referenced in Section 611.611.

Method 4500-Si E, Silica, Heteropoly Blue Method, referenced in Section 611.611.

Method 4500-Si F, Silica, Automated Method for Molybdate-Reactive Silica, referenced in Section 611.611.

Method 5910 B, UV Absorbing Organic Constituents, Ultraviolet Absorption Method, referenced in Section 611.381.

Method 6251 B, Disinfection Byproducts: Haloacetic Acids and Trichlorophenol, Micro Liquid-Liquid Extraction Gas Chromatographic Method, referenced in Section 611.381.

Method 6610, Carbamate Pesticide Method, referenced in Section 611.645.

Method 6651 B, Glyphosate Herbicide, referenced in Section 611.645.

Method 7110 B, Gross Alpha and Gross Beta Radioactivity, Evaporation Method for Gross Alpha-Beta,

referenced in Section 611.720.

Method 7110 C, Gross Alpha and Beta Radioactivity (Total, Suspended, and Dissolved), Coprecipitation Method for Gross Alpha Radioactivity in Drinking Water (Proposed), referenced in Section 611.720.

Method 7120, Gamma-Emitting Radionuclides, referenced in Section 611.720.

Method 7500-Cs B, Radioactive Cesium, Precipitation Method, referenced in Section 611.720.

Method 7500-^{3}H B, Tritium, Liquid Scintillation Spectrometric Method, referenced in Section 611.720.

Method 7500-I B, Radioactive Iodine, Precipitation Method, referenced in Section 611.720.

Method 7500-I C, Radioactive Iodine, Ion-Exchange Method, referenced in Section 611.720.

Method 7500-I D, Radioactive Iodine, Distillation Method, referenced in Section 611.720.

Method 7500-Ra B, Radium, Precipitation Method, referenced in Section 611.720.

Method 7500-Ra C, Radium, Emanation Method, referenced in Section 611.720.

Method 7500-Ra D, Radium, Sequential Precipitation Method, referenced in Section 611.720.

Method 7500-Sr B, Total Radiactive Strontium and Strontium 90, Precipitation Method, referenced in Section 611.720.

Method 7500-U B, Uranium, Radiochemical Method, referenced in Section 611.720.

Method 7500-U C, Uranium, Isotopic Method, referenced in Section 611.720.

Method 9215 B, Heterotrophic Plate Count, Pour Plate

Method, referenced in Section 611.531.

Method 9221 A, Multiple-Tube Fermentation Technique for Members of the Coliform Group, Introduction, referenced in Section 611.531.

Method 9221 B, Multiple-Tube Fermentation Technique for Members of the Coliform Group, Standard Total Coliform Fermentation Technique, referenced in Section 611.531.

Method 9221 C, Multiple-Tube Fermentation Technique for Members of the Coliform Group, Estimation of Bacterial Density, referenced in Section 611.531.

Method 9221 E, Multiple-Tube Fermentation Technique for Members of the Coliform Group, Fecal Coliform Procedure, referenced in Section 611.531.

Method 9222 A, Membrane Filter Technique for Members of the Coliform Group, Introduction, referenced in Section 611.531.

Method 9222 B, Membrane Filter Technique for Members of the Coliform Group, Standard Total Coliform Membrane Filter Procedure, referenced in Section 611.531.

Method 9222 C, Membrane Filter Technique for Members of the Coliform Group, Delayed-Incubation Total Coliform Procedure, referenced in Section 611.531.

Method 9222 D, Membrane Filter Technique for Members of the Coliform Group, Fecal Coliform Membrane Filter Procedure, referenced in Section 611.531.

Method 9223, Chromogenic Substrate Coliform Test (also referred to as the variations "Colilert®® Test" and "Colisure™ Test"), referenced in Section 611.531.

Method 9223 B, Chromogenic Substrate Coliform Test (Proposed), referenced in Section 611.1004.

"Supplement to the 19th Edition of Standard Methods for the Examination of Water and Wastewater", American Public Health

Association, 1996.

Method 5310 B, TOC, Combustion-Infrared Method, referenced in Section 611.381.

Method 5310 C, TOC, Persulfate-Ultraviolet Oxidation Method, referenced in Section 611.381.

Method 5310 D, TOC, Wet-Oxidation Method, referenced in Section 611.381.

Standard Methods, 20th ed., "Standard Methods for the Examination of Water and Wastewater", 20th Edition, 1998.

Method 2130 B, Turbidity, Nephelometric Method, referenced in Section 611.531.

Method 2320 B, Alkalinity, Titration Method, referenced in Section 611.611.

Method 2510 B, Conductivity, Laboratory Method, referenced in Section 611.611.

Method 2550, Temperature, Laboratory, and Field Methods, referenced in Section 611.611.

Method 3120 B, Metals by Plasma Emission Spectroscopy, Inductively Coupled Plasma (ICP) Method, referenced in Sections 611.611 and 611.612.

Method 3125, Metals by Inductively Coupled Plasma/Mass Spectrometry, referenced in Section 611.720.

Method 3500-Ca B, Calcium, EDTA Titrimetric Method, referenced in Section 611.611.

Method 3500-Mg B, Magnesium, EDTA Titrimetric Method, referenced in Section 611.611.

Method 4110 B, Determination of Anions by Ion Chromatography, Ion Chromatography with Chemical Suppression of Eluent Conductivity, referenced in Section 611.611.

Method 4500-Cl D, Chlorine, Amperometric Titration

Method, referenced in Sections 611.381 and 611.531.

Method 4500-Cl E, Chlorine, Low-Level Amperometric Titration Method, referenced in Sections 611.381 and 611.531.

Method 4500-Cl F, Chlorine, DPD Ferrous Titrimetric Method, referenced in Sections 611.381 and 611.531.

Method 4500-Cl G, Chlorine, DPD Colorimetric Method, referenced in Sections 611.381 and 611.531.

Method 4500-Cl H, Chlorine, Syringaldazine (FACTS) Method, referenced in Sections 611.381 and 611.531.

Method 4500-Cl I, Chlorine, Iodometric Electrode Method, referenced in Sections 611.381 and 611.531.

Method 4500-ClO_2 C, Chlorine Dioxide, Amperometric Method I, referenced in Section 611.531.

Method 4500-ClO_2 D, Chlorine Dioxide, DPD Method, referenced in Sections 611.381 and 611.531.

Method 4500-ClO_2 E, Chlorine Dioxide, Amperometric Method II (Proposed), referenced in Sections 611.381 and 611.531.

Method 4500-CN^- C, Cyanide, Total Cyanide after Distillation, referenced in Section 611.611.

Method 4500-CN^- E, Cyanide, Colorimetric Method, referenced in Section 611.611.

Method 4500-CN^- F, Cyanide, Cyanide-Selective Electrode Method, referenced in Section 611.611.

Method 4500-CN^- G, Cyanide, Cyanides Amenable to Chlorination after Distillation, referenced in Section 611.611.

Method 4500-F^- B, Fluoride, Preliminary Distillation Step, referenced in Section 611.611.

Method 4500-F^- C, Fluoride, Ion-Selective Electrode

Method, referenced in Section 611.611.

Method 4500-F^- D, Fluoride, SPADNS Method, referenced in Section 611.611.

Method 4500-F^- E, Fluoride, Complexone Method, referenced in Section 611.611.

Method 4500-H^+ B, pH Value, Electrometric Method, referenced in Section 611.611.

Method 4500-NO_2^- B, Nitrogen (Nitrite), Colorimetric Method, referenced in Section 611.611.

Method 4500-NO_3^- D, Nitrogen (Nitrate), Nitrate Electrode Method, referenced in Section 611.611.

Method 4500-NO_3^- E, Nitrogen (Nitrate), Cadmium Reduction Method, referenced in Section 611.611.

Method 4500-NO_3^- F, Nitrogen (Nitrate), Automated Cadmium Reduction Method, referenced in Section 611.611.

Method 4500-O_3 B, Ozone (Residual) (Proposed), Indigo Colorimetric Method, referenced in Section 611.531.

Method 4500-P E, Phosphorus, Ascorbic Acid Method, referenced in Section 611.611.

Method 4500-P F, Phosphorus, Automated Ascorbic Acid Reduction Method, referenced in Section 611.611.

Method 4500-SiO_2 C, Silica, Molybdosilicate Method, referenced in Section 611.611.

Method 4500-SiO_2 D, Silica, Heteropoly Blue Method, referenced in Section 611.611.

Method 4500-SiO_2 E, Silica, Automated Method for Molybdate-Reactive Silica, referenced in Section 611.611.

Method 5310 B, TOC, Combustion-Infrared Method, referenced in Section 611.381.

Method 5310 C, TOC, Persulfate-Ultraviolet Oxidation Method, referenced in Section 611.381.

Method 5310 D, TOC, Wet-Oxidation Method, referenced in Section 611.381.

Method 5910 B, UV-Absorbing Organic Constituents, Ultraviolet Absorption Method, referenced in Section 611.381.

Method 6251 B, Disinfection By-Products: Haloacetic Acids and Trichlorophenol, Micro Liquid-Liquid Extraction Gas Chromatographic Method, referenced in Section 611.381.

Method 6610, Carbamate Pesticide Method, referenced in Section 611.645.

Method 6651 B, Glyphosate Herbicide, Liquid Chromatographic Post-Column Fluorescence Method, referenced in Section 611.645.

Method 7110 B, Gross Alpha and Gross Beta Radioactivity, Evaporation Method for Gross Alpha-Beta, referenced in Section 611.720.

Method 7110 C, Gross Alpha and Beta Radioactivity (Total, Suspended, and Dissolved), Coprecipitation Method for Gross Alpha Radioactivity in Drinking Water (Proposed), referenced in Section 611.720.

Method 7120, Gamma-Emitting Radionuclides, referenced in Section 611.720.

Method 7500-Cs B, Radioactive Cesium, Precipitation Method, referenced in Section 611.720.

Method 7500-^{3}H B, Tritium, Liquid Scintillation Spectrometric Method, referenced in Section 611.720.

Method 7500-I B, Radioactive Iodine, Precipitation Method, referenced in Section 611.720.

Method 7500-I C, Radioactive Iodine, Ion-Exchange

Method, referenced in Section 611.720.

Method 7500-I D, Radioactive Iodine, Distillation Method, referenced in Section 611.720.

Method 7500-Ra B, Radium, Precipitation Method, referenced in Section 611.720.

Method 7500-Ra C, Radium, Emanation Method, referenced in Section 611.720.

Method 7500-Ra D, Radium, Sequential Precipitation Method, referenced in Section 611.720.

Method 7500-Sr B, Total Radioactive Strontium and Strontium 90, Precipitation Method, referenced in Section 611.720.

Method 7500-U B, Uranium, Radiochemical Method, referenced in Section 611.720.

Method 7500-U C, Uranium, Isotopic Method, referenced in Section 611.720.

Method 9060 A, Samples, Collection, referenced in Section 611.1052.

Method 9215 B, Heterotrophic Plate Count, Pour Plate Method, referenced in Section 611.531.

Method 9221 A, Multiple-Tube Fermentation Technique for Members of the Coliform Group, Introduction, referenced in Section 611.531.

Method 9221 B, Multiple-Tube Fermentation Technique for Members of the Coliform Group, Standard Total Coliform Fermentation Technique, referenced in Sections 611.531, 611.802, and 611.1052.

Method 9221 C, Multiple-Tube Fermentation Technique for Members of the Coliform Group, Estimation of Bacterial Density, referenced in Sections 611.531 and 611.1052.

Method 9221 D, Multiple-Tube Fermentation Technique for Members of the Coliform Group, Presence-Absence (P-A) Coliform Test, referenced in Sections 611.802 and 611.1052.

Method 9221 E, Multiple-Tube Fermentation Technique for Members of the Coliform Group, Fecal Coliform Procedure, referenced in Section 611.531.

Method 9221 F, Multiple-Tube Fermentation Technique for Members of the Coliform Group, Escherichia Coli Procedure (Proposed), referenced in Sections 611.802 and 611.1052.

Method 9222 A, Membrane Filter Technique for Members of the Coliform Group, Introduction, referenced in Section 611.531.

Method 9222 B, Membrane Filter Technique for Members of the Coliform Group, Standard Total Coliform Membrane Filter Procedure, referenced in Sections 611.531, 611.802, and 611.1052.

Method 9222 C, Membrane Filter Technique for Members of the Coliform Group, Delayed-Incubation Total Coliform Procedure, referenced in Sections 611.531, 611.802, and 611.1052.

Method 9222 D, Membrane Filter Technique for Members of the Coliform Group, Fecal Coliform Membrane Filter Procedure, referenced in Sections 611.531 and 611.1004.

Method 9222 G, Membrane Filter Technique for Members of the Coliform Group, MF Partition Procedures, referenced in Sections 611.802, 611.1004, and 611.1052.

Method 9223, Chromogenic Substrate Coliform Test (also referred to as the variations "Colilert®~~®~~ Test," ~~and~~ "Colisure™ Test," and Colilert-18® Test), referenced in Section 611.531.

Method 9223 B, Chromogenic Substrate Coliform Test (also referred to as the variations "Colilert®~~®~~ Test" and "Colisure™ Test"), referenced in Sections 611.802,

611.1004, and 611.1052.

Method 9230 B, Fecal Streptococcus and Enterococcus Groups, Multiple Tube Techniques, referenced in Section 611.802.

Method 9230 C, Fecal Streptococcus and Enterococcus Groups, Membrane Filter Techniques, referenced in Section 611.802.

Standard Methods, 21st ed., "Standard Methods for the Examination of Water and Wastewater", 21st Edition, 2005.

Method 2130 B, Turbidity, Nephelometric Method, referenced in Section 611.531.

Method 2320 B, Alkalinity, Titration Method, referenced in Section 611.611.

Method 2510 B, Conductivity, Laboratory Method, referenced in Section 611.611.

Method 2550, Temperature, Laboratory, and Field Methods, referenced in Section 611.611.

Method 3111 B, Metals by Flame Atomic Absorption Spectrometry, Direct Air-Acetylene Flame Method, referenced in Sections 611.611 and 611.612.

Method 3111 D, Metals by Flame Atomic Absorption Spectrometry, Direct Nitrous Oxide-Acetylene Flame Method, referenced in Section 611.611.

Method 3112 B, Metals by Cold-Vapor Atomic Absorption Spectrometry, Cold-Vapor Atomic Absorption Spectrometric Method, referenced in Section 611.611.

Method 3113 B, Metals by Electrothermal Atomic Absorption Spectrometry, Electrothermal Atomic Absorption Spectrometric Method, referenced in Sections 611.611 and 611.612.

Method 3114 B, Metals by Hydride Generation/Atomic Absorption Spectrometry, Manual Hydride

Generation/Atomic Absorption Spectrometric Method, referenced in Section 611.611.

Method 3120 B, Metals by Plasma Emission Spectroscopy, Inductively Coupled Plasma (ICP) Method, referenced in Sections 611.611 and 611.612.

Method 3125, Metals by Inductively Coupled Plasma/Mass Spectrometry, referenced in Section 611.720.

Method 3500-Ca B, Calcium, EDTA Titrimetric Method, referenced in Section 611.611.

Method 3500-Mg B, Magnesium, Calculation Method, referenced in Section 611.611.

Method 4110 B, Determination of Anions by Ion Chromatography, Ion Chromatography with Chemical Suppression of Eluent Conductivity, referenced in Section 611.611.

Method 4500-Cl D, Chlorine, Amperometric Titration Method, referenced in Sections 611.381 and 611.531.

Method 4500-Cl E, Chlorine, Low-Level Amperometric Titration Method, referenced in Sections 611.381 and 611.531.

Method 4500-Cl F, Chlorine, DPD Ferrous Titrimetric Method, referenced in Sections 611.381 and 611.531.

Method 4500-Cl G, Chlorine, DPD Colorimetric Method, referenced in Sections 611.381 and 611.531.

Method 4500-Cl H, Chlorine, Syringaldazine (FACTS) Method, referenced in Sections 611.381 and 611.531.

Method 4500-Cl I, Chlorine, Iodometric Electrode Method, referenced in Sections 611.381 and 611.531.

Method 4500-ClO_2 C, Chlorine Dioxide, Amperometric Method I, referenced in Section 611.531.

Method 4500-ClO_2 D, Chlorine Dioxide, Amperometric

Method I, referenced in Section 611.381.

Method 4500-ClO_2 E, Chlorine Dioxide, Amperometric Method II (Proposed), referenced in Sections 611.381 and 611.531.

Method 4500-CN^- E, Cyanide, Colorimetric Method, referenced in Section 611.611.

Method 4500-CN^- F, Cyanide, Cyanide-Selective Electrode Method, referenced in Section 611.611.

Method 4500-CN^- G, Cyanide, Cyanides Amenable to Chlorination after Distillation, referenced in Section 611.611.

Method 4500-F^- B, Fluoride, Preliminary Distillation Step, referenced in Section 611.611.

Method 4500-F^- C, Fluoride, Ion-Selective Electrode Method, referenced in Section 611.611.

Method 4500-F^- D, Fluoride, SPADNS Method, referenced in Section 611.611.

Method 4500-F^- E, Fluoride, Complexone Method, referenced in Section 611.611.

Method 4500-H^+ B, pH Value, Electrometric Method, referenced in Section 611.611.

Method 4500-NO_2^- B, Nitrogen (Nitrite), Colorimetric Method, referenced in Section 611.611.

Method 4500-NO_3^- D, Nitrogen (Nitrate), Nitrate Electrode Method, referenced in Section 611.611.

Method 4500-NO_3^- E, Nitrogen (Nitrate), Cadmium Reduction Method, referenced in Section 611.611.

Method 4500-NO_3^- F, Nitrogen (Nitrate), Automated Cadmium Reduction Method, referenced in Section 611.611.

Method 4500-O_3 B, Ozone (Residual) (Proposed), Indigo

Colorimetric Method, referenced in Section 611.531.

Method 4500-P E, Phosphorus, Ascorbic Acid Method, referenced in Section 611.611.

Method 4500-P F, Phosphorus, Automated Ascorbic Acid Reduction Method, referenced in Section 611.611.

Method 4500-SiO_2 C, Silica, Molybdosilicate Method, referenced in Section 611.611.

Method 4500-SiO_2 D, Silica, Heteropoly Blue Method, referenced in Section 611.611.

Method 4500-SiO_2 E, Silica, Automated Method for Molybdate-Reactive Silica, referenced in Section 611.611.

Method 5310 B, TOC, Combustion-Infrared Method, referenced in Section 611.381.

Method 5310 C, TOC, Persulfate-Ultraviolet Oxidation Method, referenced in Section 611.381.

Method 5310 D, TOC, Wet-Oxidation Method, referenced in Section 611.381.

Method 5910 B, UV-Absorbing Organic Constituents, Ultraviolet Absorption Method, referenced in Section 611.381.

Method 6251 B, Disinfection By-Products: Haloacetic Acids and Trichlorophenol, Micro Liquid-Liquid Extraction Gas Chromatography Method, referenced in Section 611.381.

Method 6610 B, Carbamate Pesticide Method, High-Performance Liquid Chromatographic Method, referenced in Section 611.645.

Method 6640 B, Acidic Herbicide Compounds, Micro Liquid-Liquid Extraction Gas Chromatographic Method, referenced in Section 611.645.

Method 6651 B, Glyphosate Herbicide, Liquid

Chromatographic Post-Column Fluorescence Method, referenced in Section 611.645.

Method 7110 B, Gross Alpha and Gross Beta Radioactivity, Evaporation Method for Gross Alpha-Beta, referenced in Section 611.720.

Method 7110 C, Gross Alpha and Beta Radioactivity (Total, Suspended, and Dissolved), Coprecipitation Method for Gross Alpha Radioactivity in Drinking Water (Proposed), referenced in Section 611.720.

Method 7120, Gamma-Emitting Radionuclides, referenced in Section 611.720.

Method 7500-Cs B, Radioactive Cesium, Precipitation Method, referenced in Section 611.720.

Method 7500-^{3}H B, Tritium, Liquid Scintillation Spectrometric Method, referenced in Section 611.720.

Method 7500-I B, Radioactive Iodine, Precipitation Method, referenced in Section 611.720.

Method 7500-I C, Radioactive Iodine, Ion-Exchange Method, referenced in Section 611.720.

Method 7500-I D, Radioactive Iodine, Distillation Method, referenced in Section 611.720.

Method 7500-Ra B, Radium, Precipitation Method, referenced in Section 611.720.

Method 7500-Ra C, Radium, Emanation Method, referenced in Section 611.720.

Method 7500-Ra D, Radium, Sequential Precipitation Method, referenced in Section 611.720.

Method 7500-Sr B, Total Radioactive Strontium and Strontium 90, Precipitation Method, referenced in Section 611.720.

Method 7500-U B, Uranium, Radiochemical Method,

referenced in Section 611.720.

Method 7500-U C, Uranium, Isotopic Method, referenced in Section 611.720.

Method 9060 A, Samples, Collection, referenced in Section 611.1052.

Method 9215 B, Heterotrophic Plate Count, Pour Plate Method, referenced in Section 611.531.

Method 9221 A, Multiple-Tube Fermentation Technique for Members of the Coliform Group, Introduction, referenced in Section 611.531.

Method 9221 B, Multiple-Tube Fermentation Technique for Members of the Coliform Group, Standard Total Coliform Fermentation Technique, referenced in Sections 611.531 and 611.1052.

Method 9221 C, Multiple-Tube Fermentation Technique for Members of the Coliform Group, Estimation of Bacterial Density, referenced in Section 611.531.

Method 9221 D, Multiple-Tube Fermentation Technique for Members of the Coliform Group, Presence-Absence (P-A) Coliform Test, referenced in Sections 611.802 and 611.1052.

Method 9221 E, Multiple-Tube Fermentation Technique for Members of the Coliform Group, Fecal Coliform Procedure, referenced in Section 611.531.

Method 9222 A, Membrane Filter Technique for Members of the Coliform Group, Introduction, referenced in Section 611.531.

Method 9222 B, Membrane Filter Technique for Members of the Coliform Group, Standard Total Coliform Membrane Filter Procedure, referenced in Sections 611.531 and 611.1052.

Method 9222 C, Membrane Filter Technique for Members of the Coliform Group, Delayed-Incubation Total Coliform

Procedure, referenced in Sections 611.531, 611.802, and 611.1052.

Method 9222 D, Membrane Filter Technique for Members of the Coliform Group, Fecal Coliform Membrane Filter Procedure, referenced in Sections 611.531 and 611.1052.

Method 9222 G, Membrane Filter Technique for Members of the Coliform Group, MF Partition Procedures, referenced in Section 611.1052.

Method 9223, Chromogenic Substrate Coliform Test (also referred to as the variations "Colilert®® Test" and "Colisure™ Test"), referenced in Section 611.531.

Method 9223 B, Chromogenic Substrate Coliform Test (also referred to as the variations "Colilert®® Test", "Colisure™ Test", and "Colilert-18®® Test", based on the particular medium used, available from IDEXX Laboratories, Inc.), referenced in Sections 611.531, 611.802, and 611.1052.

BOARD NOTE: See the Board note appended to Standard Methods Online in this Section about methods that appear in Standard Methods, 21st ed. which USEPA has cited as available from Standard Methods Online.

Standard Methods, 22nd ed., "Standard Methods for the Examination of Water and Wastewater", 22nd Edition, 2012, for the specified methods, as modified by "22nd Edition of Standard Methods for the Examination of Water and Wastewater ERRATA" dated December 16, 2013 and available online for free download at www.standardmethods.org/PDF/22nd_Ed_Errata_12_16_13.pdf.

Method 2130 B, Turbidity, Nephelometric Method, referenced in Section 611.531.

Method 2320 B, Alkalinity, Titration Method, referenced in Section 611.611.

Method 2510 B, Conductivity, Laboratory Method, referenced in Section 611.611.

Method 2550, Temperature, Laboratory, and Field

Methods, referenced in Section 611.611.

Method 3111 B, Metals by Flame Atomic Absorption Spectrometry, Direct Air-Acetylene Flame Method, referenced in Sections 611.611 and 611.612.

Method 3111 D, Metals by Flame Atomic Absorption Spectrometry, Direct Nitrous Oxide-Acetylene Flame Method, referenced in Section 611.611.

Method 3112 B, Metals by Cold-Vapor Atomic Absorption Spectrometry, Cold-Vapor Atomic Absorption Spectrometric Method, referenced in Section 611.611.

Method 3113 B, Metals by Electrothermal Atomic Absorption Spectrometry, Electrothermal Atomic Absorption Spectrometric Method, referenced in Sections 611.611 and 611.612.

Method 3114 B, Metals by Hydride Generation/Atomic Absorption Spectrometry, Manual Hydride Generation/Atomic Absorption Spectrometric Method, referenced in Section 611.611.

Method 3120 B, Metals by Plasma Emission Spectroscopy, Inductively Coupled Plasma (ICP) Method, referenced in Sections 611.611 and 611.612.

Method 3500-Ca B, Calcium, EDTA Titrimetric Method, referenced in Section 611.611.

Method 3500-Mg B, Magnesium, Calculation Method, referenced in Section 611.611.

Method 4110 B, Determination of Anions by Ion Chromatography, Ion Chromatography with Chemical Suppression of Eluent Conductivity, referenced in Section 611.611.

Method 4500-Cl D, Chlorine, Amperometric Titration Method, referenced in Sections 611.381 and 611.531.

Method 4500-Cl E, Chlorine, Low-Level Amperometric Titration Method, referenced in Sections 611.381 and

611.531.

Method 4500-Cl F, Chlorine, DPD Ferrous Titrimetric Method, referenced in Sections 611.381 and 611.531.

Method 4500-Cl G, Chlorine, DPD Colorimetric Method, referenced in Sections 611.381 and 611.531.

Method 4500-Cl H, Chlorine, Syringaldazine (FACTS) Method, referenced in Sections 611.381 and 611.531.

Method 4500-Cl I, Chlorine, Iodometric Electrode Method, referenced in Sections 611.381 and 611.531.

Method 4500-ClO_2 C, Chlorine Dioxide, Amperometric Method I, referenced in Section 611.531.

Method 4500-ClO_2 E, Chlorine Dioxide, Amperometric Method II (Proposed), referenced in Sections 611.381 and 611.531.

Method 4500-CN^- E, Cyanide, Colorimetric Method, referenced in Section 611.611.

Method 4500-CN^- F, Cyanide, Cyanide-Selective Electrode Method, referenced in Section 611.611.

Method 4500-CN^- G, Cyanide, Cyanides Amenable to Chlorination after Distillation, referenced in Section 611.611.

Method 4500-F^- B, Fluoride, Preliminary Distillation Step, referenced in Section 611.611.

Method 4500-F^- C, Fluoride, Ion-Selective Electrode Method, referenced in Section 611.611.

Method 4500-F^- D, Fluoride, SPADNS Method, referenced in Section 611.611.

Method 4500-F^- E, Fluoride, Complexone Method, referenced in Section 611.611.

Method 4500-H^+ B, pH Value, Electrometric Method, referenced in Section 611.611.

Method 4500-NO_2^- B, Nitrogen (Nitrite), Colorimetric Method, referenced in Section 611.611.

Method 4500-NO_3^- D, Nitrogen (Nitrate), Nitrate Electrode Method, referenced in Section 611.611.

Method 4500-NO_3^- E, Nitrogen (Nitrate), Cadmium Reduction Method, referenced in Section 611.611.

Method 4500-NO_3^- F, Nitrogen (Nitrate), Automated Cadmium Reduction Method, referenced in Section 611.611.

Method 4500-O_3 B, Ozone (Residual) (Proposed), Indigo Colorimetric Method, referenced in Section 611.531.

Method 4500-P E, Phosphorus, Ascorbic Acid Method, referenced in Section 611.611. Modified by the above-cited errata sheet.

Method 4500-P F, Phosphorus, Automated Ascorbic Acid Reduction Method, referenced in Section 611.611.

Method 4500-SiO_2 C, Silica, Molybdosilicate Method, referenced in Section 611.611.

Method 4500-SiO_2 D, Silica, Heteropoly Blue Method, referenced in Section 611.611.

Method 4500-SiO_2 E, Silica, Automated Method for Molybdate-Reactive Silica, referenced in Section 611.611.

Method 5310 B, TOC, Combustion-Infrared Method, referenced in Section 611.381.

Method 5310 C, TOC, Persulfate-Ultraviolet Oxidation Method, referenced in Section 611.381.

Method 5310 D, TOC, Wet-Oxidation Method, referenced in Section 611.381.

Method 5910 B, UV-Absorbing Organic Constituents, Ultraviolet Absorption Method, referenced in Section 611.381.

Method 6251 B, Disinfection By-Products: Haloacetic Acids and Trichlorophenol, referenced in Section 611.381.

Method 6610 B, Carbamate Pesticide Method, High-Performance Liquid Chromatographic Method, referenced in Section 611.645.

Method 6640 B, Acidic Herbicide Compounds, Micro Liquid-Liquid Extraction Gas Chromatographic Method, referenced in Section 611.645.

Method 6651 B, Glyphosate Herbicide, Liquid Chromatographic Post-Column Fluorescence Method, referenced in Section 611.645.

Method 7110 B, Gross Alpha and Gross Beta Radioactivity, Evaporation Method for Gross Alpha-Beta, referenced in Section 611.720.

Method 7110 C, Gross Alpha and Beta Radioactivity (Total, Suspended, and Dissolved), Coprecipitation Method for Gross Alpha Radioactivity in Drinking Water (Proposed), referenced in Section 611.720. Modified by the above-cited errata sheet.

Method 7120, Gamma-Emitting Radionuclides, referenced in Section 611.720.

Method 7500-Cs B, Radioactive Cesium, Precipitation Method, referenced in Section 611.720.

Method 7500-^{3}H B, Tritium, Liquid Scintillation Spectrometric Method, referenced in Section 611.720.

Method 7500-I B, Radioactive Iodine, Precipitation Method, referenced in Section 611.720.

Method 7500-I C, Radioactive Iodine, Ion-Exchange Method, referenced in Section 611.720.

Method 7500-I D, Radioactive Iodine, Distillation Method, referenced in Section 611.720.

Method 7500-Ra B, Radium, Precipitation Method,

referenced in Section 611.720.

Method 7500-Ra C, Radium, Emanation Method, referenced in Section 611.720.

Method 7500-Ra D, Radium, Sequential Precipitation Method, referenced in Section 611.720.

Method 7500-Ra E, Radium, Gamma Spectrometry Method, referenced in Section 611.720.

Method 7500-Sr B, Total Radioactive Strontium and Strontium 90, Precipitation Method, referenced in Section 611.720. Modified by the above-cited errata sheet.

Method 7500-U B, Uranium, Radiochemical Method, referenced in Section 611.720.

Method 7500-U C, Uranium, Isotopic Method, referenced in Section 611.720.

Method 9215 B, Heterotrophic Plate Count, Pour Plate Method, referenced in Section 611.531.

Method 9221 A, Multiple-Tube Fermentation Technique for Members of the Coliform Group, Introduction, referenced in Section 611.531.

Method 9221 B, Multiple-Tube Fermentation Technique for Members of the Coliform Group, Standard Total Coliform Fermentation Technique, referenced in Sections 611.531 and 611.1052.

Method 9221 C, Multiple-Tube Fermentation Technique for Members of the Coliform Group, Estimation of Bacterial Density, referenced in Section 611.531. Modified by the above-cited errata sheet.

Method 9221 E, Multiple-Tube Fermentation Technique for Members of the Coliform Group, Fecal Coliform Procedure, referenced in Section 611.531.

Method 9221 F, Multiple-Tube Fermentation Technique for Members of the Coliform Group, Escherichia Coli

Procedure (Proposed), referenced in Section 611.802 and 611.1052.

Method 9222 A, Membrane Filter Technique for Members of the Coliform Group, Introduction, referenced in Section 611.531.

Method 9222 B, Membrane Filter Technique for Members of the Coliform Group, Standard Total Coliform Membrane Filter Procedure, referenced in Section 611.531. Modified by the above-cited errata sheet.

Method 9222 C, Membrane Filter Technique for Members of the Coliform Group, Delayed-Incubation Total Coliform Procedure, referenced in Section 611.531.

Method 9222 D, Membrane Filter Technique for Members of the Coliform Group, Fecal Coliform Membrane Filter Procedure, referenced in Section 611.531.

Method 9223, Chromogenic Substrate Coliform Test (also referred to as the variations "Colilert®® Test" and "Colisure™ Test"), referenced in Section 611.531.

Method 9223 B, Chromogenic Substrate Coliform Test (also referred to as the variations "Colilert®® Test", "Colisure™ Test", and "Colilert-18®® Test", based on the particular medium used, available from IDEXX Laboratories, Inc.), referenced in Sections 611.802, 611.1004, and 611.1052.

BOARD NOTE: See the Board note appended to Standard Methods Online in this Section about methods that appear in Standard Methods, 22nd ed., which USEPA has cited as available from Standard Methods Online.

BOARD NOTE: Individual Methods from Standard Methods are available online from Standard Methods Online.

ASTM. American Society for Testing and Materials, 100 Barr Harbor Drive, West Conshohocken, PA 19428-2959 (610-832-9585).

ASTM Method D511-93 A and B, "Standard Test Methods for Calcium and Magnesium in Water", "Test Method A—

Complexometric Titration" and "Test Method B—Atomic Absorption Spectrophotometric", approved 1993, referenced in Section 611.611.

ASTM Method D511-03 A and B, "Standard Test Methods for Calcium and Magnesium in Water", "Test Method A—Complexometric Titration" and "Test Method B—Atomic Absorption Spectrophotometric", approved 2003, referenced in Section 611.611.

ASTM Method D511-09 A and B, "Standard Test Methods for Calcium and Magnesium in Water", "Test Method A—Complexometric Titration" and "Test Method B—Atomic Absorption Spectrophotometric", approved 2009, referenced in Section 611.611.

ASTM Method D511-14 A and B, "Standard Test Methods for Calcium and Magnesium in Water", "Test Method A—Complexometric Titration" and "Test Method B—Atomic Absorption Spectrophotometric", approved 2014, referenced in Section 611.611.

ASTM Method D515-88 A, "Standard Test Methods for Phosphorus in Water", "Test Method A—Colorimetric Ascorbic Acid Reduction", approved August 19, 1988, referenced in Section 611.611.

ASTM Method D859-94, "Standard Test Method for Silica in Water", approved 1994, referenced in Section 611.611.

ASTM Method D859-00, "Standard Test Method for Silica in Water", approved 2000, referenced in Section 611.611.

ASTM Method D859-05, "Standard Test Method for Silica in Water", approved 2005, referenced in Section 611.611.

ASTM Method D859-10, "Standard Test Method for Silica in Water", approved 2010, referenced in Section 611.611.

ASTM Method D1067-92 B, "Standard Test Methods for Acidity or Alkalinity in Water", "Test Method B—Electrometric or Color-Change Titration", approved May 15, 1992, referenced in Section 611.611.

ASTM Method D1067-02 B, “Standard Test Methods for Acidity or Alkalinity in Water”, “Test Method B—Electrometric or Color-Change Titration”, approved in 2002, referenced in Section 611.611.

ASTM Method D1067-06 B, “Standard Test Methods for Acidity or Alkalinity in Water”, “Test Method B—Electrometric or Color-Change Titration”, approved in 2006, referenced in Section 611.611.

ASTM Method D1067-11 B, “Standard Test Methods for Acidity or Alkalinity in Water”, “Test Method B—Electrometric or Color-Change Titration”, approved in 2011, referenced in Section 611.611.

ASTM Method D1125-95(1999) A, “Standard Test Methods for Electrical Conductivity and Resistivity of Water”, “Test Method A—Field and Routine Laboratory Measurement of Static (Non-Flowing) Samples”, approved 1995, reapproved 1999, referenced in Section 611.611.

ASTM Method D1179-93 B, “Standard Test Methods for Fluoride in Water”, “Test Method B—Ion Selective Electrode”, approved 1993, referenced in Section 611.611.

ASTM Method D1179-99 B, “Standard Test Methods for Fluoride in Water”, “Test Method B—Ion Selective Electrode”, approved 1999, referenced in Section 611.611.

ASTM Method D1179-04 B, “Standard Test Methods for Fluoride in Water”, “Test Method B—Ion Selective Electrode”, approved 2004, referenced in Section 611.611.

ASTM Method D1179-10 B, “Standard Test Methods for Fluoride in Water”, “Test Method B—Ion Selective Electrode”, approved 2010, referenced in Section 611.611.

ASTM Method D1253-86, “Standard Test Method for Residual Chlorine in Water”, reapproved 1992, referenced in Section 611.381.

ASTM Method D1253-96, “Standard Test Method for Residual Chlorine in Water”, approved 1996, referenced in Section 611.381.

ASTM Method D1253-03, “Standard Test Method for Residual Chlorine in Water”, approved 2003, referenced in Sections 611.381 and 611.531.

ASTM Method D1253-08, “Standard Test Method for Residual Chlorine in Water”, approved 2008, referenced in Sections 611.381 and 611.531.

ASTM Method D1253-14, “Standard Test Method for Residual Chlorine in Water”, approved 2014, referenced in Sections 611.381 and 611.531.

ASTM Method D1293-95, “Standard Test Methods for pH of Water”, approved 1995, referenced in Section 611.611.

ASTM Method D1293-99, “Standard Test Methods for pH of Water”, approved 1999, referenced in Section 611.611.

ASTM Method D1293-12, “Standard Test Methods for pH of Water”, approved 2012, referenced in Section 611.611.

ASTM Method D1688-95 A and C, “Standard Test Methods for Copper in Water”, “Test Method A—Atomic Absorption, Direct” and “Test Method C—Atomic Absorption, Graphite Furnace”, approved 1995, referenced in Section 611.611.

ASTM Method D1688-02 A and C, “Standard Test Methods for Copper in Water”, “Test Method A—Atomic Absorption, Direct” and “Test Method C—Atomic Absorption, Graphite Furnace”, approved 2002, referenced in Section 611.611.

ASTM Method D1688-07 A and C, “Standard Test Methods for Copper in Water”, “Test Method A—Atomic Absorption, Direct” and “Test Method C—Atomic Absorption, Graphite Furnace”, approved 2007, referenced in Section 611.611.

ASTM Method D1688-12 A and C, “Standard Test Methods for Copper in Water”, “Test Method A—Atomic Absorption, Direct” and “Test Method C—Atomic Absorption, Graphite Furnace”, approved 2012, referenced in Section 611.611.

ASTM Method D2036-98 A and B, “Standard Test Methods for Cyanide in Water”, “Test Method A—Total Cyanides after Distillation” and “Test Method B—Cyanides Amenable to

Chlorination by Difference", approved 1998, referenced in Section 611.611.

ASTM Method D2036-06 A and B, "Standard Test Methods for Cyanide in Water", "Test Method A—Total Cyanides after Distillation" and "Test Method B—Cyanides Amenable to Chlorination by Difference", approved 2006, referenced in Section 611.611.

ASTM Method D2459-72, "Standard Test Method for Gamma Spectrometry in Water", approved July 28, 1972, discontinued 1988, referenced in Section 611.720.

ASTM Method D2460-97, "Standard Test Method for Radionuclides of Radium in Water", approved 1997, referenced in Section 611.720.

ASTM Method D2460-07, "Standard Test Method for Radionuclides of Radium in Water", approved 2007, referenced in Section 611.720.

ASTM Method D2907-97, "Standard Test Methods for Microquantities of Uranium in Water by Fluorometry", approved 1997, referenced in Section 611.720.

ASTM Method D2972-97 B and C, "Standard Test Methods for Arsenic in Water", "Test Method B—Atomic Absorption, Hydride Generation" and "Test Method C—Atomic Absorption, Graphite Furnace", approved 1997, referenced in Section 611.611.

ASTM Method D2972-03 B and C, "Standard Test Methods for Arsenic in Water", "Test Method B—Atomic Absorption, Hydride Generation" and "Test Method C—Atomic Absorption, Graphite Furnace", approved 2003, referenced in Section 611.611.

ASTM Method D2972-08 B and C, "Standard Test Methods for Arsenic in Water", "Test Method B—Atomic Absorption, Hydride Generation" and "Test Method C—Atomic Absorption, Graphite Furnace", approved 2008, referenced in Section 611.611.

ASTM Method D2972-15 B and C, "Standard Test Methods for Arsenic in Water", "Test Method B—Atomic Absorption, Hydride Generation" and "Test Method C—Atomic Absorption, Graphite Furnace", approved 2015, referenced in Section 611.611.

ASTM Method D3223-97, “Standard Test Method for Total Mercury in Water”, approved 1997, referenced in Section 611.611.

ASTM Method D3223-02, “Standard Test Method for Total Mercury in Water”, approved 2002, referenced in Section 611.611.

ASTM Method D3223-12, “Standard Test Method for Total Mercury in Water”, approved 2012, referenced in Section 611.611.

ASTM Method D3454-97, “Standard Test Method for Radium-226 in Water”, approved 1997, referenced in Section 611.720.

ASTM Method D3454-05, “Standard Test Method for Radium-226 in Water”, approved 2005, referenced in Section 611.720.

ASTM Method D3559-96 D, “Standard Test Methods for Lead in Water”, “Test Method D—Atomic Absorption, Graphite Furnace”, approved August 6, 1990, referenced in Section 611.611.

ASTM Method D3559-03 D, “Standard Test Methods for Lead in Water”, “Test Method D—Atomic Absorption, Graphite Furnace”, approved 2003, referenced in Section 611.611.

ASTM Method D3559-08 D, “Standard Test Methods for Lead in Water”, “Test Method D—Atomic Absorption, Graphite Furnace”, approved 2008, referenced in Section 611.611.

ASTM Method D3559-15 D, “Standard Test Methods for Lead in Water”, “Test Method D—Atomic Absorption, Graphite Furnace”, approved 2015, referenced in Section 611.611.

ASTM Method D3645-97 B, “Standard Test Methods for Beryllium in Water”, “Method B—Atomic Absorption, Graphite Furnace”, approved 1997, referenced in Section 611.611.

ASTM Method D3645-03 B, “Standard Test Methods for Beryllium in Water”, “Method B—Atomic Absorption, Graphite Furnace”, approved 2003, referenced in Section 611.611.

ASTM Method D3645-08 B, “Standard Test Methods for Beryllium in Water”, “Method B—Atomic Absorption, Graphite Furnace”, approved 2008, referenced in Section 611.611.

ASTM Method D3645-15 B, “Standard Test Methods for

Beryllium in Water", "Method B—Atomic Absorption, Graphite Furnace", approved 2015, referenced in Section 611.611.

ASTM Method D3649-91, "Standard Test Method for High-Resolution Gamma-Ray Spectrometry of Water", approved 1991, referenced in Section 611.720.

ASTM Method D3649-98a, "Standard Test Method for High-Resolution Gamma-Ray Spectrometry of Water", approved 1998, referenced in Section 611.720.

ASTM Method D3649-06, "Standard Test Method for High-Resolution Gamma-Ray Spectrometry of Water", approved 2006, referenced in Section 611.720.

ASTM Method D3697-92, "Standard Test Method for Antimony in Water", approved 1992, referenced in Section 611.611.

ASTM Method D3697-02, "Standard Test Method for Antimony in Water", approved 2002, referenced in Section 611.611.

ASTM Method D3697-07, "Standard Test Method for Antimony in Water", approved 2007, referenced in Section 611.611.

ASTM Method D3697-12, "Standard Test Method for Antimony in Water", approved 2012, referenced in Section 611.611.

ASTM Method D3859-98 A and B, "Standard Test Methods for Selenium in Water", "Method A—Atomic Absorption, Hydride Method" and "Method B—Atomic Absorption, Graphite Furnace", approved 1998, referenced in Section 611.611.

ASTM Method D3859-03 A and B, "Standard Test Methods for Selenium in Water", "Method A—Atomic Absorption, Hydride Method" and "Method B—Atomic Absorption, Graphite Furnace", approved 2003, referenced in Section 611.611.

ASTM Method D3859-08 A and B, "Standard Test Methods for Selenium in Water", "Method A—Atomic Absorption, Hydride Method" and "Method B—Atomic Absorption, Graphite Furnace", approved 2008, referenced in Section 611.611.

ASTM Method D3859-15 A and B, "Standard Test Methods for Selenium in Water", "Method A—Atomic Absorption, Hydride

Method" and "Method B—Atomic Absorption, Graphite Furnace", approved 2015, referenced in Section 611.611.

ASTM Method D3867-90 A and B, "Standard Test Methods for Nitrite-Nitrate in Water", "Test Method A—Automated Cadmium Reduction" and "Test Method B—Manual Cadmium Reduction", approved January 10, 1990, referenced in Section 611.611.

ASTM Method D3972-97, "Standard Test Method for Isotopic Uranium in Water by Radiochemistry", approved 1997, referenced in Section 611.720.

ASTM Method D3972-02, "Standard Test Method for Isotopic Uranium in Water by Radiochemistry", approved 2002, referenced in Section 611.720.

ASTM Method D3972-09, "Standard Test Method for Isotopic Uranium in Water by Radiochemistry", approved 2009, referenced in Section 611.720.

ASTM Method D4107-91, "Standard Test Method for Tritium in Drinking Water", approved 1991, referenced in Section 611.720.

ASTM Method D4107-98, "Standard Test Method for Tritium in Drinking Water", approved 1998, referenced in Section 611.720.

ASTM Method D4107-08, "Standard Test Method for Tritium in Drinking Water", approved 2008, referenced in Section 611.720.

ASTM Method D4327-97, "Standard Test Method for Anions in Water by Ion Chromatography", approved 1997, referenced in Section 611.611.

ASTM Method D4327-03, "Standard Test Method for Anions in Water by Ion Chromatography", approved 2003, referenced in Section 611.611.

ASTM Method D4327-11, "Standard Test Method for Anions in Water by Ion Chromatography", approved 2011, referenced in Section 611.611.

ASTM Method D4785-93, "Standard Test Method for Low-Level Iodine-131 in Water", approved 1993, referenced in Section 611.720.

ASTM Method D4785-00a, “Standard Test Method for Low-Level Iodine-131 in Water”, approved 2000, referenced in Section 611.720.

ASTM Method D4785-08, “Standard Test Method for Low-Level Iodine-131 in Water”, approved 2008, referenced in Section 611.720.

ASTM Method D5174-97, “Standard Test Method for Trace Uranium in Water by Pulsed-Laser Phosphorimetry”, approved 1997, referenced in Section 611.720.

ASTM Method D5174-02, “Standard Test Method for Trace Uranium in Water by Pulsed-Laser Phosphorimetry”, approved 2002, referenced in Section 611.720.

ASTM Method D5174-07, “Standard Test Method for Trace Uranium in Water by Pulsed-Laser Phosphorimetry”, approved 2007, referenced in Section 611.720.

ASTM Method D5317-93, “Standard Test Method for Determination of Chlorinated Organic Acid Compounds in Water by Gas Chromatography with an Electron Capture Detector”, approved 1993, referenced in Section 611.645.

ASTM Method D5317-98(2003) “Standard Test Method for Determination of Chlorinated Organic Acid Compounds in Water by Gas Chromatography with an Electron Capture Detector”, approved 1998 (reapproved 2003), referenced in Section 611.645.

ASTM Method D5673-03, “Standard Test Method for Elements in Water by Inductively Coupled Plasma-Mass Spectrometry”, approved 2003, referenced in Section 611.720.

ASTM Method D5673-05, “Standard Test Method for Elements in Water by Inductively Coupled Plasma-Mass Spectrometry”, approved 2005, referenced in Section 611.720.

ASTM Method D5673-10, “Standard Test Method for Elements in Water by Inductively Coupled Plasma-Mass Spectrometry”, approved 2010, referenced in Section 611.720.

ASTM Method D6239-09, “Standard Test Method for Uranium in Drinking Water by High-Resolution Alpha-Liquid-Scintillation

Spectrometry", approved 2009, referenced in Section 611.720.

ASTM Method D6508-00(2005) "Standard Test Method for Determination of Dissolved Inorganic Anions in Aqueous Matrices Using Capillary Ion Electrophoresis and Chromate Electrolyte", approved 2000 (revised 2005), referenced in Section 611.611.

ASTM Method D6508-15, "Standard Test Method for Determination of Dissolved Inorganic Anions in Aqueous Matrices Using Capillary Ion Electrophoresis and Chromate Electrolyte", approved 2015, referenced in Section 611.611.

ASTM Method D6581-00, "Standard Test Method for Bromate, Bromide, Chlorate, and Chlorite in Drinking Water by Chemically Suppressed Ion Chromatography", approved 2000, referenced in Section 611.381.

ASTM Method D6581-08 A and B, "Standard Test Method for Bromate, Bromide, Chlorate, and Chlorite in Drinking Water by Suppressed Ion Chromatography", "Test Method A—Chemically Suppressed Ion Chromatography" and "Test Method B—Electrolytically Suppressed Ion Chromatography", approved 2008, referenced in Section 611.381.

ASTM Method D6888-04, "Standard Test Method for Available Cyanide with Ligand Displacement and Flow Injection Analysis (FIA) Utilizing Gas Diffusion Separation and Amperometric Detection", approved 2004, referenced in Section 611.611.

ASTM Method D6919-03, "Standard Test Method for Determination of Dissolved Alkali and Alkaline Earth Cations and Ammonium in Water and Wastewater by Ion Chromatography", approved 2003, referenced in Section 611.611.

ASTM Method D6919-09, "Standard Test Method for Determination of Dissolved Alkali and Alkaline Earth Cations and Ammonium in Water and Wastewater by Ion Chromatography", approved 2009, referenced in Section 611.611.

ASTM Method D7283-17, "Standard Test Method for Alpha and Beta Activity in Water by Liquid Scintillation Counting", approved 2017, referenced in Section 611.720.

BOARD NOTE: The most recent version of ASTM methods are

available for paid download from the ASTM at www.astm.org. Note that the most recent version of an ASTM method may not be the version approved for use by USEPA and incorporated by reference in this subsection (b).

Bran + Luebbe, 1025 Busch Parkway, Buffalo Grove, IL 60089.

Technicon Methods, Method #129-71W, "Fluoride in Water and Wastewater", Industrial Method #129-71W, December 1972. See 40 CFR 141.23(k)(1), footnote 11 ~~(2014)~~, referenced in Section 611.611.

Technicon Methods, Method #380-75WE, "Fluoride in Water and Wastewater", #380-75WE, February 1976. See 40 CFR 141.23(k)(1), footnote 11 ~~(2014)~~, referenced in Section 611.611.

Charm Sciences, Inc., 659 Andover St., Lawrence, MA 01843–1032:

E*Colite Test, "Charm E*Colite Presence/Absence Test for Detection and Identification of Coliform Bacteria and Escherichia coli in Drinking Water", January 9, 1998 (referred to as "E*Colite Test"), referenced in Sections 611.802 and 611.1052 (also available from USEPA, Water Resource Center).

"Charm Fast Phage Test. Presence/Absence for Coliphage in Ground Water with Same Day Positive Prediction", version 009 (Nov. 2012), referenced in Section 611.802.

CPI International, Inc., 5580 Skylane Blvd., Santa Rosa, CA 95403 (800-878-7654/fax: 707-545-7901/Internet address: www.cpiinternational.com).

Modified Colitag™ Test, "Modified Colitag™ Test Method for Simultaneous Detection of E. coli and other Total Coliforms in Water (ATP D05-0035)", August 2009, referenced in Sections 611.802 and 611.1052. See also NEMI.

EMD Millipore (division of Merck KGgA, Darmstadt, Germany), 290 Concord Road, Billerica, MA 01821 (800-645-5476 or 781-533-6000).

Chromocult®~~®~~ Method, "Chromocult®~~®~~ Coliform Agar Presence/Absence Membrane Filter Test Method for Detection and Identification of Coliform Bacteria and Escherichia coli in Finished Waters", November 2000, Version 1.0, referenced in

Sections 611.802 and 611.1052.

Readycult~~®~~ 2007, "Readycult Coliforms 100 Presence/Absence Test for Detection and Identification of Coliform Bacteria and Escherichia coli in Finished Waters", Version 1.1, January 2007, referenced in Sections 611.802 and 611.1052.

Georgia Tech Research Institute, Robert Rosson, 925 Dalney Road, Atlanta, GA 30332 (404–407–6339).

Georgia Radium Method, "The Determination of Radium-226 and Radium-228 in Drinking Water by Gamma-ray Spectrometry Using HPGE or Ge(Li) Detectors", rev. ~~Revision~~ 1.2, December 2004, referenced in Section 611.720.

Great Lakes Instruments, Inc., 8855 North 55th Street, Milwaukee, WI 53223.

GLI Method 2, "Turbidity", Nov. 2, 1992, referenced in Section 611.531.

H&E Testing Laboratory, 221 State Street, Augusta, ME 04333 (207-287-2727).

Method ME355.01, rev. ~~Revision~~ 1, "Determination of Cyanide in Drinking Water by GC/MS Headspace Analysis", May 2009, referenced in Section 611.611. See also NEMI.

The Hach Company, P.O. Box 389, Loveland, CO 80539-0389 (800-227-4224/Internet address: www.hach.com).

Hach FilterTrak Method 10133, "Determination of Turbidity by Laser Nephelometry", January 2000, rev. ~~Revision~~ 2.0, referenced in Section 611.531.

Hach Method 8026, "Spectrophotometric Measurement of Copper in Finished Drinking Water", December 2015, rev. ~~Revision~~ 1.2, referenced in Section 611.611.

Hach Method 10241, "Spectrophotometric Measurement of Free Chlorine (Cl2) in Finished Drinking Water", November 2015, rev. ~~Revision~~ 1.2 (referred to as "Hach Method 10241"), referenced in Sections 611.381 and 611.531.

Hach Method 10258, “Determination of Turbidity by 360° Nephelometry”, January 2016, rev. ~~Revision~~ 1.0, referenced in Section 611.531.

Hach Method 10260”, Determination of Chlorinated Oxidants (Free and Total) in Water Using Disposable Planar Reagent-filled Cuvettes and Mesofluic Channel Colorimetry”, April 2013, referenced in Sections 611.381 and 611.531.

Hach Method 10261, “Total Organic Carbon in Finished Drinking Water by Catalyzed Ozone Hydroxyl Radical Oxidation Infrared Analysis”, December 2015, rev. ~~Revision~~ 1.2, referenced in Section 611.381.

Hach Method 10267, “Spectrophotometric Measurement of Total Organic Carbon (TOC) in Finished Drinking Water”, December 2015, rev. ~~Revision~~ 1.2, referenced in Section 611.381.

Hach Method 10272, “Spectrophotometric Measurement of Copper in Finished Drinking Water”, December 2015, rev. ~~Revision~~ 1.2, referenced in Section 611.611.

Hach SPADNS 2 Method 10225, “Fluoride, USEPA SPADNS 2 Method 10225”, rev. ~~revision~~ 2.0, January 2011, referenced in Section 611.611.

Hach TNTplus 835/836 Method 10206, “Hach Company TNTplus 835/836 Nitrate Method 10206—Spectrophotometric Measurement of Nitrate in Water and Wastewater”, rev. ~~revision~~ 2.0, January 2011, referenced in Section 611.611.

m-ColiBlue24 Test, “Total Coliforms and E. coli Membrane Filtration Method with m-ColiBlue24~~®~~® Broth”, Method No. 10029, rev. ~~Revision~~ 2, August 17, 1999, referenced in Sections 611.802 and 611.1052 (also available from USEPA, Water Resource Center).

Palintest Method 1001, “Method 1001: Lead in Drinking Water by Differential Pulse Anodic Stripping Voltammetry”, August 1999, referenced in Section 611.611.

IAEA. International Atomic Energy Agency, Vienna International Centre, PO Box 100, 1400 Vienna, Austria, telephone: (+43-1) 2600-0.

NBS Handbook 69, "Maximum Permissible Body Burdens and Maximum Permissible Concentrations of Radionuclides in Air and in Water for Occupational Exposure" August 1963, referenced in Sections 611.101 and 611.330. Also available from NTIS and ORAU. Internet link for document: http://www.iaea.org/inis/collection/NCLCollectionStore/_Public/37/048/37048205.pdf.

BOARD NOTE: The 1963 version of National Bureau of Standards Handbook 69 modifies the 1959 publication of the National Committee on Radiation Protection, NCRP Report No. 22, of the same title. The version available on the NCRP website is the 1959 document.

IDEXX Laboratories, Inc., One IDEXX Drive, Westbrook, Maine 04092 (800-321-0207).

SimPlate Method, "IDEXX SimPlate TM HPC Test Method for Heterotrophs in Water", November 2000, referenced in Section 611.531.

Industrial Test Systems, Inc., 1875 Langston St., Rock Hill, SC 29730 (803-329-2999).

ITS Method D99-003, rev. ~~Revision~~ 3.0, "Free Chlorine Species ($HOCl^-$ and OCl^-) by Test Strip", November 21, 2003, referenced in Section 611.381.

Lachat Instruments, 6645 W. Mill Rd., Milwaukee, WI 53218 (414–358–4200).

QuikChem Method 10-204-00-1-X, "Digestion and distillation of total cyanide in drinking and wastewaters using MICRO DIST and determination of cyanide by flow injection analysis", rev. ~~Revision~~ 2.1, November 30, 2000, referenced in Section 611.611.

Leck Mitchell, PhD, PE, 656 Independence Valley Dr., Grand Junction, CO 81507 (920-244-8661). See also NEMI.

Mitchell Method M5271, rev. 1.1, "Determination of Turbidity by Laser Nephelometry", March 2009, referenced in Section 611.531.

Mitchell Method M5331, rev. 1.1, "Determination of Turbidity by LED Nephelometry", March 2009, referenced in Section 611.531.

Mitchell Method M5331, rev. 1.2, “Determination of Turbidity by LED or Laser Nephelometry”, February 2016, referenced in Section 611.531.

NEMI. National Environmental Method Index (on-line at www.nemi.gov/home/).

AMI Turbiwell Method, “Continuous Measurement of Turbidity Using a SWAN AMI Turbiwell Turbidimeter”, August 2009, referenced in Section 611.531. See also SWAN Analytische Instrumente AG.

Dioxin and Furan Method 1613, rev. B, “Tetra- through Octa-Chlorinated Dioxins and Furans by Isotope Dilution HRGC/HRMS”, October 1994, EPA 821/B-94/005, referenced in Section 611.645. See also NTIS and USEPA, NSCEP.

Method ME355.01, rev. 1, “Determination of Cyanide in Drinking Water by GC/MS Headspace Analysis”, May 2009, referenced in Section 611.611. See also H&E Testing Laboratory.

Mitchell Method M5271, rev. 1.1, “Determination of Turbidity by Laser Nephelometry”, March 2009, referenced in Section 611.531. See also Leck Mitchell, PhD, PE.

Mitchell Method M5331, rev. 1.1, “Determination of Turbidity by LED Nephelometry”, March 2009, referenced in Section 611.531. See also Leck Mitchell, PhD, PE.

Mitchell Method M5331, rev. 1.2, “Determination of Turbidity by LED or Laser Nephelometry”, February 2016, referenced in Section 611.531. See also Leck Mitchell, PhD, PE.

Modified Colitag™ Test, “Modified Colitag™ Test Method for Simultaneous Detection of E. coli and other Total Coliforms in Water (ATP D05-0035)”, August 2009, referenced in Section 611.802. See also CPI International, Inc.

Orion Method AQ4500, “Determination of Turbidity by LED Nephelometry”, May 2009, referenced in Section 611.531. See also Thermo Scientific.

Palintest ChloroSense, “Measurement of Free and Total Chlorine in Drinking Water by Palintest ChloroSense”, September 2009,

referenced in Sections 611.381 and 611.531. See also Palintest.

Systea Easy (1-Reagent), "Systea Easy (1-Reagent) Nitrate Method", February 2009, referenced in Section 611.611. See also Systea Scientific, LLC.

USEPA Asbestos Method 100.1, "Analytical Method for Determination of Asbestos Fibers in Water", September 1983, EPA 600/4-83-043, referenced in Section 611.611. See also NTIS and USEPA, NSCEP.

USEPA Asbestos Method 100.2, "Determination of Asbestos Structures over 10-mm in Length in Drinking Water", June 1994, EPA 600/R-94-134, referenced in Section 611.611. See also NTIS and USEPA, NSCEP.

USEPA Environmental Inorganic Methods, "Methods for the Determination of Inorganic Substances in Environmental Samples", August 1993, EPA 600/R-93-100, referenced in Sections 611.381, 611.531 and 611.611. (Methods 180.1 (rev. 2.0), 300.0 (rev. 2.1), 335.4 (rev. 1.0), 353.2 (rev. 2.0), and 365.1 (rev. 2.0) only.) (Individual methods available by method number.) See also NTIS and USEPA, NSCEP.

USEPA Environmental Metals Methods, "Methods for the Determination of Metals in Environmental Samples—Supplement I", May 1994, EPA 600/R-94-111, referenced in Sections 611.600, 611.611, 611.612, and 611.720. (Methods 200.7 (rev. 4.4), 200.8 (rev. 5.3), 200.9 (rev. 2.2), and 245.1 (rev. 3.0) only.) (Individual methods available by method number.) See also NTIS and USEPA, NSCEP.

USEPA Inorganic Methods, "Methods for Chemical Analysis of Water and Wastes", March 1983, EPA 600/4-79-020, referenced in Section 611.611. (Methods 150.1, 150.2, and 245.2 only.) (Individual methods available by method number.) See also NTIS and USEPA, NSCEP.

USEPA Method 1600, "Method 1600: Enterococci in Water by Membrane Filtration Using Membrane-Enterococcus Indoxyl–b–D–Glucoside Agar (mEI)", September 2002, EPA 821/R–02/022 is an approved variation of Standard Methods, Method 9230 C, "Fecal Streptococcus and Enterococcus Groups, Membrane Filter Techniques" (which has not itself been approved for use by

USEPA) (accessible on-line and available by download from http://www.epa.gov/nerlcwww/1600sp02.pdf), referenced in Section 611.802. See also USEPA, NSCEP and USEPA, Water Resource Center.

USEPA Method 1601, "Method 1601: Male-specific (F+) and Somatic Coliphage in Water by Two-step Enrichment Procedure", April 2001, EPA 821/R–01/030 (accessible on-line and available by download from http://www.epa.gov/nerlcwww/1601ap01.pdf), referenced in Section 611.802. See also USEPA, NSCEP and USEPA, Water Resource Center.

USEPA Method 1602, "Method 1602: Male-specific (F+) and Somatic Coliphage in Water by Single Agar Layer (SAL) Procedure", April 2001, EPA 821/R–01/029 (accessible on-line and available by download from http://www.epa.gov/nerlcwww/1602ap01.pdf), referenced in Section 611.802. See also USEPA, NSCEP and USEPA, Water Resource Center.

USEPA Method 1604, "Method 1604: Total Coliforms and Escherichia coli in Water by Membrane Filtration Using a Simultaneous Detection Technique (MI Medium)", September 2002, EPA 821/R-02/024 (accessible on-line and available by download from http://www.epa.gov/nerlcwww/1604sp02.pdf), referenced in Sections 611.802 and 611.1052. See also USEPA, NSCEP and USEPA, Water Resource Center.

USEPA NERL Method 200.5, rev. 4.2, "Determination of Trace Elements in Drinking Water by Axially Viewed Inductively Coupled Plasma-Atomic Emission Spectrometry", October 2003, EPA 600/R-06/115, referenced in Sections 611.611 and 611.612. See also USEPA, ORD and USEPA, NSCEP.

USEPA NERL Method 415.3, rev. 1.2, "Determination of Total Organic Carbon and Specific UV Absorbance at 254 nm in Source Water and Drinking Water", September 2009, EPA 600/R–09/122, referenced in Section 611.381. See also USEPA, ORD and USEPA, NSCEP.

USEPA NERL Method 549.2, rev. 1.0, "Determination of Diquat and Paraquat in Drinking Water by Liquid-Solid Extraction and High Performance Liquid Chromatography with Ultraviolet Detection", June 1997, referenced in Section 611.645. See also

USEPA, ORD.

USEPA OGWDW Methods, Method 302.0, "Determination of Bromate in Drinking Water Using Two-Dimensional Ion Chromatography with Suppressed Conductivity Detection", September 2009, EPA 815/B-09/014, referenced in Sections 611.381 and 611.382. See also USEPA, OGWDW and USEPA, NSCEP.

USEPA OGWDW Methods, Method 317.0, rev. 2.0, "Determination of Inorganic Oxyhalide Disinfection By-Products in Drinking Water Using Ion Chromatography with the Addition of a Postcolumn Reagent for Trace Bromate Analysis", July 2001, EPA 815/B-01/001, referenced in Sections 611.381 and 611.382. See also USEPA, OGWDW and USEPA, NSCEP.

USEPA OGWDW Methods, Method 326.0, rev. 1.0, "Determination of Inorganic Oxyhalide Disinfection By-Products in Drinking Water Using Ion Chromatography Incorporating the Addition of a Suppressor Acidified Postcolumn Reagent for Trace Bromate Analysis", June 2002, EPA 815/R-03/007, referenced in Sections 611.381 and 611.382. See also NTIS; USEPA, OGWDW; and USEPA, NSCEP.

USEPA OGWDW Methods, Method 327.0, rev. 1.1, "Determination of Chlorine Dioxide and Chlorite Ion in Drinking Water Using Lissamine Green B and Horseradish Peroxidase with Detection by Visible Spectrophotometry", May 2005, EPA 815/R-05/008, referenced in Sections 611.381 and 611.531. See also USEPA, OGWDW and USEPA, NSCEP.

USEPA OGWDW Methods, Method 334.0, "Determination of Residual in Drinking Water Using an On-line Chlorine Analyzer", August 2009, EPA 815/B-09/013, referenced in Sections 611.381 and 611.531. See also USEPA, OGWDW and USEPA, NSCEP.

USEPA OGWDW Methods, Method 515.4, rev. 1.0, "Determination of Chlorinated Acids in Drinking Water by Liquid-Liquid Microextraction, Derivatization and Fast Gas Chromatography with Electron Capture Detection", April 2000, EPA 815/B-00/001 (document file name "met515_4.pdf"), referenced in Section 611.645. See also USEPA, OGWDW and USEPA, NSCEP.

USEPA OGWDW Methods, Method 524.3, rev. 1.0, "Measurement of Purgeable Organic Compounds in Water by Capillary Column Gas Chromatography/Mass Spectrometry", June 2009, EPA 815/B-09/009, referenced in Sections 611.381 and 611.645. See also USEPA, OGWDW; and USEPA, NSCEP.

USEPA OGWDW Methods, Method 531.2, rev. 1.0, "Measurement of N-methylcarbamoyloximes and N-methylcarbamates in Water by Direct Aqueous Injection HPLC with Postcolumn Derivatization", September 2001, EPA 815/B-01/002 (document file name "met531_2.pdf"), referenced in Section 611.645. See also USEPA, OGWDW and USEPA, NSCEP.

USEPA OGWDW Methods, Method 552.3, rev. 1.0, "Determination of Haloacetic Acids and Dalapon in Drinking Water by Liquid-Liquid Microextraction, Derivatization, and Gas Chromatography with Electron Capture Detection", July 2003, EPA 815/B-03/002, referenced in Sections 611.381 and 611.645. See also USEPA, OGWDW and USEPA, NSCEP.

USEPA OGWDW Methods, Method 557, "Determination of Haloacetic Acids, Bromate, and Dalapon in Drinking Water by Ion Chromatography Electrospray Ionization Tandem Mass Spectrometry", September 2009, EPA 815/B-09/012, referenced in Sections 611.381, 611.382, and 611.645. (Search for "815B09012".) See also USEPA, OGWDW and USEPA, NSCEP.

USEPA OGWDW Methods, Method 1622 (01), "Cryptosporidium in Water by Filtration/IMS/FA", April 2001, EPA 821/R-01/026, referenced in Section 611.1007. See also USEPA, OGWDW and USEPA, NSCEP.

USEPA OGWDW Methods, Method 1623 (01), "Method 1623: Cryptosporidium and Giardia in Water by Filtration/IMS/FA", April 2001, EPA 821/R-01/025, referenced in Section 611.1007. See also USEPA, OGWDW and USEPA, NSCEP.

USEPA Organic and Inorganic Methods, "Methods for the Determination of Organic and Inorganic Compounds in Drinking Water, Volume 1", August 2000, EPA 815/R-00/014, referenced in Sections 611.381, 611.382, 611.611, and 611.645 (Methods 300.1 (rev. 1.0), 321.8 (rev. 1.0), and 515.3 (rev. 1.0) only). (Individual methods available by method number.) See also NEMI, NTIS, and

USEPA, NSCEP.

USEPA Organic Methods, "Methods for the Determination of Organic Compounds in Drinking Water", December 1988, revised July 1991, EPA 600/4-88/039, referenced in Sections 611.645 and 611.648 (Methods 508A (rev. 1.0) and 515.1 (rev. 4.0) only); "Methods for the Determination of Organic Compounds in Drinking Water—Supplement I", July 1990, EPA 600/4-90/020, referenced in Sections 611.645 and 611.648 (Methods 547, 550, and 550.1 only); "Methods for the Determination of Organic Compounds in Drinking Water—Supplement II", August 1992, EPA 600/R-92/129, referenced in Sections 611.381 and 611.645 (Methods 548.1 (rev. 1.0), 552.1 (rev. 1.0), and 555 (rev. 1.0) only); "Methods for the Determination of Organic Compounds in Drinking Water—Supplement III", August 1995, EPA 600/R-95/131, referenced in Sections 611.381, 611.645, and 611.648 (Methods 502.2 (rev. 2.1), 504.1 (rev. 1.1), 505 (rev. 2.1), 506 (rev. 1.1), 507 (rev. 2.1), 508 (rev. 3.1), 508.1 (rev. 2.0), 515.2 (rev. 1.1), 524.2 (rev. 4.1), 525.2 (rev. 2.0), 531.1 (rev. 3.1), 551.1 (rev. 1.0), and 552.2 (rev. 1.0) only). (Individual methods available by method number.) See also NTIS; USEPA, EMSL; and USEPA, NSCEP.

USEPA Radioactivity Methods, "Prescribed Procedures for Measurement of Radioactivity in Drinking Water", August 1980, EPA 600/4-80/032, referenced in Section 611.720 (Methods 900.0, 901.1, 903.0, 903.1, and 908.0 only). (Individual methods available by method number.) See also NTIS and USEPA, NSCEP.

USEPA Radiochemistry Procedures, "Radiochemistry Procedures Manual", EPA 520/5-84/006, August 1984, Doc. No. PB84-215581, referenced in Section 611.720. (Methods 00-01, 00-02, 00-07, H-02, Ra-03, Ra-04, Ra-05, Sr-04 only.) (Individual Methods Ra-04 and Sr-04 available by method number.) See also NTIS and USEPA, NSCEP.

NSF. National Sanitation Foundation International, 3475 Plymouth Road, PO Box 130140, Ann Arbor, Michigan 48113-0140 (734-769-8010).

NSF Standard 61, section 9, November 1998, referenced in Sections 611.126 and 611.356.

NTIS. National Technical Information Service, U.S. Department of

Commerce, 5301 Shawnee Road, Alexandria, VA 22312 (703-605-6000 or 800-553-6847, www.ntis.gov).

Aqueous Radiochemical Procedures, “Procedures for Radiochemical Analysis of Nuclear Reactor Aqueous Solutions”, H.L. Krieger and S. Gold, EPA-R4-73-014, May 1973, Doc. No. PB222-154/7BA, referenced in Section 611.720. See also USEPA, EMSL and USEPA, NSCEP.

Dioxin and Furan Method 1613, rev. B, “Tetra- through Octa-Chlorinated Dioxins and Furans by Isotope Dilution HRGC/HRMS”, October 1994, rev. ~~Revision~~ B, EPA 821/B-94/005, Doc. No. 94-104774, referenced in Section 611.645. See also USEPA, NSCEP.

Kelada 01, “Kelada Automated Test Methods for Total Cyanide, Acid Dissociable Cyanide, and Thiocyanate”, rev. ~~Revision~~ 1.2, August 2001, EPA 821/B–01-009, referenced in Section 611.611.

NBS Handbook 69, “Maximum Permissible Body Burdens and Maximum Permissible Concentrations of Radionuclides in Air and in Water for Occupational Exposure”, as amended August 1963, U.S. Department of Commerce, referenced in Sections 611.101 and 611.330.

USEPA Asbestos Method 100.1, “Analytical Method for Determination of Asbestos Fibers in Water”, EPA 600/4-83-043, September 1983, Doc. No. PB83-260471, referenced in Section 611.611. See also NEMI and USEPA, NSCEP.

USEPA Asbestos Method 100.2, “Determination of Asbestos Structures over 10-mm in Length in Drinking Water”, EPA 600/R-94-134, June 1994, Doc. No. PB94-201902, referenced in Section 611.611. See also NEMI and USEPA, NSCEP.

USEPA Environmental Inorganic Methods, “Methods for the Determination of Inorganic Substances in Environmental Samples”, August 1993, EPA 600/R-93-100, Doc. No. PB94-121811, referenced in Sections 611.381, 611.531, and 611.611. (Methods 180.1 (rev. 2.0), 300.0 (rev. 2.1), 335.4 (rev. 1.0), 353.2 (rev. 2.0), and 365.1 (rev. 2.0) only.) See also NEMI and USEPA, NSCEP.

USEPA Environmental Metals Methods, “Methods for the

Determination of Metals in Environmental Samples—Supplement I", May 1994, EPA 600/R-94-111, Doc. No. PB95-125472, referenced in Sections 611.600, 611.611, 611.612, and 611.720. (Methods 200.7 (rev. 4.4), 200.8 (rev. 5.3), 200.9 (rev. 2.2), and 245.1 (rev. 3.0) only.) See also NEMI and USEPA, NSCEP.

USEPA Inorganic Methods, "Methods for Chemical Analysis of Water and Wastes", March 1983, EPA 600/4-79-020, Doc. No. PB84-128677, referenced in Section 611.611. (Methods 150.1, 150.2, and 245.2 only.) See also NEMI and USEPA, NSCEP.

USEPA Interim Radiochemical Methods, "Interim Radiochemical Methodology for Drinking Water", EPA 600/4-75-008 (revised), Doc. No. PB253258, March 1976, referenced in Section 611.720 (pages 1-3, 4-5, 6-8, 9-12, 13-15, 16-23, 24-28, 29-33, and 34-37 only). See also USEPA, EMSL and USEPA, NSCEP.

USEPA OGWDW Methods, Method 326.0, rev. ~~Revision~~ 1.0, "Determination of Inorganic Oxyhalide Disinfection By-Products in Drinking Water Using Ion Chromatography Incorporating the Addition of a Suppressor Acidified Postcolumn Reagent for Trace Bromate Analysis", June 2002, EPA 815/R-03/007, Doc. No. PB2003-107402, referenced in Sections 611.381 and 611.382. See also NEMI; USEPA, NSCEP; and USEPA, OGWDW.

USEPA Organic and Inorganic Methods, "Methods for the Determination of Organic and Inorganic Compounds in Drinking Water, Volume 1", August 2000, EPA 815/R-00/014, Doc. No. PB2000-106981, referenced in Sections 611.381, 611.362, 611.611, and 611.645. (Methods 300.1 (rev. 1.0), 321.8 (rev. 1.0), and 515.3 (rev. 1.0).) See also NEMI and USEPA, NSCEP.

USEPA Organic Methods, "Methods for the Determination of Organic Compounds in Drinking Water", December 1988 (revised July 1991), EPA 600/4-88/039, Doc. No. PB91-231480, referenced in Sections 611.645 and 611.648 (Methods 508A (rev. 1.0) and 515.1 (rev. 4.0) only); "Methods for the Determination of Organic Compounds in Drinking Water—Supplement I", July 1990, EPA 600/4-90/020, Doc. No. PB91-146027, referenced in Section 611.645 (Methods 547, 550, and 550.1 only); "Methods for the Determination of Organic Compounds in Drinking Water—Supplement II", August 1992, EPA 600/R-92/129, Doc. No. PB92-207703, referenced in Sections 611.381 and 611.645. (Methods

548.1 (rev. 1.0), 552.1 (rev. 1.0), and 555 (rev. 1.0) only); and "Methods for the Determination of Organic Compounds in Drinking Water—Supplement III", August 1995, EPA 600/R-95/131, Doc. No. PB95-261616, referenced in Sections 611.381 and 611.645 (Methods 502.2 (rev. 2.1), 504.1 (rev. 1.1), 505 (rev. 2.1), 506 (rev. 1.1), 507 (rev. 2.1), 508 (rev. 3.1), 508.1 (rev. 2.0), 515.2 (rev. 1.1), 524.2 (rev. 4.1), 525.2 (rev. 2.0), 531.1 (rev. 3.1), 551.1 (rev. 1.0), and 552.2 (rev. 1.0) only.) See also NEMI; USEPA, EMSL; and USEPA, NSCEP.

USEPA Radioactivity Methods, "Prescribed Procedures for Measurement of Radioactivity in Drinking Water", EPA 600/4-80/032, August 1980, Doc. No. PB80-224744, referenced in Section 611.720 (Methods 900.0, 901.0, 901.1, 902.0, 903.0, 903.1, 904.0, 905.0, 906.0, 908.0, 908.1 only). See also NEMI and USEPA, NSCEP.

USEPA Radiochemical Analyses, "Radiochemical Analytical Procedures for Analysis of Environmental Samples", March 1979, Doc. No. EMSL LV 053917, referenced in Section 611.720. (Pages 1-5, 19-32, 33-48, 65-73, 87-91, and 92-95 only.) Also available from USEPA, NSCEP.

USEPA Radiochemistry Procedures, "Radiochemistry Procedures Manual", EPA 520/5-84-006, August 1984, Doc. No. PB84-215581, referenced in Section 611.720. (Methods 00-01, 00-02, 00-07, H-02, Ra-03, Ra-04, Ra-05, Sr-04 only.) See also NEMI and USEPA, NSCEP.

USEPA Technical Notes, "Technical Notes on Drinking Water Methods", EPA 600/R-94/173, October 1994, Doc. No. PB95-104766, referenced in Sections 611.531, 611.611, and 611.645. See also USEPA, NSCEP.

BOARD NOTE: USEPA made the following assertion with regard to this reference at 40 CFR 141.23(k)(1) and 141.24(e) and (n)(11) ~~(2014)~~: "This document contains other analytical test procedures and approved analytical methods that remain available for compliance monitoring until July 1, 1996." Also available online at http://nepis.epa.gov/EPA/html/Pubs/pubtitleORD.htm under the document designation "600R94173".

New Jersey Department of Environment, Division of Environmental Quality, Bureau of Radiation and Inorganic Analytical Services, 9 Ewing

Street, Trenton, NJ 08625.

New Jersey Radium Method, "Determination of Radium 228 in Drinking Water", August 1990, referenced in Section 611.720.

New York Department of Health, Radiological Sciences Institute, Center for Laboratories and Research, Empire State Plaza, Albany, NY 12201.

New York Radium Method, "Determination of Ra-226 and Ra-228 (Ra-02)", January 1980, Revised June 1982, referenced in Section 611.720.

ORAU. Oak Ridge Associated Universities, MC100-44, PO Box 117, Oak Ridge, TN 37831-0117, telephone: 865-576-3146.

NBS Handbook 69, "Maximum Permissible Body Burdens and Maximum Permissible Concentrations of Radionuclides in Air and in Water for Occupational Exposure", August 1963, referenced in Sections 611.101 and 611.330. Internet link for document: www.orau.org/ptp/Library/NBS/NBS%2069.pdf. Also available from IAEA and NTIS.
BOARD NOTE: The 1963 version of National Bureau of Standards Handbook 69 modifies the 1959 publication of the National Committee on Radiation Protection, NCRP Report No. 22, of the same title. The version available on the NCRP website is the 1959 document.

Palintest, Ltd., 1455 Jamike Avenue, Suite 100, Erlanger, KY (800-835-9629).

ChlordioX Plus Test, "Chlorine Dioxide and Chlorite in Drinking Water by Amperometry using Disposable Sensors", November 2013, referenced in Sections 611.381 and 611.531.

Palintest Method 1001, "Method 1001: Lead in Drinking Water by Differential Pulse Anodic Stripping Voltammetry", August 1999, referenced in Section 611.611.

Palintest ChloroSense, "Measurement of Free and Total Chlorine in Drinking Water by Palintest ChloroSense", September 2009, referenced in Sections 611.381 and 611.531. See also NEMI.

Pathogen Detection Systems, Inc., 382 King Street, Kingston, Ontario, Canada K7K 2Y2 (844-215-7122 or www.tecta-pds.ca).

Tecta EC/TC P-A Test, ver. 1.0, "TECTA™ EC/TC medium and the TECTA™ Instrument: a Presence/Absence Method for Simultaneous Detection of Total Coliforms and Escherichia coli (E.coli) in Drinking Water", ver. 1.0, May 2014, referenced in Sections 611.802 and 611.1052.

Tecta EC/TC P-A Test, ver. 2.0, "TECTA™ EC/TC medium and the TECTA™ Instrument: a Presence/Absence Method for Simultaneous Detection of Total Coliforms and Escherichia coli (E.coli) in Drinking Water", ver. 2.0, February 2017, referenced in Sections 611.802 and 611.1052.

Standard Methods Online, available online from the Standard Methods Organization at www.standardmethods.org.

Method 3113 B-04, Metals by Electrothermal Atomic Absorption Spectrometry, Electrothermal Atomic Absorption Spectrometric Method, referenced in Sections 611.611 and 611.612.

Method 7110 D-17, Liquid Scintillation Spectroscopic Method for Gross Alpha-Beta, referenced in Section 611.802.

Method 9230 B-04, Fecal Streptococcus and Enterococcus Groups, Multiple Tube Techniques, referenced in Section 611.802.

BOARD NOTE: Where, in appendix A to subpart C of 40 CFR 141, USEPA has authorized use of an approved alternative method from Standard Methods Online, and that version of the method appears also in Standard Methods, 21st or 22nd ed., the Board cites only to Standard Methods, 21st or 22nd ed. for that method. The methods that USEPA listed as available from Standard Methods Online, and which are listed above as in Standard Methods, 21st or 22nd edition, are the following: 2320 B-97 (for alkalinity), 3112 B-09 (for mercury), 3114 B-09 (for arsenic and selenium), 4500-P E-99 and 4500-P F-99; (for orthophosphate); 4500-SO_4^{-2} C-97, 4500-SO_4^{-2} D-97, 4500-SO_4^{-2} E-97, and 4500-SO_4^{-2} F-97 (for sulfate); 6640 B-01 (for 2,4-D, 2,4,5-TP (silvex), dalapon, dinoseb, pentachlorophenol, and picloram); 5561 B-00 (for glyphosate); 7500-Ra E-07 (for radium-226 and -228); and 9223 B-97 (for E. coli). Since each method is the same version from both sources, the Board views a copy from Standard Methods Online as equivalent to a copy from Standard Methods Online, even though the Board does not also cite to Standard Methods Online. The Board intends that use of the version of the method that is incorporated by reference is acceptable from either source.

~~BOARD NOTE: Where, in appendix A to subpart C of 40 CFR 141 (2014), USEPA has authorized use of an approved alternative method from Standard Methods Online, and that version of the method appears also in Standard Methods, 21st or 22nd ed., the Board cites only to Standard Methods, 21st or 22nd ed. for that method. The methods that USEPA listed as available from Standard Methods Online, and which are listed above as in Standard Methods, 21st or 22nd edition, are the following: 2320 B-97 (for alkalinity), 3112 B-09 (for mercury), 3114 B-09 (for arsenic and selenium), 4500-P E-99 and 4500-P F-99; (for orthophosphate); 4500-SO_4^{-2} C-97, 4500-SO_4^{-2} D-97, 4500-SO_4^{-2} E-97, and 4500-SO_4^{-2} F-97 (for sulfate); 6640 B-01 (for 2,4-D, 2,4,5-TP (silvex), dalapon, dinoseb, pentachlorophenol, and picloram); 5561 B-00 (for glyphosate); and 9223 B-97 (for E. coli). Since each method is the same version from both sources, the Board views a copy from Standard Methods Online as equivalent to a copy from Standard Methods Online, even though the Board does not also cite to Standard Methods Online. The Board intends that use of the version of the method that is incorporated by reference is acceptable from either source.~~

SWAN Analytische Instrumente AG, Studbachstrasse 13, CH-8340, Hinwil, Switzerland.

AMI Turbiwell Method, "Continuous Measurement of Turbidity Using a SWAN AMI Turbiwell Turbidimeter", August 2009, referenced in Section 611.531. See also NEMI.

Superior Enzymes~~,~~ Inc., 334 Hecla Street, Lake Linden, Michigan 49945 (906-296-1115).

NECi Nitrate Reductase Method, "Method for Nitrate Reductase Nitrate-Nitrogen Analysis of Drinking Water", ver. 1.0, rev. 2.0, February 2016, referenced in Section 611.611.

Syngenta Crop Protection, Inc., 410 Swing Road, Post Office Box 18300, Greensboro, NC 27419 (336-632–6000).

Syngenta AG-625, "Atrazine in Drinking Water by Immunoassay", February 2001, referenced in Section 611.645.

Systea Scientific LLC, 900 Jorie Blvd., Suite 35, Oak Brook, IL 60523 (630-645-0600).

Systea Easy (1-Reagent), "Systea Easy (1-Reagent) Nitrate Method", February 2009, referenced in Section 611.611. See also NEMI.

Thermo-Fisher Scientific, 490 Lakewside Dr, Sunnyvale, CA 94085 (800-556-2323 or www.thermofisher.com).

Thermo-Fisher Method 557.1, "Determination of Haloacetic Acids in Drinking Water using Two-Dimensional Ion Chromatography with Suppressed Conductivity Detection," January 2017, ver. 1.0, referenced in Section 611.611.

Thermo-Fisher Scientific, 168 Third Ave, Waltham, MA 02451 (800-556-2323 or www.thermofisher.com).

Orion Method AQ4500, "Determination of Turbidity by LED Nephelometry", May 2009, referenced in Section 611.531. See also NEMI.

Technical Bulletin 601, "Standard Method of Testing for Nitrate in Drinking Water", July, 1994, PN 221890-001, referenced in Section 611.611.

Thermo-Fisher Scientific, Ratastie 2, 01620 Vantaa, Finland.

Thermo-Fisher Discrete Analyzer, "Thermo Fisher Scientific Drinking Water Orthophosphate Method for Thermo Scientific Gallery Discrete Analyzer," February 2016, rev. 5, referenced in Section 611.611.

Tintometer, Inc., 6456 Parkland Drive, Sarasota, FL 34243 (800-922-5242, 941-758-6410, or www.lovibond.us).

Lovibond PTV 1000, "Continuous Measurement of Drinking Water Turbidity Using a Lovibond PTV 1000 White Light LED Turbidimeter," December 2016. rev. 1.0, referenced in Section 611.531.

Lovibond PTV 2000, "Continuous Measurement of Drinking Water Turbidity Using a Lovibond PTV 2000 660-nm LED Turbidimeter," December 2016. rev. 1.0, referenced in Section 611.531.

Lovibond PTV 6000, "Continuous Measurement of Drinking

Water Turbidity Using a Lovibond PTV 6000 Laser Turbidimeter," December 2016. rev. 1.0, referenced in Section 611.531.

USDHS, STD. United States Department of Homeland Security, Science and Technology Directorate (formerly United States Department of Energy, Environmental Measurements Laboratory), currently available on-line in the 28th edition only, at www.hsdl.org/?abstract&doc=100185&coll=limited. See also USDOE, EML.

EML Procedures Manual (28th ed.), "EML Procedures Manual", HASL 300, 28th ed., 1997 (Methods Ga-01-R, Ra-04, Sr-01, Sr-02, U-02, and U-04 only), referenced in Section 611.720.

USDOE, EML. United States Department of Energy, Environmental Measurements Laboratory (United States Department of Homeland Security, Science and Technology Directorate, since 2003), currently available on-line in the 28th edition only, at www.wipp.energy.gov/namp/emllegacy/procman.htm. See also USDHS, STD.

EML Procedures Manual (27th ed.), "EML Procedures Manual", HASL 300, 27th Edition, Volume 1, 1990 (Methods Ga-01-R, Ra-04, Sr-01, Sr-02, U-02, and U-04 only), referenced in Section 611.720.

EML Procedures Manual (28th ed.), "EML Procedures Manual", HASL 300, 28th ed., 1997 (Methods Ga-01-R, Ra-04, Sr-01, Sr-02, U-02, and U-04 only), referenced in Section 611.720.

BOARD NOTE: Although only the 28th edition is currently available, USEPA has approved use of the methods from the 27th edition also. The Board has retained the reference to the 27th edition for the benefit of any laboratory that may be using that edition.

USEPA, EMSL. United States Environmental Protection Agency, Environmental Monitoring and Support Laboratory, Cincinnati, OH 45268 (513-569-7586).

Aqueous Radiochemical Procedures, "Procedures for Radiochemical Analysis of Nuclear Reactor Aqueous Solutions", EPA-R4-73-014, May 1973, referenced in Section 611.720. See also NTIS and USEPA, NSCEP.

USEPA Interim Radiochemical Methods, "Interim Radiochemical Methodology for Drinking Water", EPA 600/4-75/008 (revised), March 1976, referenced in Section 611.720 (pages 1-3, 4-5, 6-8, 9-12, 13-15, 16-23, 24-28, 29-33, and 34-37 only). See also NTIS and USEPA, NSCEP.

USEPA Organic Methods, "Methods for the Determination of Organic Compounds in Drinking Water", December 1988 (revised July 1991), EPA 600/4-88/039, referenced in Sections 611.645 and 611.648 (Methods 508A (rev. 1.0) and 515.1 (rev. 4.0) only); "Methods for the Determination of Organic Compounds in Drinking Water—Supplement I", July 1990, EPA 600/4-90/020, referenced in Section 611.645 (Methods 547, 550, and 550.1 only); "Methods for the Determination of Organic Compounds in Drinking Water—Supplement II", August 1992, EPA 600/R-92/129, referenced in Sections 611.381 and 611.645 (Methods 548.1 (rev. 1.0), 552.1 (rev. 1.0), and 555 (rev. 1.0) only); "Methods for the Determination of Organic Compounds in Drinking Water—Supplement III", August 1995, EPA 600/R-95/131, referenced in Sections 611.381 and 611.645 (Methods 502.2 (rev. 2.1), 504.1 (rev. 1.1), 505 (rev. 2.1), 506 (rev. 1.1), 507 (rev. 2.1), 508 (rev. 3.1), 508.1 (rev. 2.0), 515.2 (rev. 1.1), 524.2 (rev. 4.1), 525.2 (rev. 2.0), 531.1 (rev. 3.1), 551.1 (rev. 1.0), and 552.2 (rev. 1.0) only). See also NEMI; NTIS; and USEPA, NSCEP.

USEPA, NSCEP. United States Environmental Protection Agency, National Service Center for Environmental Publications, P.O. Box 42419, Cincinnati, OH 45242-0419 (except for OGWDW Method 1622 (99), accessible on-line and available by download from http://www.epa.gov/nscep/ using the search term indicated for the individual method).

Aqueous Radiochemical Procedures, "Procedures for Radiochemical Analysis of Nuclear Reactor Aqueous Solutions", EPA-R4-73-014, May 1973, referenced in Section 611.720. (Search for "R473014".) See also NTIS and USEPA, EMSL.

Dioxin and Furan Method 1613, rev. B, "Tetra- through Octa-Chlorinated Dioxins and Furans by Isotope Dilution HRGC/HRMS", October 1994, EPA 821/B-94/005, referenced in Section 611.645. (Search for "821B94005".) See also NEMI and NTIS.

Guidance Manual for Filtration and Disinfection, "Guidance Manual for Compliance with the Filtration and Disinfection Requirements for Public Water Systems Using Surface Water Sources", March 1991, EPA 570/3-91-001, referenced in Sections 611.111 and 611.212. (Search for "570391001".)

USEPA Asbestos Method 100.1, "Analytical Method for Determination of Asbestos Fibers in Water", September 1983, EPA 600/4-83-043, referenced in Section 611.611. (Search for "600483043".) See also NEMI and NTIS.

USEPA Asbestos Method 100.2, "Determination of Asbestos Structures over 10-mm in Length in Drinking Water", June 1994, EPA 600/R-94-134, referenced in Section 611.611. (Search for "600R94134".) See also NEMI and NTIS.

USEPA Environmental Inorganic Methods, "Methods for the Determination of Inorganic Substances in Environmental Samples", August 1993, EPA 600/R-93-100, referenced in Sections 611.381, 611.531, and 611.611. (Methods 180.1 (rev. 2.0), 300.0 (rev. 2.1), 335.4 (rev. 1.0), 353.2 (rev. 2.0), and 365.1 (rev. 2.0) only.) (Search for "600R93100".) See also NEMI and NTIS.

USEPA Environmental Metals Methods, "Methods for the Determination of Metals in Environmental Samples—Supplement I", May 1994, EPA 600/R-94-111, referenced in Sections 611.600, 611.611, 611.612, and 611.720. (Methods 200.7 (rev. 4.4), 200.8 (rev. 5.3), 200.9 (rev. 2.2), and 245.1 (rev. 3.0) only.) (Search for "600R94111".) See also NEMI and NTIS.

USEPA Inorganic Methods, "Methods for Chemical Analysis of Water and Wastes", March 1983, EPA 600/4-79-020, referenced in Section 611.611. (Methods 150.1, 150.2, and 245.2 only.) (Search for "600479020".) See also NEMI and NTIS.

USEPA Interim Radiochemical Methods, "Interim Radiochemical Methodology for Drinking Water", EPA 600/4-75/008 (revised), March 1976, referenced in Section 611.720 (pages 1-3, 4-5, 6-8, 9-12, 13-15, 16-23, 24-28, 29-33, and 34-37 only). (Search for "600475008".) See also NTIS and USEPA, EMSL.

USEPA Method 1600, "Method 1600: Enterococci in Water by Membrane Filtration Using Membrane-Enterococcus Indoxyl–b–D–Glucoside Agar (mEI)", September 2002, EPA 821/R–02/022 is

an approved variation of Standard Methods, Method 9230 C, "Fecal Streptococcus and Enterococcus Groups, Membrane Filter Techniques" (which has not itself been approved for use by USEPA) (accessible on-line and available by download from http://www.epa.gov/nerlcwww/1600sp02.pdf), referenced in Section 611.802. (Search for "821R02022".) See also NEMI and USEPA, Water Resource Center.

USEPA Method 1601, "Method 1601: Male-specific (F+) and Somatic Coliphage in Water by Two-step Enrichment Procedure", April 2001, EPA 821/R–01/030 (accessible on-line and available by download from http://www.epa.gov/nerlcwww/1601ap01.pdf), referenced in Section 611.802. (Search for "821R01030".) See also NEMI and USEPA, Water Resource Center.

USEPA Method 1602, "Method 1602: Male-specific (F+) and Somatic Coliphage in Water by Single Agar Layer (SAL) Procedure", April 2001, EPA 821/R–01/029 (accessible on-line and available by download from http://www.epa.gov/nerlcwww/1602ap01.pdf), referenced in Section 611.802. (Search for "821R01029".) See also NEMI and USEPA, Water Resource Center.

USEPA Method 1604, "Method 1604: Total Coliforms and Escherichia coli in Water by Membrane Filtration Using a Simultaneous Detection Technique (MI Medium)", September 2002, EPA 821/R-02/024 (accessible on-line and available by download from http://www.epa.gov/nerlcwww/1604sp02.pdf), referenced in Sections 611.802 and 611.1052. (Search for "821R02024".) See also NEMI and USEPA, Water Resource Center.

USEPA NERL Method 200.5, rev. 4.2, "Determination of Trace Elements in Drinking Water by Axially Viewed Inductively Coupled Plasma-Atomic Emission Spectrometry", October 2003, EPA 600/R-06/115, referenced in Sections 611.611 and 611.612. (Search for "600R06115".) See also NEMI and USEPA, ORD.

USEPA NERL Method 415.3, rev. 1.1, "Determination of Total Organic Carbon and Specific UV Absorbance at 254 nm in Source Water and Drinking Water", February 2005, EPA 600/R–05/055, referenced in Section 611.381. (Search for "600R05055".) See also USEPA, ORD.

USEPA NERL Method 415.3, rev. 1.2, “Determination of Total Organic Carbon and Specific UV Absorbance at 254 nm in Source Water and Drinking Water”, September 2009, EPA 600/R–09/122, referenced in Section 611.381. (Search for “600R09122”.) See also NEMI and USEPA, ORD.

USEPA NERL Method 525.3, ver. 1.0, “Determination of Total Semivolatile Organic Chemicals in Drinking Water by Solid Phase Extraction and Capillary Column Gas Chromatography/Mass Spectrometry (GC/MS)”, February 2012, EPA 600/R-12/010, referenced in Section 611.645. (Search for “600R12010”.) See also USEPA, ORD.

USEPA OGWDW Methods, Method 302.0, “Determination of Bromate in Drinking Water Using Two-Dimensional Ion Chromatography with Suppressed Conductivity Detection”, September 2009, EPA 815/B-09/014, referenced in Sections 611.381 and 611.382. (Search for “815B09014”.) See also NEMI and USEPA, OGWDW.

USEPA Method 150.3, “Determination of pH in Drinking Water”, February 2017, ver. 1.0, EPA 815/B-17/001, referenced in Sections 611.611. (Search for “815B17001”.)

USEPA OGWDW Methods, Method 317.0, rev. 2.0, “Determination of Inorganic Oxyhalide Disinfection By-Products in Drinking Water Using Ion Chromatography with the Addition of a Postcolumn Reagent for Trace Bromate Analysis”, July 2001, EPA 815/B-01/001, referenced in Sections 611.381 and 611.382. (Search for “815B01001”.) See also NEMI and USEPA, OGWDW.

USEPA OGWDW Methods, Method 326.0, rev. 1.0, “Determination of Inorganic Oxyhalide Disinfection By-Products in Drinking Water Using Ion Chromatography Incorporating the Addition of a Suppressor Acidified Postcolumn Reagent for Trace Bromate Analysis”, June 2002, EPA 815/R-03/007, referenced in Sections 611.381 and 611.382. (Search for “815R03007”.) See also NEMI, NTIS, and USEPA, OGWDW.

USEPA OGWDW Methods, Method 327.0, rev. 1.1, “Determination of Chlorine Dioxide and Chlorite Ion in Drinking Water Using Lissamine Green B and Horseradish Peroxidase with Detection by Visible Spectrophotometry”, May 2005, EPA 815/R-

05/008, referenced in Sections 611.381 and 611.531. (Search for "815R05008".) See also NEMI and USEPA, OGWDW.

USEPA OGWDW Methods, Method 334.0, "Determination of Residual in Drinking Water Using an On-line Chlorine Analyzer", September 2009, EPA 815/B-09/013, referenced in Sections 611.381 and 611.531. (Search for "815B09013".) See also NEMI and USEPA, OGWDW.

USEPA OGWDW Methods, Method 515.4, rev. 1.0, "Determination of Chlorinated Acids in Drinking Water by Liquid-Liquid Microextraction, Derivatization and Fast Gas Chromatography with Electron Capture Detection", April 2000, EPA 815/B-00/001 (document file name "met515_4.pdf"), referenced in Section 611.645. (Search for "815B00001".) See also NEMI and USEPA, OGWDW.

USEPA OGWDW Methods, Method 523, ver. 1.0, "Determination of Triazine Pesticides and Other Degradates in Drinking Water by Gas Chromatography/Mass Spectrometry (GC/MS)", February 2011, EPA 815/R-11/002, referenced in Section 611.645. (Search for "815R11002".) See also USEPA, OGWDW.

USEPA OGWDW Methods, Method 524.3, rev. 1.0, "Measurement of Purgeable Organic Compounds in Water by Capillary Column Gas Chromatography/Mass Spectrometry", June 2009, EPA 815/B-09/009, referenced in Sections 611.381 and 611.645. (Search for "815B09009".) See also NEMI and USEPA, OGWDW.

USEPA OGWDW Methods, Method 524.4, "Measurement of Purgeable Organic Compounds in Water by Gas Chromatography/ Mass Spectrometry Using Nitrogen Purge Gas", May 2013, EPA 815/R-13/002, referenced in Sections 611.381 and 611.645. (Search for "815R13002".) See also USEPA, OGWDW.

USEPA OGWDW Methods, Method 531.2, rev. 1.0, "Measurement of N-methylcarbamoyloximes and N-methylcarbamates in Water by Direct Aqueous Injection HPLC with Postcolumn Derivatization", September 2001, EPA 815/B-01/002 (document file name "met531_2.pdf"), referenced in Section 611.645. (Search for "815B01002".) See also NEMI and USEPA, OGWDW.

USEPA OGWDW Methods, Method 536, ver. 1.0, "Determination of Triazine Pesticides and Other Degradates in Drinking Water by Liquid Chromatography Electrospray Ionization Tandem Mass Spectrometry (LC/ESI-MS/MS)", October 2007, EPA 815/B-07/002, referenced in Section 611.645. (Search for "815R07002".) See also USEPA, OGWDW.

USEPA OGWDW Methods, Method 552.3, rev. 1.0, "Determination of Haloacetic Acids and Dalapon in Drinking Water by Liquid-Liquid Microextraction, Derivatization, and Gas Chromatography with Electron Capture Detection", July 2003, EPA 815/B-03/002, referenced in Sections 611.381 and 611.645. (Search for "815B03002".) See also NEMI and USEPA, OGWDW.

USEPA OGWDW Methods, Method 557, "Determination of Haloacetic Acids, Bromate, and Dalapon in Drinking Water by Ion Chromatography Electrospray Ionization Tandem Mass Spectrometry", September 2009, EPA 815/B-09/012, referenced in Sections 611.381, 611.382, and 611.645. (Search for "815B09012".) See also NEMI and USEPA, OGWDW.

USEPA OGWDW Methods, Method 1622 (01), "Cryptosporidium in Water by Filtration/IMS/FA", April 2001, EPA 821/R-01/026, referenced in Section 611.1007. (Search for "821R01026".) See also NEMI and USEPA, OGWDW.

USEPA OGWDW Methods, Method 1622 (05), "Method 1622: Cryptosporidium in Water by Filtration/IMS/FA", December 2005, EPA 815/R-05/001, referenced in Sections 611.1004 and 611.1007. (Search for "815R05001".)

USEPA OGWDW Methods, Method 1623 (99), "Method 1623: Cryptosporidium and Giardia in Water by Filtration/IMS/FA", January 1999, EPA 821/R-99/006, referenced in Section 611.1007. (Search for "821R99006".) See also USEPA, OGWDW.

USEPA OGWDW Methods, Method 1623 (01), "Method 1623: Cryptosporidium and Giardia in Water by Filtration/IMS/FA", April 2001, EPA 821/R-01/025, referenced in Section 611.1007. (Search for "821R01025".) See also NEMI and USEPA, OGWDW.

USEPA OGWDW Methods, Method 1623 (05), "Method 1623:

Cryptosporidium and Giardia in Water by Filtration/IMS/FA", December 2005, EPA 815/R-05/002, referenced in Sections 611.1004 and 611.1007. (Search for "815R05002".) See also USEPA, OGWDW.

USEPA OGWDW Methods, Method 1623.1, "Method 1623.1: Cryptosporidium and Giardia in Water by Filtration/IMS/FA", January 2012, EPA 816/R-12/001, referenced in Section 611.1004. (Search for "816R12001".) See also USEPA, OGWDW.

USEPA Organic and Inorganic Methods, "Methods for the Determination of Organic and Inorganic Compounds in Drinking Water, Volume 1", August 2000, EPA 815/R-00/014, referenced in Sections 611.362, 611.381, 611.611, and 611.645. (Methods 300.1 (rev. 1.0), 321.8 (rev. 1.0), and 515.3 (rev. 1.0) only.) (Search for "815R00014".) See also NEMI and NTIS.

USEPA Organic Methods, "Methods for the Determination of Organic Compounds in Drinking Water", December 1988, revised July 1991, EPA 600/4-88/039, referenced in Sections 611.645 and 611.648 (Methods 508A (rev. 1.0) and 515.1 (rev. 4.0) only) (Search for "600488039"); "Methods for the Determination of Organic Compounds in Drinking Water—Supplement I", July 1990, EPA 600/4-90/020, referenced in Section 611.645 (Methods 547, 550, and 550.1 only) (Search for "600490020"); "Methods for the Determination of Organic Compounds in Drinking Water—Supplement II", August 1992, EPA 600/R-92/129, referenced in Sections 611.381 and 611.645 (Methods 548.1 (rev. 1.0), 552.1 (rev. 1.0), and 555 (rev. 1.0) only) (Search for "600R92129"); "Methods for the Determination of Organic Compounds in Drinking Water—Supplement III", August 1995, EPA 600/R-95/131, referenced in Sections 611.381 and 611.645 (Methods 502.2 (rev. 2.1), 504.1 (rev. 1.1), 505 (rev. 2.1), 506 (rev. 1.1), 507 (rev. 2.1), 508 (rev. 3.1), 508.1 (rev. 2.0), 515.2 (rev. 1.1), 524.2 (rev. 4.1), 525.2 (rev. 2.0), 531.1 (rev. 3.1), 551.1 (rev. 1.0), and 552.2 (rev. 1.0) only) (Search for "600R95131"). See also NEMI; NTIS; and USEPA, EMSL.

USEPA Radioactivity Methods, "Prescribed Procedures for Measurement of Radioactivity in Drinking Water", August 1980, EPA 600/4-80/032, referenced in Section 611.720. (Methods 900.0, 901.0, 901.1, 902.0, 903.0, 903.1, 904.0, 905.0, 906.0, 908.0, 908.1 only.) (Search for "821R01026".) See also NEMI

and NTIS.

USEPA Radiochemical Analyses, "Radiochemical Analytical Procedures for Analysis of Environmental Samples", March 1979, Doc. No. EMSL LV 053917, referenced in Section 611.720. (Pages 1-5, 19-32, 33-48, 65-73, 87-91, and 92-95 only.) (Search for "EMSLLV053917".) Also available from NTIS.

USEPA Radiochemistry Procedures, "Radiochemistry Procedures Manual", EPA 520/5-84-006, August 1984, Doc. No. PB84-215581, referenced in Section 611.720. (Methods 00-01, 00-02, 00-07, H-02, Ra-03, Ra-04, Ra-05, Sr-04 only.) (Search for "520584006".) See also NEMI and NTIS.

USEPA Technical Notes, "Technical Notes on Drinking Water Methods", October 1994, EPA 600/R-94/173, referenced in Sections 611.531, 611.611, and 611.645. (Search for "821R94173".) See also NTIS.

BOARD NOTE: USEPA made the following assertion with regard to this reference at 40 CFR 141.23(k)(1) and 141.24(e) and (n)(11) ~~(2014)~~: "This document contains other analytical test procedures and approved analytical methods that remain available for compliance monitoring until July 1, 1996."

USEPA, OGWDW. United States Environmental Protection Agency, Office of Ground Water and Drinking Water (accessible on-line and available by download from www.epa.gov/dwanalyticalmethods/approved-drinking-water-analytical-methods).

USEPA OGWDW Methods, Method 302.0, "Determination of Bromate in Drinking Water Using Two-Dimensional Ion Chromatography with Suppressed Conductivity Detection", September 2009, EPA 815/B-09/014, referenced in Sections 611.381 and 611.382. See also USEPA, NSCEP.

USEPA OGWDW Methods, Method 317.0, rev. 2.0, "Determination of Inorganic Oxyhalide Disinfection By-Products in Drinking Water Using Ion Chromatography with the Addition of a Postcolumn Reagent for Trace Bromate Analysis", USEPA, July 2001, EPA 815/B-01/001, referenced in Sections 611.381 and 611.382. See also USEPA, NSCEP.

USEPA OGWDW Methods, Method 326.0, rev. 1.0,

"Determination of Inorganic Oxyhalide Disinfection By-Products in Drinking Water Using Ion Chromatography Incorporating the Addition of a Suppressor Acidified Postcolumn Reagent for Trace Bromate Analysis", USEPA, June 2002, EPA 815/R-03/007, referenced in Sections 611.381 and 611.382. See also NTIS and USEPA, NSCEP.

USEPA OGWDW Methods, Method 327.0, rev. 1.1, "Determination of Chlorine Dioxide and Chlorite Ion in Drinking Water Using Lissamine Green B and Horseradish Peroxidase with Detection by Visible Spectrophotometry", USEPA, May 2005, EPA 815/R-05/008, referenced in Sections 611.381 and 611.531. See also USEPA, NSCEP.

USEPA OGWDW Methods, Method 334.0, "Determination of Residual in Drinking Water Using an On-line Chlorine Analyzer", USEPA, August 2009, EPA 815/B-09/013, referenced in Sections 611.381 and 611.531. See also USEPA, NSCEP.

USEPA OGWDW Methods, Method 515.4, rev. 1.0, "Determination of Chlorinated Acids in Drinking Water by Liquid-Liquid Microextraction, Derivatization and Fast Gas Chromatography with Electron Capture Detection", April 2000, EPA 815/B-00/001 (document file name "met515_4.pdf"), referenced in Section 611.645. See also NEMI and USEPA, NSCEP.

USEPA OGWDW Methods, Method 523, ver. 1.0, "Determination of Triazine Pesticides and Other Degradates in Drinking Water by Gas Chromatography/Mass Spectrometry (GC/MS)", June 2009, EPA 815/B-09/009, referenced in Section 611.645. See also NEMI and USEPA, NSCEP.

USEPA OGWDW Methods, Method 524.3, rev. 1.0, "Measurement of Purgeable Organic Compounds in Water by Capillary Column Gas Chromatography/Mass Spectrometry", June 2009, EPA 815/B-09/009, referenced in Sections 611.381 and 611.645. See also NEMI and USEPA, NSCEP.

USEPA OGWDW Methods, Method 524.4, "Measurement of Purgeable Organic Compounds in Water by Gas Chromatography/ Mass Spectrometry Using Nitrogen Purge Gas", May 2013, EPA 815/R-13/002, referenced in Sections 611.381 and 611.645. See also USEPA, NSCEP.

USEPA OGWDW Methods, Method 531.2, rev. 1.0, "Measurement of N-methylcarbamoyloximes and N-methylcarbamates in Water by Direct Aqueous Injection HPLC with Postcolumn Derivatization", September 2001, EPA 815/B-01/002 (document file name "met531_2.pdf"), referenced in Section 611.645. See also NEMI and USEPA, NSCEP.

USEPA OGWDW Methods, Method 536, ver. 1.0, "Determination of Triazine Pesticides and Other Degradates in Drinking Water by Liquid Chromatography Electrospray Ionization Tandem Mass Spectrometry (LC/ESI-MS/MS)", October 2007, EPA 815/B-07/002, referenced in Section 611.645. See also USEPA, NSCEP.

USEPA OGWDW Methods, Method 552.3, rev. 1.0, "Determination of Haloacetic Acids and Dalapon in Drinking Water by Liquid-liquid Microextraction, Derivatization, and Gas Chromatography with Electron Capture Detection", USEPA, July 2003, EPA 815/B-03/002, referenced in Sections 611.381 and 611.645.

USEPA OGWDW Methods, Method 557, "Determination of Haloacetic Acids, Bromate, and Dalapon in Drinking Water by Ion Chromatography Electrospray Ionization Tandem Mass Spectrometry", September 2009, EPA 815-B-09-012, referenced in Sections 611.381, 611.382, and 611.645. See also USEPA, NSCEP.

USEPA OGWDW Methods, Method 1622 (05), "Method 1622: Cryptosporidium in Water by Filtration/IMS/FA", December 2005, EPA 815/R-05/001, referenced in Sections 611.1004 and 611.1007. See also USEPA, NSCEP.

USEPA OGWDW Methods, Method 1622 (01), "Method 1622: Cryptosporidium in Water by Filtration/IMS/FA", April 2001, EPA 821/R-01/026, referenced in Section 611.1007. See also USEPA, NSCEP.

USEPA OGWDW Methods, Method 1622 (99), "Method 1622: Cryptosporidium in Water by Filtration/IMS/FA", April 1999, EPA 821/R-99/001, referenced in Section 611.1007.

USEPA OGWDW Methods, Method 1623 (05), "Method 1623: Cryptosporidium and Giardia in Water by Filtration/IMS/FA", December 2005, EPA 815/R-05/002, referenced in Sections

611.1004 and 611.1007. See also USEPA, NSCEP.

USEPA OGWDW Methods, Method 1623 (01), "Method 1623: Cryptosporidium and Giardia in Water by Filtration/IMS/FA", April 2001, EPA 821/R-01/025, referenced in Section 611.1007. See also USEPA, NSCEP.

USEPA OGWDW Methods, Method 1623 (99), "Method 1623: Cryptosporidium and Giardia in Water by Filtration/IMS/FA", January 1999, EPA 821/R-99/006, referenced in Section 611.1007. See also USEPA, NSCEP.

USEPA OGWDW Methods, Method 1623.1, "Method 1623.1: Cryptosporidium and Giardia in Water by Filtration/IMS/FA", January 2012, EPA 816/R-12/001, referenced in Section 611.1004. See also USEPA, NSCEP.

BOARD NOTE: Many of the above-listed documents available from the USEPA, Office of Ground Water and Drinking Water are also listed as available from USEPA, NSCEP and NTIS.

USEPA, ORD. USEPA, Office of Research and Development, National Exposure Research Laboratory, Microbiological & Chemical Exposure Assessment Research Division (accessible on-line and available by download from www.epa.gov/water-research/epa-drinking-water-researchmethods, with the exception of USEPA NERL Method 549.2, rev. 1.0).

USEPA NERL Method 200.5, rev. 4.2, "Determination of Trace Elements in Drinking Water by Axially Viewed Inductively Coupled Plasma-Atomic Emission Spectrometry", October 2003, EPA 600/R-06/115, referenced in Sections 611.611 and 611.612. See also USEPA, NSCEP.

USEPA NERL Method 415.3, rev. 1.1, "Determination of Total Organic Carbon and Specific UV Absorbance at 254 nm in Source Water and Drinking Water", February 2005, EPA 600/R–05/055, referenced in Section 611.381. See also USEPA, NSCEP.

USEPA NERL Method 415.3, rev. 1.2, "Determination of Total Organic Carbon and Specific UV Absorbance at 254 nm in Source Water and Drinking Water", September 2009, EPA 600/R–09/122, referenced in Section 611.381. See also NEMI and USEPA, NSCEP.

USEPA NERL Method 525.3, ver. 1.0, "Determination of Total Semivolatile Organic Chemicals in Drinking Water by Solid Phase Extraction and Capillary Column Gas Chromatography/Mass Spectrometry (GC/MS)", February 2012, EPA 600/R-12/010, referenced in Section 611.645. See also USEPA, NSCEP.

USEPA NERL Method 549.2, rev. 1.0, "Determination of Diquat and Paraquat in Drinking Water by Liquid-Solid Extraction and High Performance Liquid Chromatography with Ultraviolet Detection", June 1997, referenced in Section 611.645. See also NEMI.

USEPA, Water Resource Center (RC-4100T), 1200 Pennsylvania Avenue, NW, Washington, DC 20460:

E*Colite Test, "Charm E*Colite Presence/Absence Test for Detection and Identification of Coliform Bacteria and Escherichia coli in Drinking Water", January 9, 1998, referenced in Sections 611.802 and 611.1052. See also Charm Sciences, Inc.

m-ColiBlue24 Test, "Total Coliforms and E. coli Membrane Filtration Method with m-ColiBlue24®® Broth", Method No. 10029, rev. 2, August 17, 1999, referenced in Sections 611.802 and 611.1052. See also The Hach Company.

USEPA Method 1600, "Method 1600: Enterococci in Water by Membrane Filtration Using Membrane-Enterococcus Indoxyl–b–D–Glucoside Agar (mEI)", September 2002, EPA 821/R–02/022 is an approved variation of Standard Methods, Method 9230 C, "Fecal Streptococcus and Enterococcus Groups, Membrane Filter Techniques" (which has not itself been approved for use by USEPA) (accessible on-line and available by download from http://www.epa.gov/nerlcwww/1600sp02.pdf), referenced in Section 611.802. See also USEPA, NSCEP.

USEPA Method 1601, "Method 1601: Male-specific (F^+) and Somatic Coliphage in Water by Two-step Enrichment Procedure", April 2001, EPA 821/R–01/030 (accessible on-line and available by download from http://www.epa.gov/nerlcwww/1601ap01.pdf), referenced in Section 611.802. See also USEPA, NSCEP.

USEPA Method 1602, "Method 1602: Male-specific (F^+) and Somatic Coliphage in Water by Single Agar Layer (SAL) Procedure", April 2001, EPA 821/R–01/029 (accessible on-line

and available by download from http://www.epa.gov/nerlcwww/1602ap01.pdf), referenced in Section 611.802. See also USEPA, NSCEP.

USEPA Method 1604, "Method 1604: Total Coliforms and *Escherichia coli* in Water by Membrane Filtration Using a Simultaneous Detection Technique (MI Medium)", September 2002, EPA 821/R-02/024 (accessible on-line and available by download from http://www.epa.gov/nerlcwww/1604sp02.pdf), referenced in Sections 611.802 and 611.1052. See also USEPA, NSCEP.

USGS. United States Geological Survey, Federal Center, Box 25286, Denver, CO 80225-0425.

Open File Report 93-125, method available upon request by method number from "Methods for Analysis by the U.S. Geological Survey National Water Quality Laboratory—Determination of Inorganic and Organic Constituents in Water and Fluvial Sediments", 1993. Available on-line as a digital document at https://pubs.usgs.gov/of/1993/0125/report.pdf.

USGS Method I-2601-90, "Phosphorus, orthophosphate, colorimetry, phosphomolybdate, automated segment-flow," referenced in Section 611.611.

USGS Techniques of Water-Resource Investigation: 05-A1, methods available upon request by method number from Book 5, Chapter A-1, "Methods for Determination of Inorganic Substances in Water and Fluvial Sediments", 3rd ed., 1989. Available on-line as a digital document at https://pubs.usgs.gov/twri/twri5-a1/pdf/TWRI_5-A1.pdf.

USGS Method I-1030-85, "Alkalinity, electrometric titration", I-1030-85, referenced in Section 611.611.

USGS Method I-1601-85, "Phosphorus, orthophosphate, colorimetric, phosphomolybdate", I-1601-85, referenced in Section 611.611.

USGS Method I-1700-85, "Silica, colorimetric, molybdate blue", I-1700-85, referenced in Section 611.611.

USGS Method I-2598-85, "Phosphorus, orthophosphate,

colorimetric, phosphomolybdate, automated-discrete", I-2598-85, referenced in Section 611.611.

USGS Method I-2700-85, "Silica, colorimetric, molybdate blue, automated-segmented flow", I-2700-85, referenced in Section 611.611.

USGS Method I-3300-85, "Cyanide, colorimetric, pyridine-pyrazolone", I-3300-85, referenced in Section 611.611.

USGS Techniques of Water-Resource Investigation: 05-A5, methods available upon request by method number from Book 5, Chapter A-5, "Methods for Determination of Radioactive Substances in Water and Fluvial Sediments", 1977. Available on-line as a digital document at https://pubs.usgs.gov/twri/twri5a5/pdf/TWRI_5-A5.pdf.

USGS Method R-1110-76, "Cesium-137 and cesium-134, dissolved. Inorganic ion-exchange method—gamma counting", R-1110-76, referenced in Section 611.720.

USGS Method R-1111-76, "Radiocesium, dissolved, as cesium-137. Inorganic ion-exchange method—beta counting". R-1111-76, referenced in Section 611.720.

USGS Method R-1120-76, "Gross alpha and beta radioactivity, dissolved and suspended", R-1120-76, referenced in Section 611.720.

USGS Method R-1140-76, "Radium, dissolved, as radium-226. Precipitation method", R-1140-76, referenced in Section 611.720.

USGS Method R-1141-76, "Radium-226, dissolved. Radon emanation method", R-1141-76, referenced in Section 611.720.

USGS Method R-1142-76, "Radium-228, dissolved. Determination by separation and counting of actinium-228", R-1142-76, referenced in Section 611.720.

USGS Method R-1160-76, "Strontium-90, dissolved. Chemical separation and precipitation method", R-1160-76, referenced in Section 611.720.

USGS Method R-1171-76, "Tritium. Liquid scintillation, Denver lab method—gamma counting", R-1171-76, referenced in Section 611.720.

USGS Method R-1180-76, "Uranium, dissolved. Fluorometric method—direct", R-1180-76, referenced in Section 611.720.

USGS Method R-1181-76, "Uranium, dissolved. Fluorometric method—extraction procedure", R-1181-76, referenced in Section 611.720.

USGS Method R-1182-76, "Uranium, dissolved, isotopic ratios. Alpha spectrometry—chemical separation", R-1182-76, referenced in Section 611.720.

BOARD NOTE: USGS methods are freely available for download in an electronic format from the USGS Publications Warehouse, at pubs.er.usgs.gov/. Sections 611.611 and 611.720 do not distinguish the volume in which each USGS method appears. The distinction as to which volume where a particular method appears is made in this incorporation by reference.

~~Veolia Water Solutions and Technologies, Suite 4697, Biosciences Complex, 116 Barrie Street, Kingston, Ontario, Canada K7L 3N6.~~

~~Tecta EC/TC P-A Test, "TECTA™ EC/TC medium and the TECTA™ Instrument: a Presence/Absence Method for Simultaneous Detection of Total Coliforms and Escherichia coli (E.coli) in Drinking Water", April 2014, referenced in Sections 611.802 and 611.1052.~~

Waters Corporation, Technical Services Division, 34 Maple St., Milford, MA 01757 (800-252-4752 or 508-478-2000, www.waters.com).

Waters Method B-1011, "Waters Test Method for Determination of Nitrite/Nitrate in Water Using Single Column Ion Chromatography", Method B-1011, August 1987, referenced in Section 611.611.

c) The Board incorporates the following federal regulations by reference:

40 CFR 3.3 (2017) ~~(2016)~~ (What Definitions Are Applicable to This Part?), referenced in Section 611.105.

40 CFR 3.10 (2017) ~~(2016)~~ (What Are the Requirements for Electronic Reporting to EPA?), referenced in Section 611.105.

40 CFR 3.2000 (2017) ~~(2016)~~ (What Are the Requirements Authorized State, Tribe, and Local Programs' Reporting Systems Must Meet?), referenced in Section 611.105.

40 CFR 136.3(a) (2017) ~~(2016)~~, referenced in Section 611.1004.

Appendix B to 40 CFR 136 (2017) ~~(2016)~~, referenced in Sections 611.359, 611.609, and 611.646.

40 CFR 142.20(b)(1) (2017) ~~(2016)~~, referenced in Section 611.112.

Subpart G of 40 CFR 142 (2017) ~~(2016)~~, referenced in Section 611.113.

d) This Part incorporates no later amendments or editions.

(Source: Amended 43 Ill. Reg. _____, effective _____)

SUBPART I: DISINFECTANT RESIDUALS, DISINFECTION BYPRODUCTS, AND DISINFECTION BYPRODUCT PRECURSORS

Section 611.381 Analytical Requirements

a) A supplier must use only the analytical methods specified in this Section, each of which is incorporated by reference in Section 611.102, or alternative methods approved by the Agency pursuant to Section 611.480 to demonstrate compliance with the requirements of this Subpart I and with the requirements of Subparts W and Y.

b) Disinfection byproducts (DBPs).

1) A supplier must measure disinfection byproducts (DBPs) by the appropriate of the following methods:

A) TTHM:

i) By purge and trap, gas chromatography, electrolytic conductivity detector, and photoionization detector: USEPA Organic Methods, Method 502.2 (rev. 2.1). If TTHMs are the only analytes being measured in the sample, then a photoionization detector is not required.

ii) By purge and trap, gas chromatography-mass spectrometer:

USEPA Organic Methods, Method 524.2 (rev. 4.1).

iii) By liquid-liquid extraction, gas chromatography, electron capture detector: USEPA Organic Methods, Method 551.1 (rev. 1.0).

iv) By purge and trap, gas chromatography-mass spectrometry: USEPA OGWDW Methods, Method 524.3 (rev. 1.0) and 524.4.

BOARD NOTE: USEPA added USEPA OGWDW Methods, Method 524.3 (rev. 1.0) as an approved alternative method on August 3, 2009 (at 74 Fed. Reg. 38348). USEPA added USEPA OGWDW Methods, Method 524.4 as approved alternative methods on May 31, 2013 (at 78 Fed. Reg. 32558).

B) HAA5:

i) By liquid-liquid extraction (diazomethane), gas chromatography, electron capture detector: Standard Methods, 19th, 20th, 21st, or 22nd ed., Method 6251 B.

ii) By solid phase extractor (acidic methanol), gas chromatography, electron capture detector: USEPA Organic Methods, Method 552.1 (rev. 1.0).

iii) By liquid-liquid extraction (acidic methanol), gas chromatography, electron capture detector: USEPA Organic Methods, Method 552.2 (rev. 1.0) or USEPA OGWDW Methods, Method 552.3 (rev. 1.0).

iv) By ion chromatography, electrospray ionization, tandem mass spectrometry: USEPA OGWDW Methods, Method 557.

v) Two-dimensional ion chromatography (IC) with suppressed conductivity detection: Thermo-Fisher Method 557.1.

BOARD NOTE: USEPA added Standard Methods, 21st ed., Method 6251 B as an approved alternative method on June 3, 2008 (at 73 Fed. Reg. 31616). USEPA added USEPA OGWDW Methods, Method 557 as an approved alternative method on November 10, 2009 (at 74 Fed. Reg. 57908). USEPA added Standard Methods, 22nd ed., Method 6251 B as an approved

alternative method on May 31, 2013 (at 78 Fed. Reg. 32558). USEPA added Standard Methods Online, Method 6251 B-07 as an approved alternative method on June 19, 2014 (at 79 Fed. Reg. 35081). USEPA added Thermo-Fisher Method 557.1 as an approved alternative method on July 27, 2017 (at 82 Fed. Reg. 34861). Because Standard Methods, 22nd ed., Method 6251 B is the same version as Standard Methods Online, Method 6251 B-07, the Board has not listed the Standard Methods Online versions separately.

C) Bromate:

i) By ion chromatography: USEPA Organic and Inorganic Methods, Method 300.1 (rev. 1.0) or ASTM Method D6581-00.

ii) By ion chromatography and post-column reaction: USEPA OGWDW Methods, Method 317.0 (rev. 2.0) or 326.0 (rev. 1.0).

iii) By inductively coupled plasma-mass spectrometer: USEPA Organic and Inorganic Methods, Method 321.8 (rev. 1.0).

iv) By two-dimensional ion chromatography: USEPA OGWDW Methods, Method 302.0.

v) By ion chromatography, electrospray ionization, tandem mass spectrometry: USEPA OGWDW Methods, Method 557.

vi) By chemically suppressed chromatography: ASTM Method D6581-08 A.

vii) By electrolytically suppressed chromatography: ASTM Method D6581-08 B.

BOARD NOTE: Ion chromatography and post column reaction or inductively coupled plasma-mass spectrometry must be used for monitoring of bromate for purposes of demonstrating eligibility of reduced monitoring, as prescribed in Section 611.382(b)(3)(B). For inductively coupled plasma-mass spectrometry, samples must be preserved at the time of sampling with 50 mg ethylenediamine (EDA) per liter of sample, and the samples must be analyzed

within 28 days.

BOARD NOTE: USEPA added USEPA OGWDW Methods, Methods 302.0 and 557 and ASTM Methods D6581-08 A and B as approved alternative methods on November 10, 2009 (at 74 Fed. Reg. 57908).

D) Chlorite:

i) By amperometric titration for daily monitoring pursuant to Section 611.382(b)(2)(A)(i): Standard Methods, 19th, 21st, or 22nd ed., Method 4500-ClO_2 E.

ii) By amperometric sensor for daily monitoring pursuant to Section 611.382(b)(2)(A)(i): ChlordioX Plus Test.

iii) By spectrophotometry: USEPA OGWDW Methods, Method 327.0 (rev. 1.1).

iv) By ion chromatography: USEPA Environmental Inorganic Methods, Method 300.0 (rev. 2.1); USEPA Organic and Inorganic Methods, Method 300.1 (rev. 1.0); USEPA OGWDW Methods, Method 317.0 (rev. 2.0), or 326.0 (rev. 1.0); or ASTM Method D6581-00.

v) By chemically suppressed chromatography: ASTM Method D6581-08 A.

vi) By electrolytically suppressed chromatography: ASTM Method D6581-08 B.

BOARD NOTE: USEPA added Standard Methods, 21st ed., Method 4500-ClO_2 E as an approved alternative method on June 3, 2008 (at 73 Fed. Reg. 31616). USEPA added ASTM Methods D6581-08 A and B as approved alternative methods on November 10, 2009 (at 74 Fed. Reg. 57908). USEPA added Standard Methods, 22nd ed., Method 4500-ClO_2 E as an approved alternative method on June 21, 2013 (at 78 Fed. Reg. 37463). USEPA added ChlordioX Plus Test as an approved alternative method on June 19, 2014 (at 79 Fed. Reg. 35081).

BOARD NOTE: Amperometric titration or spectrophotometry may be used for routine daily monitoring of chlorite at the entrance to the distribution system, as prescribed in Section

611.382(b)(2)(A)(i). Ion chromatography must be used for routine monthly monitoring of chlorite and additional monitoring of chlorite in the distribution system, as prescribed in Section 611.382(b)(2)(A)(ii) and (b)(2)(B).

2) Analyses under this Section for DBPs must be conducted by a certified laboratory in one of the categories listed in Section 611.490(a) except as specified under subsection (b)(3). To receive certification to conduct analyses for the DBP contaminants listed in Sections 611.312 and 611.381 and Subparts W and Y, the laboratory must fulfill the requirements of subsections (b)(2)(A), (b)(2)(C), and (b)(2)(D).

A) The laboratory must analyze performance evaluation (PE) samples that are acceptable to USEPA or the Agency at least once during each consecutive 12-month period by each method for which the laboratory desires certification.

B) This subsection corresponds with 40 CFR 141.131(b)(2)(ii), which has expired by its own terms. This statement maintains structural consistency with the corresponding federal rule.

C) The laboratory must achieve quantitative results on the PE sample analyses that are within the acceptance limits set forth in subsections (b)(2)(C)(i) through (b)(2)(B)(xi), subject to the conditions of subsections (b)(2)(C)(xii) and (b)(2)(C)(xiii):

i) Chloroform (a THM): ±20% of true value;

ii) Bromodichloromethane (a THM): ±20% of true value;

iii) Dibromochloromethane (a THM): ±20% of true value;

iv) Bromoform (a THM): ±20% of true value;

v) Monochloroacetic Acid (an HAA5): ±40% of true value;

vi) Dichloroacetic Acid (an HAA5): ±40% of true value;

vii) Trichloroacetic Acid (an HAA5): ±40% of true value;

viii) Monobromoacetic Acid (an HAA5): ±40% of true value;

ix) Dibromoacetic Acid (an HAA5): ±40% of true value;

x) Chlorite: ±30% of true value; and

xi) Bromate: ±30% of true value.

xii) The laboratory must meet all four of the individual THM acceptance limits set forth in subsections (b)(2)(B)(i) through (b)(2)(B)(iv) in order to successfully pass a PE sample for TTHM.

xiii) The laboratory must meet the acceptance limits for four out of the five HAA5 compounds set forth in subsections (b)(2)(B)(v) through (b)(2)(B)(ix) in order to successfully pass a PE sample for HAA5.

D) The laboratory must report quantitative data for concentrations at least as low as the minimum reporting levels (MRLs) listed in subsections (b)(2)(D)(i) through (b)(2)(D)(xi), subject to the limitations of subsections (b)(2)(D)(xii) and (b)(2)(D)(xiii), for all DBP samples analyzed for compliance with Sections 611.312 and 611.385 and Subparts W and Y:

i) Chloroform (a THM): 0.0010 mg/ℓ;

ii) Bromodichloromethane (a THM): 0.0010 mg/ℓ;

iii) Dibromochloromethane (a THM): 0.0010 mg/ℓ;

iv) Bromoform (a THM): 0.0010 mg/ℓ;

v) Monochloroacetic Acid (an HAA5): 0.0020 mg/ℓ;

vi) Dichloroacetic Acid (an HAA5): 0.0010 mg/ℓ;

vii) Trichloroacetic Acid (an HAA5): 0.0010 mg/ℓ;

viii) Monobromoacetic Acid (an HAA5): 0.0010 mg/ℓ;

ix) Dibromoacetic Acid (an HAA5): 0.0010 mg/ℓ;

x) Chlorite: 0.020 mg/ℓ, applicable to monitoring as required by Section 611.382(b)(2)(A)(ii) and (b)(2)(B); and

xi) Bromate: 0.0050, or 0.0010 mg/ℓ if the laboratory uses USEPA OGWDW Methods, Method 317.0 or 326.0 or USEPA Organic and Inorganic Methods, Method 321.8.

xii) The calibration curve must encompass the regulatory MRL

concentration. Data may be reported for concentrations lower than the regulatory MRL as long as the precision and accuracy criteria are met by analyzing an MRL check standard at the lowest reporting limit chosen by the laboratory. The laboratory must verify the accuracy of the calibration curve at the MRL concentration by analyzing an MRL check standard with a concentration less than or equal to 110% of the MRL with each batch of samples. The measured concentration for the MRL check standard must be ±50% of the expected value, if any field sample in the batch has a concentration less than five times the regulatory MRL. Method requirements to analyze higher concentration check standards and meet tighter acceptance criteria for them must be met in addition to the MRL check standard requirement.

xiii) When adding the individual trihalomethane or haloacetic acid concentrations, for the compounds listed in subsections (b)(2)(D)(v) through (b)(2)(D)(ix), to calculate the TTHM or HAA5 concentrations, respectively, a zero is used for any analytical result that is less than the MRL concentration for that DBP, unless otherwise specified by the Agency.

3) A party approved by USEPA or the Agency must measure daily chlorite samples at the entrance to the distribution system.

c) Disinfectant residuals.

1) A supplier must measure residual disinfectant concentrations for free chlorine, combined chlorine (chloramines), and chlorine dioxide by the appropriate of the methods listed in subsections (c)(1)(A) through (c)(1)(D), subject to the provisions of subsection (c)(1)(E):

A) Free Chlorine:

i) Amperometric titration: Standard Methods, 19th, 20th, 21st, or 22nd ed., Method 4500-Cl D, or ASTM Method D1253-86, D1253-96, D1253-03, D1253-08, or D1253-14;

ii) DPD ferrous titration: Standard Methods, 19th, 20th, 21st, or 22nd ed., Method 4500-Cl F;

iii) DPD colorimetric: Standard Methods, 19th, 20th, 21st, or

22nd ed., Method 4500-Cl G or Hach Method 10260;

iv) Syringaldazine (FACTS): Standard Methods, 19th, 20th, 21st, or 22nd ed., Method 4500-Cl H;

v) Test strips: ITS Method D99-003 if approved by the Agency pursuant to subsection (c)(2);

vi) Amperometric sensor: Palintest ChloroSense;

vii) On-line chlorine analyzer: USEPA OGWDW Methods, Method 334.0; or

viii) Indenophenol colorimetric: Hach Method 10241.

BOARD NOTE: USEPA added Standard Methods, 21st ed., Methods 4500-Cl D, F, G, and H as approved alternative methods on June 3, 2008 (at 73 Fed. Reg. 31616). USEPA added ASTM Method D1253-08, USEPA OGWDW Methods, Method 334.0, and Palintest ChloroSense as approved alternative methods on November 10, 2009 (at 74 Fed. Reg. 57908). USEPA added Standard Methods, 22nd ed., Methods 4500-Cl D, F, G, and H as approved alternative methods on June 21, 2013 (at 78 Fed. Reg. 37463). USEPA added Hach Method 10260 as an approved alternative method on June 19, 2014 (at 79 Fed. Reg. 35081). USEPA added ASTM Method D1253-14 and Hach Method 10241 as approved alternative methods on July 19, 2016 (at 81 Fed. Reg. 46839).

B) Combined Chlorine:

i) Amperometric titration: Standard Methods, 19th, 20th, 21st, or 22nd ed., Method 4500-Cl D, or ASTM Method D1253-86, D1253-96, D1253-03, D1253-08, or D1253-14;

ii) DPD ferrous titration: Standard Methods, 19th, 20th, 21st, or 22nd ed., Method 4500-Cl F; or

iii) DPD colorimetric: Standard Methods, 19th, 20th, 21st, or 22nd ed., Method 4500-Cl G or Hach Method 10260.

BOARD NOTE: USEPA added Standard Methods, Methods 4500-Cl D, F, and G as approved alternative methods on June 3, 2008 (at 73 Fed. Reg. 31616). USEPA added ASTM Method

D1253-08 as an approved alternative method on November 10, 2009 (at 74 Fed. Reg. 57908). USEPA added Standard Methods, 22nd ed., Methods 4500-Cl D, F, and G as approved alternative methods on June 21, 2013 (at 78 Fed. Reg. 37463). USEPA added Hach Method 10260 as an approved alternative method on June 19, 2014 (at 79 Fed. Reg. 35081). USEPA added ASTM Method D1253-14 as an approved alternative method on July 19, 2016 (at 81 Fed. Reg. 46839).

C) Total Chlorine:

i) Amperometric titration: Standard Methods, 19th, 20th, 21st, or 22nd ed., Method 4500-Cl D, or ASTM Method D1253-86, D1253-96, D1253-03, D1253-08, or D1253-14;

ii) Low-level amperometric titration: Standard Methods, 19th, 20th, 21st, or 22nd ed., Method 4500-Cl E;

iii) DPD ferrous titration: Standard Methods, 19th, 20th, 21st, or 22nd ed., Method 4500-Cl F;

iv) DPD colorimetric: Standard Methods, 19th, 20th, 21st, or 22nd ed., Method 4500-Cl G or Hach Method 10260;

v) Iodometric electrode: Standard Methods, 19th, 20th, 21st, or 22nd ed., Method 4500-Cl I;

vi) Amperometric sensor: Palintest ChloroSense; or

vii) On-line chlorine analyzer: USEPA OGWDW Methods, Method 334.0.

BOARD NOTE: USEPA added Standard Methods, Methods 4500-Cl D, E, F, G, and I as approved alternative methods on June 3, 2008 (at 73 Fed. Reg. 31616). USEPA added ASTM Method D1253-08, USEPA OGWDW Methods, Method 334.0, and Palintest ChloroSense as approved alternative methods on November 10, 2009 (at 74 Fed. Reg. 57908). USEPA added Standard Methods, 22nd ed., Methods 4500-Cl D, E, F, G, and I as approved alternative methods on June 21, 2013 (at 78 Fed. Reg. 37463). USEPA added Hach Method 10260 as an approved alternative method on June 19, 2014 (at 79 Fed. Reg. 35081). USEPA added ASTM Method D1253-14 as an approved alternative method on July 19, 2016 (at 81 Fed. Reg. 46839).

D) Chlorine Dioxide:

i) DPD: Standard Methods, 19th, 20th, or 21st ed., Method 4500-ClO_2 D;

ii) Amperometric Method II: Standard Methods, 19th, 20th, 21st, or 22nd ed., Method 4500-ClO_2 E;

iii) Amperometric sensor: ChlordioX Plus Test; or

iv) Lissamine Green spectrophotometric: USEPA OGWDW Method 327.0 (rev. 1.1).

BOARD NOTE: USEPA added Standard Methods, 21st ed., Methods 4500-ClO_2 D and E as approved alternative methods on June 3, 2008 (at 73 Fed. Reg. 31616). USEPA added Standard Methods, 22nd ed., Method 4500-ClO_2 E as an approved alternative method on June 21, 2013 (at 78 Fed. Reg. 37463). USEPA added ChlordioX Plus Test as an approved alternative method on June 19, 2014 (at 79 Fed. Reg. 35081).

E) The methods listed are approved for measuring the specified disinfectant residual. The supplier may measure free chlorine or total chlorine for demonstrating compliance with the chlorine MRDL and combined chlorine, or total chlorine may be measured for demonstrating compliance with the chloramine MRDL.

2) Alternative methods available only upon specific approval by the Agency.

A) Test strips: ITS Method D99-003.

BOARD NOTE: USEPA added ITS Method D99-003 as an approved alternative method on June 3, 2008 (at 73 Fed. Reg. 31616), contingent upon specific state approval. The Board has opted to provide that the Agency can grant such approvals on a case-by-case basis using the SEP mechanism.

B) If approved by the Agency, by an SEP issued pursuant to Section 611.110, a supplier may also measure residual disinfectant concentrations for chlorine, chloramines, and chlorine dioxide by using DPD colorimetric test kits.

3) A party approved by USEPA or the Agency must measure residual disinfectant concentration.

d) A supplier required to analyze parameters not included in subsections (b) and (c) must use the methods listed in this subsection (d). A party approved by USEPA or the Agency must measure the following parameters:

1) Alkalinity. All methods allowed in Section 611.611(a)(21) for measuring alkalinity.

2) Bromide:

A) USEPA Inorganic Methods, Method 300.0 (rev. 2.1);

B) USEPA Organic and Inorganic Methods, Method 300.1 (rev. 1.0);

C) USEPA OGWDW Methods, Method 317.0 (rev. 2.0) or Method 326.0 (rev. 1.0); or

D) ASTM Method D6581-00.

3) Total Organic Carbon (TOC), by any of the methods listed in subsection (d)(3)(A)(i), (d)(3)(A)(ii), (d)(3)(A)(iii), or (d)(3)(B), subject to the limitations of subsection (d)(3)(C):

A) High-temperature combustion:

i) Standard Methods, 19th (Supplement), 20th, 21st, or 22nd ed., Method 5310 B; or

ii) USEPA NERL Method 415.3 (rev. 1.1) or USEPA NERL Method 415.3 (rev. 1.2).

B) Persulfate-ultraviolet or heated-persulfate oxidation:

i) Standard Methods, 19th (Supplement), 20th, 21st, or 22nd ed., Method 5310 C; or

ii) USEPA NERL Method 415.3 (rev. 1.1) or USEPA NERL Method 415.3 (rev. 1.2); or

iii) Hach Method 10267.

C) Wet oxidation method:

i) Standard Methods, 19th (Supplement), 20th, 21st, or 22nd ed., Method 5310 D; or

ii) USEPA NERL Method 415.3 (rev. 1.1) or USEPA NERL Method 415.3 (rev. 1.2).

D) Ozone oxidation: Hach Method 10261.

E) Inorganic carbon must be removed from the samples prior to analysis. TOC samples may not be filtered prior to analysis. TOC samples must be acidified at the time of sample collection to achieve pH less than or equal to 2 with minimal addition of the acid specified in the method or by the instrument manufacturer. Acidified TOC samples must be analyzed within 28 days.

BOARD NOTE: USEPA added Standard Methods, 21st ed., Methods 5310 B, C, and D as approved alternative methods on June 3, 2008 (at 73 Fed. Reg. 31616). USEPA added USEPA NERL Method 415.3 (rev. 1.2) as an approved alternative method on November 10, 2009 (at 74 Fed. Reg. 57908). USEPA added Standard Methods, 22nd ed., Methods 5310 B, C, and D as approved alternative methods on June 21, 2013 (at 78 Fed. Reg. 37463). USEPA added Hach Method 10267 as an approved alternative method on July 19, 2016 (at 81 Fed. Reg. 46839).

4) Specific Ultraviolet Absorbance (SUVA). SUVA is equal to the UV absorption at 254 nm (UV_{254}) (measured in m^{-1}) divided by the dissolved organic carbon (DOC) concentration (measured as mg/ℓ). In order to determine SUVA, it is necessary to separately measure UV_{254} and DOC. When determining SUVA, a supplier must use the methods stipulated in subsection (d)(4)(A) to measure DOC and the method stipulated in subsection (d)(4)(B) to measure UV_{254}. SUVA must be determined on water prior to the addition of disinfectants/oxidants by the supplier. DOC and UV_{254} samples used to determine a SUVA value must be taken at the same time and at the same location.

A) Dissolved Organic Carbon (DOC). Prior to analysis, DOC samples must be filtered through the 0.45 μm pore-diameter filter as soon as practical after sampling, not to exceed 48 hours. After filtration, DOC samples must be acidified to achieve pH less than or equal to 2 with minimal addition of the acid specified in the method or by the instrument manufacturer. Acidified DOC samples must be analyzed within 28 days after sample collection. Inorganic carbon must be removed from the samples prior to analysis. Water passed through the filter prior to filtration of the sample must serve as the filtered blank. This filtered blank must be analyzed using procedures identical to those used for analysis of the

samples and must meet the following standards: DOC less than 0.5 mg/ℓ.

i) High-Temperature Combustion Method: Standard Methods, 19th (Supplement), 20th, 21st, or 22nd ed., Method 5310 B or USEPA NERL Methods 415.3 (rev. 1.1) or 415.3 (rev. 1.2).

ii) Persulfate-Ultraviolet or Heated-Persulfate Oxidation Method, Standard Methods, 19th (Supplement), 20th, 21st, or 22nd ed., Method 5310 C or USEPA NERL Methods 415.3 (rev. 1.1) or 415.3 (rev. 1.2).

iii) Wet-Oxidation Method: Standard Methods, 19th (Supplement), 20th, 21st, or 22nd ed., Method 5310 D or USEPA NERL Methods 415.3 (rev. 1.1) or 415.3 (rev. 1.2).

BOARD NOTE: USEPA added Standard Methods, Methods 5310 B, C, and D as approved alternative methods on June 3, 2008 (at 73 Fed. Reg. 31616). USEPA added USEPA NERL Method 415.3 (rev. 1.2) as an approved alternative method on November 10, 2009 (at 74 Fed. Reg. 57908). USEPA added Standard Methods, 22nd ed., Methods 5310 B, C, and D as approved alternative methods on June 21, 2013 (at 78 Fed. Reg. 37463).

B) Ultraviolet Absorption at 254 nm (UV_{254}) by spectrometry: Standard Methods, 19th, 20th, 21st, or 22nd ed., Method 5910 B or USEPA NERL Method 415.3 (rev. 1.1) or 415.3 (rev. 1.2). UV absorption must be measured at 253.7 nm (may be rounded off to 254 nm). Prior to analysis, UV_{254} samples must be filtered through a 0.45 μm pore-diameter filter. The pH of UV_{254} samples may not be adjusted. Samples must be analyzed as soon as practical after sampling, not to exceed 48 hours; and

BOARD NOTE: USEPA added Standard Methods, 21st ed., Method 5910 B as an approved alternative method on June 3, 2008 (at 73 Fed. Reg. 31616). USEPA added USEPA NERL Method 415.3 (rev. 1.2) as an approved alternative method on November 10, 2009 (at 74 Fed. Reg. 57908). USEPA added Standard Methods, 22nd ed., Method 5910 B as an approved alternative method on June 21, 2013 (at 78 Fed. Reg. 37463). USEPA added Standard Methods Online, Method 5910 B-11 as an approved alternative method on June 19, 2014 (at 79 Fed. Reg. 35081).

Because Standard Methods, 22nd ed., Methods 5910 B is the same version as Standard Methods Online, Method 5910 B-11, the Board has not listed the Standard Methods Online versions separately.

5) pH. All methods allowed in Section 611.611(a)(17) for measuring pH.

6) Magnesium. All methods allowed in Section 611.611(a) for measuring magnesium.

BOARD NOTE: Derived from 40 CFR 141.131 and appendix A to 40 CFR 141 (2017) ~~(2016)~~.

(Source: Amended at 43 Ill. Reg. _____, effective _____)

SUBPART L: MICROBIOLOGICAL MONITORING AND ANALYTICAL REQUIREMENTS

Section 611.531 Analytical Requirements

The analytical methods specified in this Section, or alternative methods approved by the Agency pursuant to Section 611.480, must be used to demonstrate compliance with the requirements of only 611.Subpart B. Measurements for pH, temperature, turbidity, and RDCs must be conducted under the supervision of a certified operator. Measurements for total coliforms, fecal coliforms and HPC must be conducted by a certified laboratory in one of the categories listed in Section 611.490(a). The following procedures must be performed by the following methods, incorporated by reference in Section 611.102:

a) A supplier must conduct analyses as follows:

1) The supplier must conduct analyses for pH and temperature in accordance with one of the methods listed at Section 611.611; and

2) The supplier must conduct analyses for total coliforms, fecal coliforms, heterotrophic bacteria, and turbidity in accordance with one of the following methods, and by using analytical test procedures contained in USEPA Technical Notes, incorporated by reference in Section 611.102, as follows:

A) Total Coliforms.

BOARD NOTE: The time from sample collection to initiation of analysis for source (raw) water samples required by Section 611.532 and Subpart B only must not exceed eight hours. The

supplier is encouraged but not required to hold samples below 10° C during transit.

i) Total coliform fermentation technique: Standard Methods, 18th, 19th, 20th, 21st, or 22nd ed., Method 9221 A, B, and C.

BOARD NOTE: Lactose broth, as commercially available, may be used in lieu of lauryl tryptose broth if the supplier conducts at least 25 parallel tests between this medium and lauryl tryptose broth using the water normally tested and this comparison demonstrates that the false-positive rate and false-negative rate for total coliforms, using lactose broth, is less than 10 percent. If inverted tubes are used to detect gas production, the media should cover these tubes at least one-half to two-thirds after the sample is added. No requirement exists to run the completed phase on 10 percent of all total coliform-positive confirmed tubes.

ii) Total coliform membrane filter technique: Standard Methods, 18th, 19th, 20th, 21st, or 22nd ed., Method 9222 A, B, and C.

iii) ONPG-MUG test (also known as the Colilert®® Test): Standard Methods, 18th, 19th, 20th, or 21st ed., Method 9223 or Standard Methods, 21st or 22nd ed., Method 9223 B.

BOARD NOTE: USEPA added Standard Methods, 21st ed., Methods 9221 A, B, and C; 9222 A, B, and C; and 9223 as approved alternative methods on June 3, 2008 (at 73 Fed. Reg. 31616). USEPA added Standard Methods, 22nd ed., Methods 9221 A, B, and C and 9223 B as approved alternative methods on June 21, 2013 (at 78 Fed. Reg. 37463). USEPA added Standard Methods Online, Methods 9221 A, B, and C-06 and 9223 B-04 as approved alternative methods on June 19, 2014 (at 79 Fed. Reg. 35081). USEPA listed Standard Methods Online, Method 9223 B-97 in note 1 to the table in 40 CFR 141.25(a). This is identical to Standard Methods 21st ed., Method 9223 B. The Board lists both Standard Methods, Methods 9223 and 9223 B. Because Standard Methods, 22nd ed., Methods 9221 A, B, and C and 9223 B are the same versions as Standard Methods Online, Methods 9221 A, B, and C-06 and 9223 B-04, the Board has not listed the Standard

Methods Online versions separately.

B) Fecal Coliforms.

BOARD NOTE: The time from sample collection to initiation of analysis for source (raw) water samples required by Section 611.532 and Subpart B only must not exceed eight hours. The supplier is encouraged but not required to hold samples below 10° C during transit.

i) Fecal coliform procedure: Standard Methods, 18th, 19th, 20th, 21st, or 22nd ed., Method 9221 E.

BOARD NOTE: A-1 broth may be held up to seven days in a tightly closed screwcap tube at 4° C (39° F).

ii) Fecal Coliform Membrane Filter Procedure: Standard Methods, 18th, 19th, 20th, 21st, or 22nd ed., Method 9222 D.

BOARD NOTE: USEPA added Standard Methods, 21st ed., Methods 9221 E and 9222 D as approved alternative methods on June 3, 2008 (at 73 Fed. Reg. 31616). USEPA added Standard Methods, 22nd ed., Methods 9221 E and 9222 D as approved alternative methods on June 21, 2013 (at 78 Fed. Reg. 37463). USEPA added Standard Methods Online, Methods 9221 E-06 and 9222 D-06 as approved alternative methods on June 19, 2014 (at 79 Fed. Reg. 35081). Because Standard Methods, 22nd ed., Methods 9221 E and 9222 D are the same versions as Standard Methods Online, Methods 9221 E-06 and 9222 D-06, the Board has not listed the Standard Methods Online versions separately.

C) Heterotrophic bacteria.

i) Pour plate method: Standard Methods, 18th, 19th, 20th, 21st, or 22nd ed., Method 9215 B.

BOARD NOTE: The time from sample collection to initiation of analysis must not exceed eight hours. The supplier is encouraged but not required to hold samples below 10° C during transit.

ii) SimPlate method.

BOARD NOTE: USEPA added Standard Methods, 21st ed., Method 9215 B as an approved alternative method on June 3, 2008 (at 73 Fed. Reg. 31616). USEPA added Standard Methods, 22nd ed., Method 9215 B as an approved alternative method on June 21, 2013 (at 78 Fed. Reg. 37463). USEPA added Standard Methods Online, Method 9215 B-04 as an approved alternative method on June 19, 2014 (at 79 Fed. Reg. 35081). Because Standard Methods, 22nd ed., Method 9215 B is the same version as Standard Methods Online, Method 9215 B-04, the Board has not listed the Standard Methods Online versions separately.

D) Turbidity.

BOARD NOTE: Styrene divinyl benzene beads (*e.g.*, AMCO-AEPA–1 or equivalent) and stabilized formazin (*e.g.*, Hach StablCal™ or equivalent) are acceptable substitutes for formazin.

i) Nephelometric method: Standard Methods, 18th, 19th, 20th, 21st, or 22nd ed., Method 2130 B.

ii) Nephelometric method: USEPA Environmental Inorganic Methods, Method 180.1 (rev. 2.0).

iii) GLI Method 2.

iv) Hach FilterTrak Method 10133.

v) Laser nephelometry (on-line): Mitchell Method M5271, rev. 1.1 and Mitchell Method M5331, rev. 1.2.

vi) Laser nephelometry (on-line): Lovibond PTV 6000.

vii~~vi~~) LED nephelometry (on-line): Mitchell Method M5331, rev. 1.1 and Mitchell Method M5331, rev. 1.2.

viii~~vii~~) LED nephelometry (on-line): AMI Turbiwell Method.

ix) LED nephelometry (on-line): Lovibond PTV 1000 or Lovibond PTV 2000.

x~~viii~~) LED nephelometry (portable): Orion Method AQ4500.

xi~~ix~~) 360° Nephelometry: Hach Method 10258.

BOARD NOTE: USEPA added Standard Methods, 21st ed.,

Method 9130 B as an approved alternative method on June 3, 2008 (at 73 Fed. Reg. 31616). USEPA added Mitchell Method M5271 and Orion Method AQ4500 as approved alternative methods on August 3, 2009 (at 74 Fed. Reg. 38348). USEPA added AMI Turbiwell Method as an approved alternative method on November 10, 2009 (at 74 Fed. Reg. 57908). USEPA added Standard Methods, 22nd ed., Method 2130 B as an approved alternative method on June 21, 2013 (at 78 Fed. Reg. 37463). USEPA added Hach Method 10258 and Mitchell Method M5331, rev. 1.2 as approved alternative methods on July 19, 2016 (at 81 Fed. Reg. 46839). USEPA added Lovibond PTV 1000, Lovibond PTV 2000, and Lovibond PTV 6000 as approved alternative methods on July 27, 2017 (at 82 Fed. Reg. 34861).

b) A supplier must measure residual disinfectant concentrations with one of the following analytical methods:

1) Free chlorine.

A) Amperometric Titration.

i) Standard Methods, 18th, 19th, 20th, 21st, or 22nd ed., Method 4500-Cl D.

ii) ASTM Method D1253-03, D1253-08, or D1253-14.

B) DPD Ferrous Titrimetric: Standard Methods, 18th, 19th, 20th, 21st, or 22nd ed., Method 4500-Cl F.

C) DPD Colimetric:

i) Standard Methods, 18th, 19th, 20th, 21st, or 22nd ed., Method 4500-Cl G; or

ii) Hach Method 10260.

D) Syringaldazine (FACTS): Standard Methods, 18th, 19th, 20th, 21st, or 22nd ed., Method 4500-Cl H.

E) On-line chlorine analyzer: USEPA OGWDW Methods, Method 334.0.

F) Amperometric sensor: Palintest ChloroSense.

G) Indophenol colorimetric: Hach Method 10241.

BOARD NOTE: USEPA added Standard Methods, 21st ed., Methods 4500-Cl D, F, G, and H; Method 4500-ClO_2 C and E as approved alternative methods on June 3, 2008 (at 73 Fed. Reg. 31616).USEPA added ASTM Method D1253-08, USEPA OGWDW Methods, Method 334.0, and Palintest ChloroSense as approved alternative methods on November 10, 2009 (at 74 Fed. Reg. 57908). USEPA added Standard Methods, 22nd ed., Methods 4500-Cl B, F, G, and H as approved alternative methods on June 21, 2013 (at 78 Fed. Reg. 37463). USEPA added Hach Method 10260 as an approved alternative method on June 19, 2014 (at 79 Fed. Reg. 35081). USEPA added ASTM Method D1253-14 and Hach Method 10241 as approved alternative methods on July 19, 2016 (at 81 Fed. Reg. 46839).

2) Total chlorine.

A) Amperometric Titration:.

i) Standard Methods, 18th, 19th, 20th, 21st, or 22nd ed., Method 4500-Cl D.

ii) ASTM Method D1253-03, D1253-08, or D1253-14.

B) Amperometric Titration (low level measurement): Standard Methods, 18th, 19th, 20th, 21st, or 22nd ed., Method 4500-Cl E.

C) DPD Ferrous Titrimetric: Standard Methods, 18th, 19th, 20th, 21st, or 22nd ed., Method 4500-Cl F.

D) DPD Colimetric:

i) Standard Methods, 18th, 19th, 20th, 21st, or 22nd ed., Method 4500-Cl G; or

ii) Hach Method 10260.

E) Iodometric Electrode: Standard Methods, 18th, 19th, 20th, 21st, or 22nd ed., Method 4500-Cl I.

F) On-line chlorine analyzer: USEPA OGWDW Methods, Method 334.0.

G) Amperometric sensor: Palintest ChloroSense.

BOARD NOTE: USEPA added Standard Methods, 21st ed., Methods 4500-Cl D, E, F, G, and I as approved alternative methods on June 3, 2008 (at 73 Fed. Reg. 31616). USEPA added ASTM Method D1253-08, USEPA OGWDW Methods, Method 334.0, and Palintest ChloroSense as approved alternative methods on November 10, 2009 (at 74 Fed. Reg. 57908). USEPA added Standard Methods, 22nd ed., Methods 4500-Cl D, E, F, G, and I as approved alternative methods on June 21, 2013 (at 78 Fed. Reg. 37463). USEPA added Hach Method 10260 as an approved alternative method on June 19, 2014 (at 79 Fed. Reg. 35081). USEPA added ASTM Method D1253-14 as an approved alternative method on July 19, 2016 (at 81 Fed. Reg. 46839).

3) Chlorine dioxide.

A) Amperometric Titration:

i) Standard Methods, 18th, 19th, 20th, 21st, or 22nd ed., Method 4500-ClO_2 C or E; or

ii) ChlordioX Plus Test.

B) DPD Method: Standard Methods, 18th, 19th, or 20th ed., Method 4500-ClO_2 D.

C) Spectrophotometric: USEPA OGWDW Methods, Method 327.0 (rev. 1.1).

BOARD NOTE: USEPA added Standard Methods, 21st ed., Method 4500-ClO_2 C, D, and E and Method 4500-O_3 B as approved alternative methods on June 3, 2008 (at 73 Fed. Reg. 31616). USEPA added Standard Methods, 22nd ed., Methods 4500-ClO_2 C and E as approved alternative methods on May 31, 2013 (at 78 Fed. Reg. 32558). USEPA added ChlordioX Plus Test as an approved alternative method on June 19, 2014 (at 79 Fed. Reg. 35081).

4) Ozone: Indigo Method: Standard Methods, 18th, 19th, 20th, 21st, or 22nd ed., Method 4500-O_3 B.

BOARD NOTE: USEPA added Standard Methods, 21st ed., Method 4500-O_3 B as an approved alternative method on June 3, 2008 (at 73 Fed. Reg. 31616). USEPA added Standard Methods, 22nd ed., Method 4500-O_3 B as an approved alternative method on May 31, 2013 (at 78 Fed. Reg. 32558).

5) Alternative test methods: The Agency may grant a SEP pursuant to Section 611.110 that allows a supplier to use alternative chlorine test methods as follows:

A) DPD colorimetric test kits: Residual disinfectant concentrations for free chlorine and combined chlorine may also be measured by using DPD colorimetric test kits.

B) Continuous monitoring for free and total chlorine: Free and total chlorine residuals may be measured continuously by adapting a specified chlorine residual method for use with a continuous monitoring instrument, provided the chemistry, accuracy, and precision remain the same. Instruments used for continuous monitoring must be calibrated with a grab sample measurement at least every five days or as otherwise provided by the Agency.

BOARD NOTE: Suppliers may use a five-tube test or a 10-tube test.

BOARD NOTE: Derived from 40 CFR 141.74(a) and appendix A to subpart C of 40 CFR 141 (2017) ~~(2016)~~.

(Source: Amended at 43 Ill. Reg. _____, effective _____)

SUBPART N: INORGANIC MONITORING AND ANALYTICAL REQUIREMENTS

Section 611.611 Inorganic Analysis

Analytical methods are from documents incorporated by reference in Section 611.102. These are mostly referenced by a short name defined by Section 611.102(a). Other abbreviations are defined in Section 611.101.

a) Analysis for the following contaminants must be conducted using the following methods or an alternative method approved pursuant to Section 611.480. Criteria for analyzing arsenic, chromium, copper, lead, nickel, selenium, sodium, and thallium with digestion or directly without digestion, and other analytical procedures, are contained in USEPA Technical Notes, incorporated by reference in Section 611.102.

BOARD NOTE: Because MDLs reported in USEPA Environmental Metals Methods 200.7 and 200.9 were determined using a 2× preconcentration step during sample digestion, MDLs determined when samples are analyzed by direct analysis (i.e., no sample digestion) will be higher. For direct analysis of cadmium

and arsenic by USEPA Environmental Metals Method 200.7, and arsenic by Standard Methods, Method 3120 B, sample preconcentration using pneumatic nebulization may be required to achieve lower detection limits. Preconcentration may also be required for direct analysis of antimony, lead, and thallium by USEPA Environmental Metals Method 200.9; antimony and lead by Standard Methods, Method 3113 B; and lead by ASTM Method D3559-96 D or D3559-03 D unless multiple in-furnace depositions are made.

1) Alkalinity.

A) Titrimetric.

i) ASTM Method D1067-92 B, D1067-02 B, D1067-06 B, or D1067-11 B; or

ii) Standard Methods, 18th, 19th, 20th, 21st, or 22nd ed., Method 2320 B.

B) Electrometric titration: USGS Method I-1030-85.

BOARD NOTE: USEPA added Standard Methods, 21st ed., Method 2320 B as an approved alternative method on June 3, 2008 (at 73 Fed. Reg. 31616). USEPA added Standard Methods, 22nd ed., Method 2320 B and ASTM Method D1067-11 B as approved alternative methods on May 31, 2013 (at 78 Fed. Reg. 32558).

2) Antimony.

A) Inductively coupled plasma-mass spectrometry: USEPA Environmental Metals Methods, Method 200.8 (rev. 5.3).

B) Atomic absorption, hydride technique: ASTM Method D3697-92, D3697-02, D3697-07, or D3697-12.

C) Atomic absorption, platform furnace technique: USEPA Environmental Metals Methods, Method 200.9 (rev. 2.2).

D) Atomic absorption, furnace technique:

i) Standard Methods, 18th, 19th, 21st, or 22nd ed., Method 3113 B; or

ii) Standard Methods Online, Method 3113 B-04.

E) Axially viewed inductively coupled plasma-atomic emission

spectrometry (AVICP-AES): USEPA NERL Method 200.5.

BOARD NOTE: USEPA added Standard Methods, 21st ed., Method 3113B and USEPA NERL Method 200.5 as approved alternative methods on June 3, 2008 (at 73 Fed. Reg. 31616). USEPA added ASTM Method D3697-07 as an approved alternative method on November 10, 2009 (at 74 Fed. Reg. 57908. USEPA added Standard Methods Online, Method 3113 B-04 as an approved alternative method on June 24, 2011 (at 76 Fed. Reg. 37014). USEPA added Standard Methods, 22nd ed., Method 3113 B as an approved alternative method on May 31, 2013 (at 78 Fed. Reg. 32558). USEPA added Standard Methods Online, Method 3113 B-10 as an approved alternative method on June 19, 2014 (at 79 Fed. Reg. 35081). Because Standard Methods, 22nd ed., Method 3113 B is the same version as Standard Methods Online, Method 3113 B-10, the Board has not listed the Standard Methods Online versions separately. USEPA added ASTM Method D3697-12 as an approved alternative method on July 19, 2016 (at 81 Fed. Reg. 46839).

3) Arsenic.

BOARD NOTE: If ultrasonic nebulization is used in the determination of arsenic by Method 200.8, the arsenic must be in the pentavalent state to provide uniform signal response. For direct analysis of arsenic with Method 200.8 using ultrasonic nebulization, samples and standards must contain one mg/ℓ of sodium hypochlorite.

A) Inductively coupled plasma-mass spectrometry: USEPA Environmental Metals Methods, Method 200.8 (rev. 5.3).

B) Atomic absorption, platform furnace technique: USEPA Environmental Metals Methods, Method 200.9 (rev. 2.2).

C) Atomic absorption, furnace technique.

i) ASTM Method D2972-97 C, D2972-03 C, ~~or~~ D2972-08 C, or D2972-15 C;

ii) Standard Methods, 18th, 19th, 21st, or 22nd ed., Method 3113 B; or

iii) Standard Methods Online, Method 3113 B-04.

D) Atomic absorption, hydride technique.

i) ASTM Method D2972-97 B, D2972-03 C, ~~or~~ D2972-08 B, or D2972-15 B;

ii) Standard Methods, 18th, 19th, 21st, or 22nd ed., Method 3114 B; or

iii) Standard Methods Online, Method 3114 B-04.

E) Axially viewed inductively coupled plasma-atomic emission spectrometry (AVICP-AES): USEPA NERL Method 200.5.

BOARD NOTE: USEPA added Standard Methods, 21st ed., Methods 3113 B and 3114 B and USEPA NERL Method 200.5 as approved alternative methods on June 3, 2008 (at 73 Fed. Reg. 31616). USEPA added ASTM Methods D2972-08 B and C as approved alternative methods on November 10, 2009 (at 74 Fed. Reg. 57908). USEPA added Standard Methods Online, Method 3113 B-04 and Method 3114 B-09 as approved alternative methods on June 24, 2011 (at 76 Fed. Reg. 37014). USEPA added Standard Methods, 22nd ed., Methods 3113 B and 3114 B as approved alternative methods on May 31, 2013 (at 78 Fed. Reg. 32558). Because Standard Methods, 22nd ed., Method 3114 B is the same version as Standard Methods Online 3114 B-09, the Board has not listed the Standard Methods Online version separately. USEPA added Standard Methods Online, Method 3113 B-10 as an approved alternative method on June 19, 2014 (at 79 Fed. Reg. 35081). USEPA added ASTM Methods D2972-15 B and C as approved alternative methods on July 27, 2017 (at 82 Fed. Reg. 34861). Because Standard Methods, 22nd ed., Method 3113 B is the same version as Standard Methods Online, Method 3113 B-10, the Board has not listed the Standard Methods Online versions separately.

4) Asbestos: Transmission electron microscopy: USEPA Asbestos Method 100.1 or USEPA Asbestos Method 100.2.

5) Barium.

A) Inductively coupled plasma.

i) USEPA Environmental Metals Methods, Method 200.7 (rev. 4.4); or

ii) Standard Methods, 18th, 19th, 20th, 21st, or 22nd ed., Method 3120 B.

B) Inductively coupled plasma-mass spectrometry: USEPA

Environmental Metals Methods, Method 200.8 (rev. 5.3).

C) Atomic absorption, direct aspiration technique: Standard Methods, 18th, 19th, 21st, or 22nd ed., Method 3111 D.

D) Atomic absorption, furnace technique:

i) Standard Methods, 18th, 19th, 21st, or 22nd ed., Method 3113 B; or

ii) Standard Methods Online, Method 3113 B-04.

E) Axially viewed inductively coupled plasma-atomic emission spectrometry (AVICP-AES): USEPA NERL Method 200.5.

BOARD NOTE: USEPA added Standard Methods, 21st ed., Methods 3111D, 3113B, and 3120 B and USEPA NERL Method 200.5 as approved alternative methods on June 3, 2008 (at 73 Fed. Reg. 31616). USEPA added Standard Methods Online, Method 3113 B-04 as an approved alternative method on June 24, 2011 (at 76 Fed. Reg. 37014). USEPA added Standard Methods, 22nd ed., Methods 3111 D, 3113 B, and 3120 B as approved alternative methods on May 31, 2013 (at 78 Fed. Reg. 32558). USEPA added Standard Methods Online, Method 3113 B-10 as an approved alternative method on June 19, 2014 (at 79 Fed. Reg. 35081). Because Standard Methods, 22nd ed., Method 3113 B is the same version as Standard Methods Online, Method 3113 B-10, the Board has not listed the Standard Methods Online versions separately.

6) Beryllium.

A) Inductively coupled plasma.

i) USEPA Environmental Metals Methods, Method 200.7 (rev. 4.4); or

ii) Standard Methods, 18th, 19th, 20th, 21st, or 22nd ed., Method 3120 B.

B) Inductively coupled plasma-mass spectrometry: USEPA Environmental Metals Methods, Method 200.8 (rev. 5.3).

C) Atomic absorption, platform furnace technique: USEPA Environmental Metals Methods, Method 200.9 (rev. 2.2).

D) Atomic absorption, furnace technique.

i) ASTM Method D3645-97 B, D3645-03 B, ~~or~~ D3645-08 B, or D3645-15 B;

ii) Standard Methods, 18th, 19th, 21st, or 22nd ed., Method 3113 B; or

iii) Standard Methods Online, Method 3113 B-04.

E) Axially viewed inductively coupled plasma-atomic emission spectrometry (AVICP-AES): USEPA NERL Method 200.5.

BOARD NOTE: USEPA added Standard Methods, 21st ed., Methods 3113 B and 3120 B and USEPA NERL Method 200.5 as approved alternative methods on June 3, 2008 (at 73 Fed. Reg. 31616). USEPA added ASTM Method D3645-08 B as an approved alternative method on November 10, 2009 (at 74 Fed. Reg. 57908). USEPA added Standard Methods Online, Method 3113 B-04 as an approved alternative method on June 24, 2011 (at 76 Fed. Reg. 37014). USEPA added Standard Methods, 22nd ed., Methods 3113 B and 3120 B as approved alternative methods on May 31, 2013 (at 78 Fed. Reg. 32558). USEPA added Standard Methods Online, Method 3113 B-10 as an approved alternative method on June 19, 2014 (at 79 Fed. Reg. 35081). USEPA added ASTM Method D3645-15 B as an approved alternative method on July 27, 2017 (at 82 Fed. Reg. 34861). Because Standard Methods, 22nd ed., Method 3113 B is the same version as Standard Methods Online, Method 3113 B-10, the Board has not listed the Standard Methods Online versions separately.

7) Cadmium.

A) Inductively coupled plasma arc furnace: USEPA Environmental Metals Methods, Method 200.7 (rev. 4.4).

B) Inductively coupled plasma-mass spectrometry: USEPA Environmental Metals Methods, Method 200.8 (rev. 5.3).

C) Atomic absorption, platform furnace technique: USEPA Environmental Metals Methods, Method 200.9 (rev. 2.2).

D) Atomic absorption, furnace technique:

i) Standard Methods, 18th, 19th, 21st, or 22nd ed., Method

3113 B; or

ii) Standard Methods Online, Method 3113 B-04.

E) Axially viewed inductively coupled plasma-atomic emission spectrometry (AVICP-AES): USEPA NERL Method 200.5.

BOARD NOTE: USEPA added Standard Methods, 21st ed., Method 3113 B and USEPA NERL Method 200.5 as approved alternative methods on June 3, 2008 (at 73 Fed. Reg. 31616). USEPA added Standard Methods Online, Method 3113 B-04 as an approved alternative method on June 24, 2011 (at 76 Fed. Reg. 37014). USEPA added Standard Methods, 22nd ed., Method 3113 B as an approved alternative method on May 31, 2013 (at 78 Fed. Reg. 32558). USEPA added Standard Methods Online, Method 3113 B-10 as an approved alternative method on June 19, 2014 (at 79 Fed. Reg. 35081). Because Standard Methods, 22nd ed., Method 3113 B is the same version as Standard Methods Online, Method 3113 B-10, the Board has not listed the Standard Methods Online versions separately.

8) Calcium.

A) EDTA titrimetric.

i) ASTM Method D511-93 A, D511-03 A, D511-09 A, or D511-14A; or

ii) Standard Methods, 18th or 19th ed., Method 3500-Ca D or Standard Methods, 20th, 21st, or 22nd ed., Method 3500-Ca B.

B) Atomic absorption, direct aspiration.

i) ASTM Method D511-93 B, D511-03 B, D511-09 B, or D511-14B; or

ii) Standard Methods, 18th, 19th, 21st, or 22nd ed., Method 3111 B.

C) Inductively coupled plasma.

i) USEPA Environmental Metals Methods, Method 200.7 (rev. 4.4); or

ii) Standard Methods, 18th, 19th, 20th, 21st, or 22nd ed., Method 3120 B.

D) Ion chromatography: ASTM Method D6919-03 or D6919-09.

E) Axially viewed inductively coupled plasma-atomic emission spectrometry (AVICP-AES): USEPA NERL Method 200.5.

BOARD NOTE: USEPA added Standard Methods, 21st ed., Methods 3111B, 3120 B, and 3500-Ca B and USEPA NERL Method 200.5 as approved alternative methods on June 3, 2008 (at 73 Fed. Reg. 31616). USEPA added ASTM Methods D511-09 A and B as approved alternative methods on November 10, 2009 (at 74 Fed. Reg. 57908). USEPA added ASTM Method D6919-09 as an approved alternative method on June 24, 2011 (at 76 Fed. Reg. 37014). USEPA added Standard Methods, 22nd ed., Methods 3111 B, 3120 B, and 3500-Ca B as approved alternative methods on May 31, 2013 (at 78 Fed. Reg. 32558). USEPA added ASTM Method D511-14 A and B as approved alternative methods on July 19, 2016 (at 81 Fed. Reg. 46839).

9) Chromium.

A) Inductively coupled plasma.

i) USEPA Environmental Metals Methods, Method 200.7 (rev. 4.4); or

ii) Standard Methods, 18th, 19th, 20th, 21st, or 22nd ed., Method 3120 B.

B) Inductively coupled plasma-mass spectrometry: USEPA Environmental Metals Methods, Method 200.8 (rev. 5.3).

C) Atomic absorption, platform furnace technique: USEPA Environmental Metals Methods, Method 200.9 (rev. 2.2).

D) Atomic absorption, furnace technique:

i) Standard Methods, 18th, 19th, 21st, or 22nd ed., Method 3113 B; or

ii) Standard Methods Online, Method 3113 B-04.

E) Axially viewed inductively coupled plasma-atomic emission spectrometry (AVICP-AES): USEPA NERL Method 200.5.

BOARD NOTE: USEPA added Standard Methods, 21st ed., Methods

3113 B and 3120 B and USEPA NERL Method 200.5 as approved alternative methods on June 3, 2008 (at 73 Fed. Reg. 31616). USEPA added Standard Methods Online, Method 3113 B-04 as an approved alternative method on June 24, 2011 (at 76 Fed. Reg. 37014). USEPA added Standard Methods, 22nd ed., Methods 3113 B and 3120 B as approved alternative methods on May 31, 2013 (at 78 Fed. Reg. 32558). USEPA added Standard Methods Online, Method 3113 B-10 as an approved alternative method on June 19, 2014 (at 79 Fed. Reg. 35081). Because Standard Methods, 22nd ed., Method 3113 B is the same version as Standard Methods Online, Method 3113 B-10, the Board has not listed the Standard Methods Online versions separately.

10) Copper.

A) Atomic absorption, furnace technique.

i) ASTM Method D1688-95 C, D1688-02 C, D1688-07 C, or D1688-12 C;

ii) Standard Methods, 18th, 19th, 21st, or 22nd ed., Method 3113 B; or

iii) Standard Methods Online, Method 3113 B-04.

B) Atomic absorption, direct aspiration.

i) ASTM Method D1688-95 A, D1688-02 A, D1688-07 A, or D1688-12 A; or

ii) Standard Methods, 18th, 19th, 21st, or 22nd ed., Method 3111 B.

C) Inductively coupled plasma.

i) USEPA Environmental Metals Methods, Method 200.7 (rev. 4.4); or

ii) Standard Methods, 18th, 19th, 20th, 21st, or 22nd ed., Method 3120 B.

D) Inductively coupled plasma-mass spectrometry: USEPA Environmental Metals Methods, Method 200.8 (rev. 5.3).

E) Atomic absorption, platform furnace technique: USEPA

Environmental Metals Methods, Method 200.9 (rev. 2.2).

F) Axially viewed inductively coupled plasma-atomic emission spectrometry (AVICP-AES): USEPA NERL Method 200.5.

G) Colorimetric: Hach Method 8026 or 10272.

BOARD NOTE: USEPA added Standard Methods, 21st ed., Methods 3111B, 3113 B, and 3120 B and USEPA NERL Method 200.5 as an approved alternative method on June 3, 2008 (at 73 Fed. Reg. 31616). USEPA added ASTM Methods D1688-07 A and C as approved alternative methods on November 10, 2009 (at 74 Fed. Reg. 57908). USEPA added Standard Methods Online, Method 3113 B-04 as an approved alternative method on June 24, 2011 (at 76 Fed. Reg. 37014). USEPA added Standard Methods, 22nd ed., Methods 3111 B, 3113 B, and 3120 B as approved alternative methods on May 31, 2013 (at 78 Fed. Reg. 32558). USEPA added Standard Methods Online, Method 3113 B-10 as an approved alternative method on June 19, 2014 (at 79 Fed. Reg. 35081). Because Standard Methods, 22nd ed., Method 3113 B is the same version as Standard Methods Online, Method 3113 B-10, the Board has not listed the Standard Methods Online versions separately. USEPA added ASTM Method D1688-12 A and C and Hach Methods 8026 and 10272 as approved alternative methods on July 19, 2016 (at 81 Fed. Reg. 46839).

11) Conductivity; Conductance.

A) ASTM Method D1125-95(1999) A or D1125-14 A; or

B) Standard Methods, 18th, 19th, 20th, 21st, or 22nd ed., Method 2510 B.

BOARD NOTE: USEPA added Standard Methods, 21st ed., Method 2510 B as an approved alternative method on June 3, 2008 (at 73 Fed. Reg. 31616). USEPA added Standard Methods, 22nd ed., Method 2510 B as an approved alternative method on May 31, 2013 (at 78 Fed. Reg. 32558). USEPA added ASTM Method D1125-14 A as an approved alternative method on July 19, 2016 (at 81 Fed. Reg. 46839).

12) Cyanide.

A) Manual distillation (ASTM Method D2036-98 A or Standard Methods, 18th, 19th, or 20th ed., Method 4500-CN^- C), followed by spectrophotometric, amenable.

i) ASTM Method D2036-98 B or D2036-06 B; or

ii) Standard Methods, 18th, 19th, 20th, 21st, or 22nd ed., Method 4500-CN^- G.

B) Manual distillation (ASTM Method D2036-98 A or Standard Methods, 18th, 19th, or 20th ed., Method 4500-CN^- C), followed by spectrophotometric, manual.

i) ASTM Method D2036-98 A or D2036-06 A;

ii) Standard Methods, 18th, 19th, 20th, 21st, or 22nd ed., Method 4500-CN^- E; or

iii) USGS Method I-3300-85.

C) Spectrophotometric, semiautomated: USEPA Environmental Inorganic Methods, Method 335.4 (rev. 1.0).

D) Selective electrode: Standard Methods, 18th, 19th, 20th, 21st, or 22nd ed., Method 4500-CN^- F.

E) UV/Distillation/Spectrophotometric: Kelada 01.

F) Microdistillation/Flow Injection/Spectrophotometric: QuikChem 10-204-00-1-X.

G) Ligand exchange and amperometry.

i) ASTM Method D6888-04.

ii) OI Analytical Method OIA-1677 DW.

H) Gas chromatography-mass spectrometry headspace: Method ME355.01.

BOARD NOTE: USEPA added ASTM Method D2036-06 A and Standard Methods, 21st ed., Methods 4500-CN^- E, F, and G as approved alternative methods on June 3, 2008 (at 73 Fed. Reg. 31616). USEPA added Method ME355.01 as an approved alternative method on August 3, 2009 (at 74 Fed. Reg. 38348). USEPA added Standard Methods, 22nd ed., Methods 4500-CN- E, F, and G as approved alternative methods on May 31, 2013 (at 78 Fed. Reg. 32558).

13) Fluoride.

A) Ion Chromatography.

i) USEPA Environmental Inorganic Methods, Method 300.0 (rev. 2.1) or USEPA Organic and Inorganic Methods, Method 300.1 (rev. 1.0);

ii) ASTM Method D4327-97, D4327-03, or D4327-11;

iii) Standard Methods, 18th, 19th, 20th, 21st, or 22nd ed., Method 4110 B; or

iv) Hach SPADNS 2 Method 10225.

B) Manual distillation, colorimetric SPADNS: Standard Methods, 18th, 19th, 20th, 21st, or 22nd ed., Method 4500-F^- B and D.

C) Manual electrode.

i) ASTM Method D1179-93 B, D1179-99 B, D1179-04 B, or D1179-10 B; or

ii) Standard Methods, 18th, 19th, 20th, 21st, or 22nd ed., Method 4500-F^- C.

D) Automated electrode: Technicon Methods, Method 380-75WE.

E) Automated alizarin.

i) Standard Methods, 18th, 19th, 20th, 21st, or 22nd ed., Method 4500-F^- E; or

ii) Technicon Methods, Method 129-71W.

F) Capillary ion electrophoresis: ASTM Method D6508-00(2005).

BOARD NOTE: On March 12, 2007 (at 72 Fed. Reg. 11200), USEPA amended the entry for fluoride to add capillary ion electrophoresis in the table at corresponding 40 CFR 141.23(k)(1) to allow the use of "Waters Method D6508, Rev. 2". The Board attempt to locate a copy of the method disclosed that it is an ASTM method originally approved in 2000 and reapproved in 2005. The Board has cited to the ASTM Method D6508-00(2005).

BOARD NOTE: USEPA added Standard Methods, 21st ed., Methods 4110 B and 4500-F^- B, C, D, and E and ASTM Method D1179-04 B as

approved alternative methods on June 3, 2008 (at 73 Fed. Reg. 31616). USEPA added Hach SPADNS 2 Method 10225 as an approved alternative method on June 24, 2011 (at 76 Fed. Reg. 37014). USEPA added ASTM Method D1179-10 B as an approved alternative method on June 28, 2012 (at 77 Fed. Reg. 38523). USEPA added Standard Methods, 22nd ed., Methods 4110 B and 4500-F- B, C, D, and E as approved alternative methods on May 31, 2013 (at 78 Fed. Reg. 32558). USEPA added ASTM Method D4327-11 as an approved alternative method on June 19, 2014 (at 79 Fed. Reg. 35081).

14) Lead.

A) Atomic absorption, furnace technique.

i) ASTM Method D3559-96 D, D3559-03 D, ~~or~~ D3559-08 D, or D3559-08 D;

ii) Standard Methods, 18th, 19th, 21st, or 22nd ed., Method 3113 B; or

iii) Standard Methods Online, Method 3113 B-04.

B) Inductively coupled plasma-mass spectrometry: USEPA Environmental Metals Methods, Method 200.8 (rev. 5.3).

C) Atomic absorption, platform furnace technique: USEPA Environmental Metals Methods, Method 200.9 (rev. 2.2).

D) Differential Pulse Anodic Stripping Voltammetry: Palintest Method 1001.

E) Axially viewed inductively coupled plasma-atomic emission spectrometry (AVICP-AES): USEPA NERL Method 200.5.

BOARD NOTE: USEPA added Standard Methods, 21st ed., Method 3113 B and USEPA NERL Method 200.5 as approved alternative methods on June 3, 2008 (at 73 Fed. Reg. 31616). USEPA added ASTM Method D3559-08 D as an approved alternative method on November 10, 2009 (at 74 Fed. Reg. 57908). USEPA added Standard Methods Online, Method 3113 B-04 as an approved alternative method on June 24, 2011 (at 76 Fed. Reg. 37014). USEPA added Standard Methods, 22nd ed., Method 3113 B as an approved alternative method on May 31, 2013 (at 78 Fed. Reg. 32558). USEPA added Standard Methods Online, Method 3113 B-10 as an approved alternative method on June 19, 2014 (at 79 Fed. Reg. 35081).

USEPA added ASTM Method D3559-08 D as an approved alternative method on July 27, 2017 (at 82 Fed. Reg. 34861). Because Standard Methods, 22nd ed., Method 3113 B is the same version as Standard Methods Online, Method 3113 B-10, the Board has not listed the Standard Methods Online versions separately.

15) Magnesium.

A) Atomic absorption.

i) ASTM Method D511-93 B, D511-03 B, D511-09 B, or D511-14 B; or

ii) Standard Methods, 18th, 19th, 21st, or 22nd ed., Method 3111 B.

B) Inductively coupled plasma.

i) USEPA Environmental Metals Methods, Method 200.7 (rev. 4.4); or

ii) Standard Methods, 18th, 19th, 20th, 21st, or 22nd ed., Method 3120 B.

C) Complexation titrimetric.

i) ASTM Method D511-93 A, D511-03 A, D511-09 A, or D511-14 A; or

ii) Standard Methods, 18th or 19th ed., Method 3500-Mg E or Standard Methods, 20th, 21st, or 22nd ed., Method 3500-Mg B.

D) Ion chromatography: ASTM Method D6919-03 or D6919-09.

E) Axially viewed inductively coupled plasma-atomic emission spectrometry (AVICP-AES): USEPA NERL Method 200.5.

BOARD NOTE: USEPA added Standard Methods, 21st ed., Methods 3111B, 3120 B, and 3500-Mg B and USEPA NERL Method 200.5 as approved alternative methods on June 3, 2008 (at 73 Fed. Reg. 31616). USEPA added ASTM Methods D511-09 A and B as approved alternative methods on November 10, 2009 (at 74 Fed. Reg. 57908). USEPA added ASTM Method D6919-09 as an approved alternative method on June 24,

2011 (at 76 Fed. Reg. 37014). USEPA added Standard Methods, 22nd ed., Methods 3111 B, 3120 B, and 3500-Mg B as approved alternative methods on May 31, 2013 (at 78 Fed. Reg. 32558). USEPA added ASTM Method D511-14 A and B as approved alternative methods on July 19, 2016 (at 81 Fed. Reg. 46839).

16) Mercury.

A) Manual cold vapor technique.

i) USEPA Environmental Metals Methods, Method 245.1 (rev. 3.0);

ii) ASTM Method D3223-97, D3223-02, or D3223-12; or

iii) Standard Methods, 18th, 19th, 21st, or 22nd ed., Method 3112 B.

B) Automated cold vapor technique: USEPA Inorganic Methods, Method 245.2.

C) Inductively coupled plasma-mass spectrometry: USEPA Environmental Metals Methods, Method 200.8 (rev. 5.3).

BOARD NOTE: USEPA added Standard Methods, 21st ed., Method 3112 B as an approved alternative method on June 3, 2008 (at 73 Fed. Reg. 31616). USEPA added Standard Methods Online, Method 3112 B-09 as an approved alternative method on June 28, 2012 (at 77 Fed. Reg. 38523). USEPA added Standard Methods, 22nd ed., Method 3112 B as an approved alternative method on May 31, 2013 (at 78 Fed. Reg. 32558). Because Standard Methods, 22nd ed., Method 3112 B is the same version as Standard Methods Online 3112 B-09, the Board has not listed the Standard Methods Online version separately. USEPA added ASTM D3223 B-12 as an approved alternative method on June 19, 2014 (at 79 Fed. Reg. 35081).

17) Nickel.

A) Inductively coupled plasma.

i) USEPA Environmental Metals Methods, Method 200.7 (rev. 4.4); or

ii) Standard Methods, 18th, 19th, 20th, 21st, or 22nd ed.,

Method 3120 B.

B) Inductively coupled plasma-mass spectrometry: USEPA Environmental Metals Methods, Method 200.8 (rev. 5.3).

C) Atomic absorption, platform furnace technique: USEPA Environmental Metals Methods, Method 200.9 (rev. 2.2).

D) Atomic absorption, direct aspiration technique: Standard Methods, 18th, 19th, 21st, or 22nd ed., Method 3111 B.

E) Atomic absorption, furnace technique:

i) Standard Methods, 18th, 19th, 21st, or 22nd ed., Method 3113 B; or

ii) Standard Methods Online, Method 3113 B-04.

F) Axially viewed inductively coupled plasma-atomic emission spectrometry (AVICP-AES): USEPA NERL Method 200.5.

BOARD NOTE: USEPA added Standard Methods, 21st ed., Methods 3111 B, 3113 B, and 3120 B and USEPA NERL Method 200.5 as approved alternative methods on June 3, 2008 (at 73 Fed. Reg. 31616). USEPA added Standard Methods Online, Method 3113 B-04 as an approved alternative method on June 24, 2011 (at 76 Fed. Reg. 37014). USEPA added Standard Methods, 22nd ed., Methods 3111 B, 3113 B, and 3120 B as approved alternative methods on May 31, 2013 (at 78 Fed. Reg. 32558). USEPA added Standard Methods Online, Method 3113 B-10 as an approved alternative method on June 19, 2014 (at 79 Fed. Reg. 35081). Because Standard Methods, 22nd ed., Method 3113 B is the same version as Standard Methods Online, Method 3113 B-10, the Board has not listed the Standard Methods Online versions separately.

18) Nitrate.

A) Ion chromatography.

i) USEPA Environmental Inorganic Methods, Method 300.0 (rev. 2.1) or USEPA Organic and Inorganic Methods, Method 300.1 (rev. 1.0);

ii) ASTM Method D4327-97,D4327-03, or D4327-11;

iii) Standard Methods, 18th, 19th, 20th, 21st, or 22nd ed., Method 4110 B; or

iv) Waters Method B-1011, available from Millipore Corporation.

B) Automated cadmium reduction.

i) USEPA Environmental Inorganic Methods, Method 353.2 (rev. 2.0);

ii) ASTM Method D3867-90 A; or

iii) Standard Methods, 18th, 19th, 20th, 21st, or 22nd ed., Method 4500-NO_3^- F.

C) Ion selective electrode.

i) Standard Methods, 18th, 19th, 20th, 21st, or 22nd ed., Method 4500-NO_3^- D; or

ii) Technical Bulletin 601.

D) Manual cadmium reduction.

i) ASTM Method D3867-90 B; or

ii) Standard Methods, 18th, 19th, 20th, 21st, or 22nd ed., Method 4500-NO_3^- E.

E) Capillary ion electrophoresis: ASTM Method D6508-00(2005) or D6508-15.

F) Reduction-colorimetric: Systea Easy (1-Reagent) or NECi Nitrate-Reductase Method.

G) Direct colorimetric: Hach TNTplus 835/836 Method 10206.

BOARD NOTE: USEPA added Standard Methods, 21st ed., Methods 4110 B and 4500-NO_3^- D, E, and F as approved alternative methods on June 3, 2008 (at 73 Fed. Reg. 31616). USEPA added Systea Easy (1-Reagent) as an approved alternative method on August 3, 2009 (at 73 Fed. Reg. 38348). USEPA added Hach TNTplus 835/836 Method 10206 as an approved alternative method on June 24, 2011 (at 76 Fed. Reg. 37014). USEPA added Standard Methods, 22nd ed., Methods 4110 B and 4500-

NO_3^- D, E, and F as approved alternative methods on May 31, 2013 (at 78 Fed. Reg. 32558). USEPA added ASTM D4327-11 as an approved alternative method on June 19, 2014 (at 79 Fed. Reg. 35081). USEPA added NECi Nitrate-Reductase Method as an approved alternative method on July 19, 2016 (at 81 Fed. Reg. 46839). USEPA added ASTM Method D6508-15 as an approved alternative method on July 27, 2017 (at 82 Fed. Reg. 34861).

19) Nitrite.

A) Ion chromatography.

i) USEPA Environmental Inorganic Methods, Method 300.0 (rev. 2.1) or USEPA Organic and Inorganic Methods, Method 300.1 (rev. 1.0);

ii) ASTM Method D4327-97, D4327-03, or D4327-11;

iii) Standard Methods, 18th, 19th, 20th, 21st, or 22nd ed., Method 4110 B; or

iv) Waters Method B-1011, available from Millipore Corporation.

B) Automated cadmium reduction.

i) USEPA Environmental Inorganic Methods, Method 353.2 (rev. 2.0);

ii) ASTM Method D3867-90 A; or

iii) Standard Methods, 18th, 19th, 20th, 21st, or 22nd ed., Method 4500-NO_3^- F.

C) Manual cadmium reduction.

i) ASTM Method D3867-90 B; or

ii) Standard Methods, 18th, 19th, 20th, 21st, or 22nd ed., Method 4500-NO_3^- E.

D) Spectrophotometric: Standard Methods, 18th, 19th, 20th, 21st, or 22nd ed., Method 4500-NO_2^- B.

E) Capillary ion electrophoresis: ASTM Method D6508-00(2005), or

D6508-15.

F) Reduction-colorimetric: Systea Easy (1-Reagent) or NECi Nitrate-Reductase Method.

BOARD NOTE: USEPA added Standard Methods, 21st ed., Methods 4110 B, 4500-NO_3^- E and F; and 4500-NO_2^- B as approved alternative methods on June 3, 2008 (at 73 Fed. Reg. 31616). USEPA added Systea Easy (1-Reagent) as an approved alternative method on August 3, 2009 (at 73 Fed. Reg. 38348). USEPA added Standard Methods, 22nd ed., Methods 4110 B, 4500-NO_3^- E and F, and 4500-NO_2^- B as approved alternative methods on May 31, 2013 (at 78 Fed. Reg. 32558). USEPA added ASTM D4327-11 as an approved alternative method on June 19, 2014 (at 79 Fed. Reg. 35081). USEPA added NECi Nitrate-Reductase Method as an approved alternative method on July 19, 2016 (at 81 Fed. Reg. 46839). USEPA added ASTM Method D6508-15 as an approved alternative method on July 27, 2017 (at 82 Fed. Reg. 34861).

20) Orthophosphate (unfiltered, without digestion or hydrolysis).

A) Automated colorimetric, ascorbic acid.

i) USEPA Environmental Inorganic Methods, Method 365.1 (rev. 2.0);

ii) Standard Methods, 18th, 19th, 20th, 21st, or 22nd ed., Method 4500-P F; or

iii) Thermo-Fisher Discrete Analyzer.

B) Single reagent colorimetric, ascorbic acid.

i) ASTM Method D515-88 A; or

ii) Standard Methods, 18th, 19th, 20th, 21st, or 22nd ed., Method 4500-P E.

C) Colorimetric, phosphomolybdate: USGS Method I-1601-85.

D) Phosphorus, orthophosphate, colorimetry, phosphomolybdate, automated-segmented flow: USGS Method I-2601-90.

E) Colorimetric, phosphomolybdate, automated discrete: USGS Method I-2598-85.

F) Ion Chromatography.

i) USEPA Environmental Inorganic Methods, Method 300.0 (rev. 2.1) or USEPA Organic and Inorganic Methods, Method 300.1 (rev. 1.0);

ii) ASTM Method D4327-97, D4327-03, or D4327-11; or

iii) Standard Methods, 18th, 19th, 20th, 21st, or 22nd ed., Method 4110 B.

G) Capillary ion electrophoresis: ASTM Method D6508-00(2005), or D6508-15.

BOARD NOTE: USEPA added Standard Methods, 21st ed., Methods 4110 B and 4500-P E and F as approved alternative methods on June 3, 2008 (at 73 Fed. Reg. 31616). Because Standard Methods, 21st ed., Methods 4500-P E and F are the same versions as Standard Methods Online 4500-P E-99 and F-99, the Board has not listed the Standard Methods Online versions separately. USEPA added Standard Methods, 22nd ed., Methods 4500-P E and F and 4110 B as approved alternative methods on May 31, 2013 (at 78 Fed. Reg. 32558). USEPA added ASTM D4327-11 as an approved alternative method on June 19, 2014 (at 79 Fed. Reg. 35081). USEPA added Thermo-Fisher Discrete Analyzer as an approved alternative method on July 19, 2016 (at 81 Fed. Reg. 46839). USEPA added ASTM Method D6508-15 as an approved alternative method on July 27, 2017 (at 82 Fed. Reg. 34861).

21) pH: electrometric.

A) USEPA Inorganic Methods, Method 150.1 or Method 150.2;

B) ASTM Method D1293-95, D1293-99, or D1293-12; or

C) Standard Methods, 18th, 19th, 20th, 21st, or 22nd ed., Method 4500-H^+ B.

D) USEPA Method 150.3.

BOARD NOTE: USEPA added Standard Methods, 21st ed., Method 4500-H^+ B as an approved alternative method on June 3, 2008 (at 73 Fed. Reg. 31616). USEPA added Standard Methods, 22nd ed., Method 4500-H^+ B and ASTM Method D1293-12 as approved alternative methods on May 31, 2013 (at 78 Fed. Reg. 32558). USEPA added USEPA Method

150.3 as an approved alternative method on July 27, 2017 (at 82 Fed. Reg. 34861).

22) Selenium.

A) Atomic absorption, hydride.

i) ASTM Method D3859-98 A, D3859-03 A, ~~or~~ D3859-08 A, or D3859-15 A; or

ii) Standard Methods, 18th, 19th, 21st, or 22nd ed., Method 3114 B.

B) Inductively coupled plasma-mass spectrometry: USEPA Environmental Metals Methods, Method 200.8 (rev. 5.3).

C) Atomic absorption, platform furnace technique: USEPA Environmental Metals Methods, Method 200.9 (rev. 2.2).

D) Atomic absorption, furnace technique.

i) ASTM Method D3859-98 B, D3859-03 B, ~~or~~ D3859-08 B; or D3859-15 B;

ii) Standard Methods, 18th, 19th, 21st, or 22nd ed., Method 3113 B; or

iii) Standard Methods Online, Method 3113 B-04.

E) Axially viewed inductively coupled plasma-atomic emission spectrometry (AVICP-AES): USEPA NERL Method 200.5.

BOARD NOTE: USEPA added Standard Methods, 21st ed., Methods 3113 B and 3114 B and USEPA NERL Method 200.5 as approved alternative methods on June 3, 2008 (at 73 Fed. Reg. 31616). USEPA added ASTM Methods D3859-08 A and B as approved alternative methods on November 10, 2009 (at 74 Fed. Reg. 57908). USEPA added Standard Methods Online, Method 3113 B-04 and Method 3114 B-09 as approved alternative methods on June 24, 2011 (at 76 Fed. Reg. 37014). USEPA added Standard Methods, 22nd ed., Methods 3113 B and 3114 B as approved alternative methods on May 31, 2013 (at 78 Fed. Reg. 32558). Because Standard Methods, 22nd ed., Method 3114 B is the same version as Standard Methods Online 3114 B-09, the Board has not listed the Standard Methods Online version separately. USEPA added Standard

Methods Online, Method 3113 B-10 as an approved alternative method on June 19, 2014 (at 79 Fed. Reg. 35081). USEPA added ASTM Methods D3859-15 A and B as approved alternative methods on July 27, 2017 (at 82 Fed. Reg. 34861). Because Standard Methods, 22nd ed., Method 3113 B is the same version as Standard Methods Online, Method 3113 B-10, the Board has not listed the Standard Methods Online versions separately.

23) Silica.

A) Colorimetric, molybdate blue: USGS Method I-1700-85.

B) Colorimetric, molybdate blue, automated-segmented flow: USGS Method I-2700-85.

C) Colorimetric: ASTM Method D859-94, D859-00, D859-05, or D859-10.

D) Molybdosilicate: Standard Methods, 18th or 19th ed., Method 4500-Si D or Standard Methods, 20th, 21st, or 22nd ed., Method 4500-SiO_2 C.

E) Heteropoly blue: Standard Methods, 18th or 19th ed., Method 4500-Si E or Standard Methods, 20th, 21st, or 22nd ed., Method 4500-SiO_2 D.

F) Automated method for molybdate-reactive silica: Standard Methods, 18th or 19th ed., Method 4500-Si F or Standard Methods, 20th, 21st, or 22nd ed., Method 4500-SiO_2 E.

G) Inductively coupled plasma.

i) USEPA Environmental Metals Methods, Method 200.7 (rev. 4.4); or

ii) Standard Methods, 18th, 19th, 20th, 21st, or 22nd ed., Method 3120 B.

H) Axially viewed inductively coupled plasma-atomic emission spectrometry (AVICP-AES): USEPA NERL Method 200.5.

BOARD NOTE: USEPA added ASTM Method D859-05, Standard Methods, 21st ed.; Methods 3120 B and 4500-SiO_2 C, D, and E; and USEPA NERL Method 200.5 as approved alternative methods on June 3, 2008 (at 73 Fed. Reg. 31616). USEPA added ASTM Method D859-10 as

an approved alternative method on June 28, 2012 (at 77 Fed. Reg. 38523). USEPA added Standard Methods, 22nd ed., Methods 3120 B and 4500-SiO_2 C, D, and E as approved alternative methods on May 31, 2013 (at 78 Fed. Reg. 32558).

24) Sodium.

A) Inductively coupled plasma: USEPA Environmental Metals Methods, Method 200.7 (rev. 4.4).

B) Atomic absorption, direct aspiration: Standard Methods, 18th, 19th, 21st, or 22nd ed., Method 3111 B.

C) Ion chromatography: ASTM Method D6919-03 or D6919-09.

D) Axially viewed inductively coupled plasma-atomic emission spectrometry (AVICP-AES): USEPA NERL Method 200.5.

BOARD NOTE: USEPA added Standard Methods, 21st ed., Method 3111 B and USEPA NERL Method 200.5 as approved alternative methods on June 3, 2008 (at 73 Fed. Reg. 31616). USEPA added ASTM Method D6919-09 as an approved alternative method on June 24, 2011 (at 76 Fed. Reg. 37014). USEPA added Standard Methods, 22nd ed., Method 3111 B as an approved alternative method on May 31, 2013 (at 78 Fed. Reg. 32558).

25) Temperature; thermometric: Standard Methods, 18th, 19th, 20th, 21st, or 22nd ed., Method 2550.

BOARD NOTE: USEPA added Standard Methods, 21st ed., Method 2550 as an approved alternative method on June 3, 2008 (at 73 Fed. Reg. 31616). USEPA added Standard Methods, 22nd ed., Method 2550 as an approved alternative method on May 31, 2013 (at 78 Fed. Reg. 32558). USEPA added Standard Methods Online, Method 2550-10 as an approved alternative method on June 19, 2014 (at 79 Fed. Reg. 35081). Because Standard Methods, 22nd ed., Method 2550 is the same version as Standard Methods Online, Method 2550-10, the Board has not listed the Standard Methods Online versions separately.

26) Thallium.

A) Inductively coupled plasma-mass spectrometry: USEPA Environmental Metals Methods, Method 200.8 (rev. 5.3).

B) Atomic absorption, platform furnace technique: USEPA Environmental Metals Methods, Method 200.9 (rev. 2.2).

b) Sample collection for antimony, arsenic, asbestos, barium, beryllium, cadmium, chromium, cyanide, fluoride, mercury, nickel, nitrate, nitrite, selenium, and thallium pursuant to Sections 611.600 through 611.604 must be conducted using the following sample preservation, container, and maximum holding time procedures:

BOARD NOTE: For cyanide determinations samples must be adjusted with sodium hydroxide to pH 12 at the time of collection. When chilling is indicated the sample must be shipped and stored at 4° C or less. Acidification of nitrate or metals samples may be with a concentrated acid or a dilute (50% by volume) solution of the applicable concentrated acid. Acidification of samples for metals analysis is encouraged and allowed at the laboratory rather than at the time of sampling provided the shipping time and other instructions in Section 8.3 of USEPA Environmental Metals Method 200.7, 200.8, or 200.9 are followed.

1) Antimony.

A) Preservative: Concentrated nitric acid to pH less than 2.

B) Plastic or glass (hard or soft).

C) Holding time: Samples must be analyzed as soon after collection as possible, but in any event within six months.

2) Arsenic.

A) Preservative: Concentrated nitric acid to pH less than 2.

B) Plastic or glass (hard or soft).

C) Holding time: Samples must be analyzed as soon after collection as possible, but in any event within six months.

3) Asbestos.

A) Preservative: Cool to 4° C.

B) Plastic or glass (hard or soft).

C) Holding time: Samples must be analyzed as soon after collection as possible, but in any event within 48 hours.

4) Barium.

A) Preservative: Concentrated nitric acid to pH less than 2.

B) Plastic or glass (hard or soft).

C) Holding time: Samples must be analyzed as soon after collection as possible, but in any event within six months.

5) Beryllium.

A) Preservative: Concentrated nitric acid to pH less than 2.

B) Plastic or glass (hard or soft).

C) Holding time: Samples must be analyzed as soon after collection as possible, but in any event within six months.

6) Cadmium.

A) Preservative: Concentrated nitric acid to pH less than 2.

B) Plastic or glass (hard or soft).

C) Holding time: Samples must be analyzed as soon after collection as possible, but in any event within six months.

7) Chromium.

A) Preservative: Concentrated nitric acid to pH less than 2.

B) Plastic or glass (hard or soft).

C) Holding time: Samples must be analyzed as soon after collection as possible, but in any event within six months.

8) Cyanide.

A) Preservative: Cool to 4° C. Add sodium hydroxide to pH greater than 12. See the analytical methods for information on sample preservation.

B) Plastic or glass (hard or soft).

C) Holding time: Samples must be analyzed as soon after collection

as possible, but in any event within 14 days.

9) Fluoride.

A) Preservative: None.

B) Plastic or glass (hard or soft).

C) Holding time: Samples must be analyzed as soon after collection as possible, but in any event within one month.

10) Mercury.

A) Preservative: Concentrated nitric acid to pH less than 2.

B) Plastic or glass (hard or soft).

C) Holding time: Samples must be analyzed as soon after collection as possible, but in any event within 28 days.

11) Nickel.

A) Preservative: Concentrated nitric acid to pH less than 2.

B) Plastic or glass (hard or soft).

C) Holding time: Samples must be analyzed as soon after collection as possible, but in any event within six months.

12) Nitrate, chlorinated.

A) Preservative: Cool to 4° C.

B) Plastic or glass (hard or soft).

C) Holding time: Samples must be analyzed as soon after collection as possible, but in any event within 14 days.

13) Nitrate, non-chlorinated.

A) Preservative: Concentrated sulfuric acid to pH less than 2.

B) Plastic or glass (hard or soft).

C) Holding time: Samples must be analyzed as soon after collection

as possible, but in any event within 14 days.

14) Nitrite.

A) Preservative: Cool to 4° C.

B) Plastic or glass (hard or soft).

C) Holding time: Samples must be analyzed as soon after collection as possible, but in any event within 48 hours.

15) Selenium.

A) Preservative: Concentrated nitric acid to pH less than 2.

B) Plastic or glass (hard or soft).

C) Holding time: Samples must be analyzed as soon after collection as possible, but in any event within six months.

16) Thallium.

A) Preservative: Concentrated nitric acid to pH less than 2.

B) Plastic or glass (hard or soft).

C) Holding time: Samples must be analyzed as soon after collection as possible, but in any event within six months.

c) Analyses under this Subpart N must be conducted by a certified laboratory in one of the categories listed in Section 611.490(a). The Agency must certify laboratories to conduct analyses for antimony, arsenic, asbestos, barium, beryllium, cadmium, chromium, cyanide, fluoride, mercury, nickel, nitrate, nitrite, selenium, and thallium if the laboratory does as follows:

1) It analyzes performance evaluation (PE) samples, provided by the Agency pursuant to 35 Ill. Adm. Code 186, that include those substances at levels not in excess of levels expected in drinking water; and

2) It achieves quantitative results on the analyses within the following acceptance limits:

A) Antimony: ± 30% at greater than or equal to 0.006 mg/ℓ.

B) Arsenic: ± 30% at greater than or equal to 0.003 mg/ℓ.

C) Asbestos: 2 standard deviations based on study statistics.

D) Barium: ± 15% at greater than or equal to 0.15 mg/ℓ.

E) Beryllium: ± 15% at greater than or equal to 0.001 mg/ℓ.

F) Cadmium: ± 20% at greater than or equal to 0.002 mg/ℓ.

G) Chromium: ± 15% at greater than or equal to 0.01 mg/ℓ.

H) Cyanide: ± 25% at greater than or equal to 0.1 mg/ℓ.

I) Fluoride: ± 10% at 1 to 10 mg/ℓ.

J) Mercury: ± 30% at greater than or equal to 0.0005 mg/ℓ.

K) Nickel: ± 15% at greater than or equal to 0.01 mg/ℓ.

L) Nitrate: ± 10% at greater than or equal to 0.4 mg/ℓ.

M) Nitrite: ± 15% at greater than or equal to 0.4 mg/ℓ.

N) Selenium: ± 20% at greater than or equal to 0.01 mg/ℓ.

O) Thallium: ± 30% at greater than or equal to 0.002 mg/ℓ.

BOARD NOTE: Derived from 40 CFR 141.23(k) and appendix A to subpart C of 40 CFR 141 (2017) ~~(2016)~~.

(Source: Amended at 43 Ill. Reg. _____, effective _____)

SUBPART Q: RADIOLOGICAL MONITORING AND ANALYTICAL REQUIREMENTS

Section 611.720 Analytical Methods

a) The methods specified below, or alternative methods approved by the Agency pursuant to Section 611.480, incorporated by reference in Section 611.102, are to be used to determine compliance with Section 611.330, except in cases where alternative methods have been approved in accordance with Section 611.480.

1) Gross Alpha and Beta.

A) Standard Methods.

i) Evaporation: Method 302, 13th ed.; or

ii) Evaporation: Method 7110 B, 17th, 18th, 19th, 20th, 21st, or 22nd ed.;

B) Evaporation: USEPA Interim Radiochemical Methods: pages 1-3;

C) Evaporation: USEPA Radioactivity Methods, Method 900.0;

D) Evaporation: USEPA Radiochemical Analyses: pages 1-5;

E) Evaporation: USEPA Radiochemistry Procedures, Method 00-01; or

F) Evaporation: USGS Method R-1120-76.

G) Liquid scintillation: ASTM Method D7283-17.

H) Liquid scintillation: Standard Methods Online, Method 7110 D-17.

BOARD NOTE: USEPA added Standard Methods, 21st ed., Method 7110 B as an approved alternative method on June 3, 2008 (at 73 Fed. Reg. 31616). USEPA added Standard Methods, 22nd ed., Method 7110 B as an approved alternative method on June 21, 2013 (at 78 Fed. Reg. 37463). USEPA added ASTM Method D7283-17 and Standard Methods Online, Method 7110 D-17 as approved alternative methods on July 27, 2017 (at 82 Fed. Reg. 34861).

2) Gross Alpha.

A) Coprecipitation: Standard Methods, 18th, 19th, 20th, 21st, or 22nd ed., Method 7110 C; or

B) Coprecipitation: USEPA Radiochemistry Procedures, Method 00-02.

BOARD NOTE: USEPA added Standard Methods, 21st ed., Method 7110 C as an approved alternative method on June 3, 2008 (at 73 Fed. Reg. 31616). See the comment appended to 611.611(a)(2)(D)(ii) re Standard Methods Online, Method 3113 B-04 for antimony. USEPA added Standard Methods, 22nd ed., Method 7110 C as an approved alternative method on June 21, 2013 (at 78 Fed. Reg. 37463).

3) Radium-226.

A) ASTM Methods.

i) Radiochemical: Method D2460-97 or D2460-07; or

ii) Radon emanation: Method D3454-97 or D3454-05;

B) Radiochemical: New York Radium Method;

C) Standard Methods.

i) Radiochemical: Method 304, 13th ed.;

ii) Radon emanation: Method 305, 13th ed.;

iii) Radiochemical: Method 7500-Ra B, 17th, 18th, 19th, 20th, 21st, or 22nd ed.; or

iv) Radon emanation: Method 7500-Ra C, 17th, 18th, 19th, 20th, 21st, or 22nd ed.;

v) Gamma spectrometry: Method 7500-Ra E, 22nd ed.;

D) Radon emanation: EML Procedures Manual (27th or 28th ed.), Method Ra-04;

E) USEPA Interim Radiochemical Methods: ~~pages 13-15 or 16-23;~~

i) Radiochemical: pages 13-15; or

ii) Radon emanation: pages 16-23;

F) USEPA Radioactivity Methods:~~, Methods 903.0, 903.1;~~

i) Radiochemical: Method 903.0; or

ii) Radon emanation: Method 903.1;

G) Radiochemical: USEPA Radiochemical Analyses, pages 19-32;

H) Radiochemical: USEPA Radiochemistry Procedures:~~, Method Ra-03 or Ra-04; or~~

i) Radiochemical: Method Ra-03; or

ii) Radon emanation: Method Ra-04; or

I) USGS Methods.

i) Radiochemical: USGS Method R-1140-76; or

ii) Radon emanation: USGS Method R-1141-76.

J) Radiochemical: Georgia Radium Method.

BOARD NOTE: USEPA added Standard Methods, 21st ed., Methods 7500-Ra B and C as approved alternative methods on June 3, 2008 (at 73 Fed. Reg. 31616). USEPA added ASTM Methods D2460-07 and D3454-05 as approved alternative methods on June 8, 2010 (at 75 Fed. Reg. 32295). USEPA added Standard Methods, 22nd ed., Methods 7500-Ra B and C as approved alternative methods on June 21, 2013 (at 78 Fed. Reg. 37463). USEPA added Standard Methods, 22nd ed., Method 7500-Ra E as an approved alternative method on July 27, 2017 (at 82 Fed. Reg. 34861).

4) Radium-228.

A) Standard Methods:~~, 17th, 18th, 19th, 20th, 21st, or 22nd ed., Method 7500-Ra D;~~

i) Radiochemical: Method 7500-Ra D (Standard Methods, 17th, 18th, 19th, 20th, 21st, or 22nd ed.);

ii) Gamma spectrometry: Method 7500-Ra E (Standard Methods, 22nd ed.);

B) Radiochemical: New York Radium Method;

C) Radiochemical: USEPA Interim Radiochemical Methods, pages 24-28;

D) Radiochemical: USEPA Radioactivity Methods, Method 904.0;

E) Radiochemical: USEPA Radiochemical Analyses, pages 19-32;

F) Radiochemical: USEPA Radiochemistry Procedures, Method Ra-05;

G) Radiochemical: USGS Method R-1142-76;

H) Radiochemical: New Jersey Radium Method; or

I) Radiochemical: Georgia Radium Method.

BOARD NOTE: USEPA added Standard Methods, 21st ed., Method 7500-Ra D as an approved alternative method on June 3, 2008 (at 73 Fed. Reg. 31616). USEPA added Standard Methods, 22nd ed., Method 7500-Ra D as an approved alternative method on June 21, 2013 (at 78 Fed. Reg. 37463). USEPA added Standard Methods, 22nd ed., Method 7500-Ra E as an approved alternative method on July 27, 2017 (at 82 Fed. Reg. 34861).

5) Uranium.

A) Standard Methods, 17th, 18th, 19th, 20th, 21st, or 22nd ed.:, ~~Method 7500-U B or 7500-U C;~~

i) Radiochemical: Method 7500-U B; or

ii) Fluorometric: Method 7500-U C;

B) ICP-MS: Standard Methods, 20th or 21st ed., Method 3125;

C) ASTM Methods.

i) Fluorometric: Method D2907-97;

ii) Alpha spectrometry: Method D3972-97, D3972-02, or D3972-09;

iii) Laser spectrometry: Method D5174-97, D5174-02, or D5174-07;

iv) ICP-MS: Method D5673-03, Method D5673-05, or Method D5673-10; or

v) Alpha liquid scintillation spectrometry: Method D6239-09;

D) USEPA Radioactivity Methods:, ~~Methods 908.0, 908.1;~~

i) Radiochemical: Method 908.0; or

ii) Fluorometric: Method 908.1;

E) ICP-MS: USEPA Environmental Metals Methods, Method 200.8 (rev. 5.3);

F) Alpha spectrometry: USEPA Radiochemical Analyses, pages 33-48;

G) Alpha spectrometry: USEPA Radiochemistry Procedures, Method 00-07;

H) EML Procedures Manual (27th or 28th ed.):~~, Method U-02 or U-04; or~~

i) Alpha spectrometry: Method U-02; or

ii) Fluorometric: Method U-04; or

I) USGS Methods.

i) Fluorometric: USGS Method R-1180-76;

ii) Fluorometric: USGS Method R-1181-76; or

iii) Alpha spectrometry: USGS Method R-1182-76.

BOARD NOTE: If uranium (U) is determined by mass, a conversion factor of 0.67 pCi/µg of uranium must be used. This conversion factor is based on the 1:1 activity ratio of ^{234}U and ^{238}U that is characteristic of naturally occurring uranium.

BOARD NOTE: USEPA added Standard Methods, 21st ed., Method 7500-U B and Method 7500-U C and ASTM Method D5673-05 as approved alternative methods on June 3, 2008 (at 73 Fed. Reg. 31616). USEPA added ASTM Method D5174-07 as an approved alternative method on June 8, 2010 (at 75 Fed. Reg. 32295). USEPA added ASTM Method D3972-09 as an approved alternative method on June 24, 2011 (at 76 Fed. Reg. 37014). USEPA added Standard Methods, 21st ed., Method 3125 and ASTM Methods D5673-10 and D6329-09 as approved alternative methods on June 3, 2012 (at 77 Fed. Reg. 38523). USEPA added Standard Methods, 22nd ed., Methods 7500-U B and C as approved alternative methods on June 21, 2013 (at 78 Fed. Reg. 37463).

6) Radioactive Cesium.

A) ASTM Methods.

i) Radiochemical: Method D2459-72; or

ii) Gamma ray spectrometry: Method D3649-91, D3649-98a, or D3649-06;

B) Standard Methods.

i) Gamma ray spectrometry: Method 7120, 19th, 20th, 21st, or 22nd ed.; or

ii) Radiochemical: Method 7500-Cs B, 17th, 18th, 19th, 20th, 21st, or 22nd ed.;

C) Gamma ray spectrometry: EML Procedures Manual (27th or 28th ed.), Method Ga-01-R;

D) Radiochemical: USEPA Interim Radiochemical Methods, pages 4-5;

E) USEPA Radioactivity Methods:~~, Methods 901.0, 901.1;~~

i) Radiochemical: Method 901.0; or

ii) Gamma ray spectrometry: Method 901.1;

F) Gamma ray spectrometry: USEPA Radiochemical Analyses, pages 92-95; or

G) USGS Methods.

i) Gamma ray spectrometry: USGS Method R-1110-76; or

ii) Radiochemical: USGS Method R-1111-76.

BOARD NOTE: USEPA added Standard Methods, 21st ed., Methods 7120 and 7500-Cs B as approved alternative methods on June 3, 2008 (at 73 Fed. Reg. 31616). USEPA added ASTM Method D3649-06 as an approved alternative method on June 8, 2010 (at 75 Fed. Reg. 32295). USEPA added Standard Methods, 22nd ed., Methods 7120 and 7500-Cs B as approved alternative methods on June 21, 2013 (at 78 Fed. Reg. 37463).

7) Radioactive Iodine.

A) ASTM Methods.

i) Radiochemical: D3649-91, D3649-98a, or D3649-06; or

ii) Gamma ray spectrometry: D4785-93, D4785-00a, or D4785-08;

B) Standard Methods.

i) Method 7120, 19th, 20th, 21st, or 22nd ed.;

ii) Radiochemical: Method 7500-I B, 17th, 18th, 19th, 20th, 21st, or 22nd ed.;

iii) Radiochemical: Method 7500-I C, 17th, 18th, 19th, 20th, 21st, or 22nd ed.; or

iv) Radiochemical: Method 7500-I D, 17th, 18th, 19th, 20th, 21st, or 22nd ed.;

C) Gamma ray spectrometry: EML Procedures Manual (27th or 28th ed.), Method Ga-01-R;

D) Radiochemical: USEPA Interim Radiochemical Methods, pages 6-8 or 9-12;

E) Gamma ray spectrometry: USEPA Radiochemical Analyses, pages 92-95; or

F) USEPA Radioactivity Methods:~~, Methods 901.1 or 902.0.~~

i) Gamma ray spectrometry: Method 901.1; or

ii) Radiochemical: Method 902.0.

BOARD NOTE: USEPA added Standard Methods, 21st ed., Methods 7120 and 7500-I B, C, and D as approved alternative methods on June 3, 2008 (at 73 Fed. Reg. 31616). USEPA added ASTM Methods D3649-06 and D4785-08 as approved alternative methods on June 8, 2010 (at 75 Fed. Reg. 32295). USEPA added Standard Methods, 22nd ed., Methods 7120 and 7500-I B, C, and D as approved alternative methods on June 21, 2013 (at 78 Fed. Reg. 37463).

8) Radioactive Strontium-89 and 90.

A) Standard Methods.

i) Radiochemical: Method 303, 13th ed.; or

ii) Radiochemical: Method 7500-Sr B, 17th, 18th, 19th, 20th, 21st, or 22nd ed.;

B) Radiochemical: EML Procedures Manual (27th or 28th ed.), Method Sr-01 or Sr-02.

C) Radiochemical: USEPA Interim Radiochemical Methods, pages 29-33;

D) Radiochemical: USEPA Radioactivity Methods, Method 905.0;

E) Radiochemical: USEPA Radiochemical Analyses, pages 65-73;

F) Radiochemical: USEPA Radiochemistry Procedures, Method Sr-04; or

G) Radiochemical: USGS Method R-1160-76.

BOARD NOTE: USEPA added Standard Methods, 21st ed., Method 7500-Sr B as an approved alternative method on June 3, 2008 (at 73 Fed. Reg. 31616). USEPA added Standard Methods, 22nd ed., Method 7500-Sr B as an approved alternative method on June 21, 2013 (at 78 Fed. Reg. 37463).

9) Tritium.

A) Liquid scintillation: ASTM Methods: Method D4107-91, D4107-98, or D4107-08;

B) Standard Methods.

i) Liquid scintillation: Method 306, 13th ed.; or

ii) Liquid scintillation: Method 7500-^{3}H B, 17th, 18th, 19th, 20th, 21st, or 22nd ed.;

C) Liquid scintillation: USEPA Interim Radiochemical Methods, pages 34-37;

D) Liquid scintillation: USEPA Radioactivity Methods, Method 906.0;

E) Liquid scintillation: USEPA Radiochemical Analyses, pages 87-91;

F) Liquid scintillation: USEPA Radiochemistry Procedures, Method H-02; or

G) Liquid scintillation: USGS Method R-1171-76.

BOARD NOTE: USEPA added Standard Methods, 21st ed., Method 7500-^{3}H B as an approved alternative method on June 3, 2008 (at 73 Fed. Reg. 31616). USEPA added ASTM Method D4107-08 as an approved alternative method on June 8, 2010 (at 75 Fed. Reg. 32295). USEPA added Standard Methods, 22nd ed., Method 7500-^{3}H B as an approved alternative method on June 21, 2013 (at 78 Fed. Reg. 37463).

10) Gamma Emitters.

A) ASTM Methods.

i) Gamma ray spectrometry: Method D3649-91, D3649-98a, or D3649-06; or

ii) Gamma ray spectrometry: Method D4785-93, D4785-00a, or D4785-08;

B) Standard Methods.

i) Gamma ray spectrometry: Method 7120, 19th, 20th, 21st, or 22nd ed.;

ii) Gamma ray spectrometry: Method 7500-Cs B, 17th, 18th, 19th, 20th, 21st, or 22nd ed.; or

iii) Gamma ray spectrometry: Method 7500-I B, 17th, 18th, 19th, 20th, 21st, or 22nd ed.;

C) Gamma ray spectrometry: EML Procedures Manual (27th or 28th ed.), Method Ga-01-R;

D) Gamma ray spectrometry: USEPA Radioactivity Methods, Methods 901.0, 901.1, or 902.0;

E) Gamma ray spectrometry: USEPA Radiochemical Analyses, pages 92-95; or

F) Gamma ray spectrometry: USGS Method R-1110-76.

BOARD NOTE: USEPA added Standard Methods, 21st ed., Methods 7120, 7500-Cs B, and 7500-I B as approved alternative methods on June 3, 2008 (at 73 Fed. Reg. 31616). USEPA added ASTM Methods D3649-08 and D4785-08 as approved alternative methods on June 8, 2010 (at 75 Fed. Reg. 32295). USEPA added Standard Methods, 22nd ed., Methods 7120, 7500-Cs B, and 7500-I B as approved alternative methods on June 21, 2013 (at 78 Fed. Reg. 37463).

b) When the identification and measurement of radionuclides other than those listed in subsection (a) are required, the following methods, incorporated by reference in Section 611.102, are to be used, except in cases where alternative methods have been approved in accordance with Section 611.480:

1) Aqueous Radiochemical Procedures.

2) EML Procedures Manual (27th or 28th ed.).

c) For the purpose of monitoring radioactivity concentrations in drinking water, the required sensitivity of the radioanalysis is defined in terms of a detection limit. The detection limit must be that concentration which can be counted with a precision of plus or minus 100 percent at the 95 percent confidence level (1.96σ, where σ is the standard deviation of the net counting rate of the sample).

1) To determine compliance with Section 611.330(b), (c), and (e), the detection limit must not exceed the concentrations set forth in the following table:

Contaminant	Detection Limit
Gross alpha particle activity	3 pCi/ℓ
Radium-226	1 pCi/ℓ
Radium-228	1 pCi/ℓ
Uranium	1 µg/ℓ

BOARD NOTE: Derived from 40 CFR 141.25(c) Table B (2017) ~~(2013)~~.

2) To determine compliance with Section 611.330(d), the detection limits must not exceed the concentrations listed in the following table:

Radionuclide	Detection Limit
Tritium	1,000 pCi/ℓ
Strontium-89	10 pCi/ℓ
Strontium-90	2 pCi/ℓ
Iodine-131	1 pCi/ℓ
Cesium-134	10 pCi/ℓ
Gross beta	4 pCi/ℓ
Other radionuclides	1/10 of applicable limit

BOARD NOTE: Derived from 40 CFR 141.25(c) Table C (2017) ~~(2013)~~.

d) To judge compliance with the MCLs listed in Section 611.330, averages of data must be used and must be rounded to the same number of significant figures as the MCL for the substance in question.

BOARD NOTE: Derived from 40 CFR 141.25 and appendix A to subpart C of 40 CFR 141 (2017) ~~(2016)~~.

(Source: Amended at 43 Ill. Reg. _____, effective _____)

SUBPART S: GROUNDWATER RULE

Section 611.802 Groundwater Source Microbial Monitoring and Analytical Methods

a) Triggered source water monitoring.

1) General requirements. A GWS supplier must conduct triggered source water monitoring if the following conditions exist.

A) The supplier does not provide at least 4-log treatment of viruses (using inactivation, removal, or an Agency-approved combination of 4-log virus inactivation and removal) before or at the first customer for each groundwater source.

B) This subsection (a)(1)(B) corresponds with 40 CFR 141.802(a)(1)(ii), which has no operative effect after a past implementation date. This statement maintains structural

consistency with the federal regulations.

C) The system is notified that a sample collected under Sections 611.1054 through 611.1057 is total coliform-positive and the sample is not invalidated under Section 611.1053(c).

2) Sampling requirements. A GWS supplier must collect, within 24 hours after notification of the total coliform-positive sample, at least one groundwater source sample from each groundwater source in use at the time the total coliform-positive sample was collected pursuant to Sections 611.1054 through 611.1057, except as provided in subsection (a)(2)(B).

A) The Agency may, by a SEP issued pursuant to Section 611.110, extend the 24-hour time limit on a case-by-case basis if it determines that the supplier cannot collect the groundwater source water sample within 24 hours due to circumstances beyond the supplier's control. In the case of an extension, the Agency must specify how much time the supplier has to collect the sample.

B) If approved by the Agency, a supplier with more than one groundwater source may meet the requirements of this subsection (a)(2) by sampling a representative groundwater source or sources. If directed by the Agency by a SEP issued pursuant to Section 611.110, the supplier must submit for Agency approval a triggered source water monitoring plan that identifies one or more groundwater sources that are representative of each monitoring site in the system's sample siting plan pursuant to Section 611.521 and that the system intends to use for representative sampling pursuant to this subsection (a).

C) This subsection (a)(2)(C) corresponds with 40 CFR 141.802(a)(1)(ii), a now-obsolete implementing provision. This statement maintains structural consistency with the federal regulations.

D) A GWS supplier that serves 1,000 or fewer people may use a repeat sample collected from a groundwater source to meet both the requirements of Subpart AA and to satisfy the monitoring requirements of subsection (a)(2) for that groundwater source only if the Agency, by a SEP issued pursuant to Section 611.110, approves the use of E. coli as a fecal indicator for source water monitoring pursuant to this subsection (a) and approves the use of a single sample for meeting both the triggered source water monitoring requirements in this subsection (a) and the repeat

monitoring requirements in Section 611.1058. If the repeat sample collected from the groundwater source is E. coli-positive, the system must comply with subsection (a)(3).

3) Additional requirements. If the Agency does not require corrective action pursuant to Section 611.803(a)(2) for a fecal indicator-positive source water sample collected pursuant to subsection (a)(2) that is not invalidated pursuant to subsection (d), the system must collect five additional source water samples from the same source within 24 hours after being notified of the fecal indicator-positive sample.

4) Consecutive and wholesale systems.

A) In addition to the other requirements of this subsection (a), a consecutive GWS supplier that has a total coliform-positive sample collected pursuant to Sections 611.1054 through 611.1057, must notify the wholesale systems within 24 hours after being notified of the total coliform-positive sample.

B) In addition to the other requirements of this subsection (a), a wholesale GWS supplier must comply with the following requirements:

i) A wholesale GWS supplier that receives notice from a consecutive system it serves that a sample collected pursuant to Sections 611.1054 through 611.1057, is total coliform-positive must, within 24 hours after being notified, collect a sample from its groundwater sources pursuant to subsection (a)(2) and analyze it for a fecal indicator pursuant to subsection (c).

ii) If the sample collected pursuant to subsection (a)(4)(B)(i) is fecal indicator-positive, the wholesale GWS supplier must notify all consecutive systems served by that groundwater source of the fecal indicator source water positive within 24 hours after being notified of the groundwater source sample monitoring result and must meet the requirements of subsection (a)(3).

5) Exceptions to the triggered source water monitoring requirements. A GWS supplier is not required to comply with the source water monitoring requirements of subsection (a) if either of the following conditions exists:

A) The Agency determines, and documents in writing, by a SEP

issued pursuant to Section 611.110, that the total coliform-positive sample collected pursuant to Sections 611.1054 through 611.1057, is caused by a distribution system deficiency; or

B) The total coliform-positive sample collected pursuant to Sections 611.1054 through 611.1057, is collected at a location that meets Agency criteria for distribution system conditions that will cause total coliform-positive samples.

b) Assessment source water monitoring. If directed by the Agency by a SEP issued pursuant to Section 611.110, a GWS supplier must conduct assessment source water monitoring that meets Agency-determined requirements for such monitoring. A GWS supplier conducting assessment source water monitoring may use a triggered source water sample collected pursuant to subsection (a)(2) to meet the requirements of subsection (b). Agency-determined assessment source water monitoring requirements may include the following:

1) Collection of a total of 12 groundwater source samples that represent each month the system provides groundwater to the public;

2) Collection of samples from each well, unless the system obtains written Agency approval to conduct monitoring at one or more wells within the GWS that are representative of multiple wells used by that system and which draw water from the same hydrogeologic setting;

3) Collection of a standard sample volume of at least 100 mℓ for fecal indicator analysis, regardless of the fecal indicator or analytical method used;

4) Analysis of all groundwater source samples using one of the analytical methods listed in subsection (c)(2) for the presence of E. coli, enterococci, or coliphage;

5) Collection of groundwater source samples at a location prior to any treatment of the groundwater source unless the Agency approves a sampling location after treatment; and

6) Collection of groundwater source samples at the well itself, unless the system's configuration does not allow for sampling at the well itself and the Agency approves an alternate sampling location by a SEP issued pursuant to Section 611.110 that is representative of the water quality of that well.

c) Analytical methods.

1) A GWS supplier subject to the source water monitoring requirements of subsection (a) must collect a standard sample volume of at least 100 mℓ for fecal indicator analysis, regardless of the fecal indicator or analytical method used.

2) A GWS supplier must analyze all groundwater source samples collected pursuant to subsection (a) using one of the analytical methods listed in subsections (c)(2)(A) through (c)(2)(C), each incorporated by reference in Section 611.102, or alternative methods approved by the Agency pursuant to Section 611.480, subject to the limitations of subsection (c)(2)(D), for the presence of E. coli, enterococci, or coliphage:

A) E. coli:

i) Colilert®~~®~~ Test: ~~,~~ Standard Methods, 20th, 21st, or 22nd ed., Method 9223 B.

ii) Colisure™ Test: ~~,~~ Standard Methods, 20th, 21st, or 22nd ed., Method 9223 B.

iii) Membrane Filter Method with MI Agar: ~~,~~ USEPA Method 1604.

iv) m-ColiBlue24 Test.

v) E*Colite Test.

vi) EC–MUG: ~~,~~ Standard Methods, 20th or 22nd ed., Method 9221 F.

vii) NA–MUG: ~~,~~ Standard Methods, 20th ed., Method 9222 G.

viii) Colilert®-18~~®~~ Test: ~~,~~ Standard Methods, 20th, 21st, or 22nd ed., Method 9223 B.

ix) Readycult®~~®~~ 2007.

x) Modified Colitag™ Test.

xi) Chromocult®~~®~~ Method.

xii) Tecta EC/TC P-A Test, ver. 1.0 or 2.0.

BOARD NOTE: EC–MUG (Standard Methods, Method 9221 F) or NA–MUG (Standard Methods, Method 9222 G) can be used for

E. coli testing step, as described in Section 611.526(f)(1) or (f)(2) after use of Standard Methods, 20th ed., Method 9221 B, 9221 D, 9222 B, or 9222 C. USEPA added Standard Methods, 21st ed., Method 9223 B as an approved alternative method on June 3, 2008 (at 73 Fed. Reg. 31616). USEPA added Readycult®~~®~~ 2007, Modified Colitag™ Test, and Chromocult®~~®~~ Method as approved alternative methods on June 8, 2010 (at 75 Fed. Reg. 32295). USEPA added Standard Methods, 22nd ed., Methods 9221 F and 9223 B as approved alternative methods on May 31, 2013 (at 78 Fed. Reg. 32558). USEPA added Standard Methods Online, Method 9221 F-06 and 9223 B-04 and Tecta EC/TC P-A Test, ver. 1.0 as approved alternative methods on June 19, 2014 (at 79 Fed. Reg. 35081). USEPA added Tecta EC/TC P-A Test, ver. 2.0 as an approved alternative method on July 27, 2017 (at 82 Fed. Reg. 34861). Because Standard Methods, 22nd ed., Methods 9223 B and 9221 F are the same versions as Standard Methods Online, Methods 9223 B-04 and 9221 F-06, the Board has not listed the Standard Methods Online versions separately.

B) Enterococci:

i) Multiple-Tube Technique: ~~,~~ Standard Methods, 20th ed., Method 9230 B or Standard Methods Online, Method 9230 B-04.

ii) Membrane Filter Technique: ~~,~~ Standard Methods, 20th ed., Method 9230 C, and USEPA Method 1600.

BOARD NOTE: The holding time and temperature for groundwater samples are specified in subsection (c)(2)(D), rather than as specified in Section 8 of USEPA Method 1600.

iii) Enterolert.

BOARD NOTE: Medium is available through IDEXX Laboratories, Inc., at the address set forth in Section 611.102(b). Preparation and use of the medium must be as set forth in the article that embodies the method as incorporated by reference in Section 611.102(b).

BOARD NOTE: USEPA added Standard Methods Online, Method 9230 B-04 as an approved alternative method on June 3, 2008 (at 73 Fed. Reg. 31616).

C) Coliphage:

i) Two-Step Enrichment Presence-Absence Procedure: ~~,~~ USEPA Method 1601 or Charm Fast Phage.

ii) Single Agar Layer Procedure: ~~,~~ USEPA Method 1602.

D) Limitation on methods use. The time from sample collection to initiation of analysis may not exceed 30 hours. The GWS supplier is encouraged but is not required to hold samples below 10°C during transit.

d) Invalidation of a fecal indicator-positive groundwater source sample.

1) A GWS supplier may obtain Agency invalidation of a fecal indicator-positive groundwater source sample collected pursuant to subsection (a) only under either of the following conditions:

A) The supplier provides the Agency with written notice from the laboratory that improper sample analysis occurred; or

B) The Agency determines and documents in writing by a SEP issued pursuant to Section 611.110 that there is substantial evidence that a fecal indicator-positive groundwater source sample is not related to source water quality.

2) If the Agency invalidates a fecal indicator-positive groundwater source sample, the GWS supplier must collect another source water sample pursuant to subsection (a) within 24 hours after being notified by the Agency of its invalidation decision, and the supplier must have it analyzed for the same fecal indicator using the analytical methods in subsection (c). The Agency may extend the 24-hour time limit on a case-by-case basis if the supplier cannot collect the source water sample within 24 hours due to circumstances beyond its control. In the case of an extension, the Agency must specify how much time the system has to collect the sample.

e) Sampling location.

1) Any groundwater source sample required pursuant to subsection (a) must be collected at a location prior to any treatment of the groundwater source unless the Agency approves a sampling location after treatment.

2) If the supplier's system configuration does not allow for sampling at the well itself, it may collect a sample at an Agency-approved location to meet

the requirements of subsection (a) if the sample is representative of the water quality of that well.

f) New sources. If directed by the Agency by a SEP issued pursuant to Section 611.110, a GWS supplier that places a new groundwater source into service must conduct assessment source water monitoring pursuant to subsection (b). If directed by the SEP, the system must begin monitoring before the groundwater source is used to provide water to the public.

g) Public Notification. A GWS supplier with a groundwater source sample collected pursuant to subsection (a) or (b) that is fecal indicator-positive and which is not invalidated pursuant to subsection (d), including a consecutive system supplier served by the groundwater source, must conduct public notification pursuant to Section 611.902.

h) Monitoring Violations. A failure to meet the requirements of subsections (a) through (f) is a monitoring violation that requires the GWS supplier to provide public notification pursuant to Section 611.904.

BOARD NOTE: Derived from 40 CFR 141.402 and appendix A to subpart C of 40 CFR 141 (2017) ~~(2016)~~.

(Source: Amended at 43 Ill. Reg. _____, effective _____)

SUBPART AA: REVISED TOTAL COLIFORM RULE

Section 611.1052 Analytical Methods and Laboratory Certification

a) Analytical methodology.

1) The standard sample volume required for analysis, regardless of analytical method used, is 100 mℓ.

2) A supplier needs only determine the presence or absence of total coliforms and E. coli; a determination of density is not required.

3) The time from sample collection to initiation of test medium incubation may not exceed 30 hours. Suppliers are encouraged but not required to hold samples below 10º C during transit.

4) If water having residual chlorine (measured as free, combined, or total chlorine) is to be analyzed, sufficient sodium thiosulfate ($Na_2S_2O_3$) must be added to the sample bottle before sterilization to neutralize any residual chlorine in the water sample. Dechlorination procedures are addressed in

section 2 of Standard Methods, 20th or 21st ed., Method 9060 A, each incorporated by reference in Section 611.102.

5) The supplier must conduct total coliform and E. coli analyses in accordance with one of the following analytical methods, each incorporated by reference in Section 611.102:

BOARD NOTE: All monitoring and analyses must be done in accordance with the version of the approved method recited in this subsection (a) and incorporated by reference in Section 611.102. The methods listed are the only versions that may be used for compliance with this Subpart AA. Laboratories should be careful to use only the approved versions of the methods, as product package inserts may not be the same as the approved versions of the methods.

A) Total coliforms, lactose fermentation methods:

i) Standard total coliform fermentation technique: sections 1 and 2 of Standard Methods, 20th, 21st, or 22nd ed., Method 9221 B; or

BOARD NOTE: Lactose broth, as commercially available, may be used in lieu of lauryl tryptose broth, if the supplier conducts at least 25 parallel tests between lactose broth and lauryl tryptose broth using the water normally tested, and if the findings from this comparison demonstrate that the false-positive rate and false-negative rate for total coliforms, using lactose broth, is less than 10 percent. Because Standard Methods, 21st ed., Method 9221 B is the same version as Standard Methods Online 9221 B-99, the Board has not listed the Standard Methods Online version separately.

ii) Presence-absence (P–A) coliform test: sections 1 and 2 of Standard Methods, 20th or 21st, Method 9221 D.

BOARD NOTE: A multiple tube enumerative format, as described in Standard Methods, 20th or 21st, Method 9221 D, is approved for this method for use in presence-absence determination under this Subpart AA. Because Standard Methods, 21st ed., Method 9221 D is the same version as Standard Methods Online 9221 D-99, the Board has not listed the Standard Methods Online version separately.

BOARD NOTE: USEPA added sections 1 and 2 of Standard Methods Online, Method 9221 B-06 as an approved alternative method on June 19, 2014 (at 79 Fed. Reg. 35081). Because Standard Methods, 22nd ed., Method 9221 B is the same version as Standard Methods Online, Method 9221 B-06, the Board has not listed the Standard Methods Online versions separately.

B) Total coliforms, membrane filtration methods:

i) Standard total coliform membrane filter procedure: Standard Methods, 20th or 21st ed., Method 9222 B or C.

BOARD NOTE: Because Standard Methods, 20th ed., Methods 9222 B and C are the same version as Standard Methods Online 9222 B and C-97, the Board has not listed the Standard Methods Online version separately.

ii) Membrane filtration using MI medium: USEPA Method 1604.

iii) m-ColiBlue24®® Test.

BOARD NOTE: All filtration series must begin with membrane filtration equipment that has been sterilized by autoclaving. Exposure of filtration equipment to UV light is not adequate to ensure sterilization. Subsequent to the initial autoclaving, exposure of the filtration equipment to UV light may be used to sanitize the funnels between filtrations within a filtration series. Alternatively, membrane filtration equipment that is pre-sterilized by the manufacturer (i.e., disposable funnel units) may be used.

iv) Chromocult®® Method.

BOARD NOTE: All filtration series must begin with membrane filtration equipment that has been sterilized by autoclaving. Exposure of filtration equipment to UV light is not adequate to ensure sterilization. Subsequent to the initial autoclaving, exposure of the filtration equipment to UV light may be used to sanitize the funnels between filtrations within a filtration series. Alternatively, membrane filtration equipment that is pre-sterilized by the manufacturer (i.e., disposable funnel units) may be used.

C) Total coliforms, enzyme substrate methods:

i) Colilert®® Test: Standard Methods, 20th, 21st, or 22nd ed., Method 9223 B;

BOARD NOTE: Multiple-tube and multi-well enumerative formats for this method are approved for use in presence-absence determination under this Subpart AA.

ii) Colilert®-18®® Test: Standard Methods, 20th, 21st, or 22nd ed., Method 9223 B;

iii) Colisure™ Test: Standard Methods, 20th, 21st, or 22nd ed., Method 9223 B;

BOARD NOTE: Multiple-tube and multi-well enumerative formats for this method are approved for use in presence-absence determination under this Subpart AA. Colisure™ Test results may be read after an incubation time of 24 hours. Because Standard Methods, 20th ed., Method 9223 B is the same version as Standard Methods Online 9223 B-97, the Board has not listed the Standard Methods Online version separately.

iv) E*Colite®® Test;

v) Readycult®® 2007 Test;

vi) Modified Colitag™ Test; or

vii) Tecta EC/TC P-A Test, ver. 1.0 or 2.0.

BOARD NOTE: USEPA added Standard Methods Online, Method 9223 B-04, Colilert®-18®® Test, and Tecta EC/TC P-A Test, ver 1.0 as approved alternative methods on June 19, 2014 (at 79 Fed. Reg. 35081). USEPA added Tecta EC/TC P-A Test, ver. 2.0 as an approved alternative method on July 27, 2017 (at 82 Fed. Reg. 34861). Because Standard Methods, 22nd ed., Method 9223 B is the same version as Standard Methods Online, Method 9223 B-04, the Board has not listed the Standard Methods Online versions separately.

D) E. coli (following lactose fermentation methods), EC-MUG medium: section 1 of Standard Methods, 20th or 22nd ed., Method 9221 F.

BOARD NOTE: USEPA added section 1 of Standard Methods Online, Method 9221 F-06 as an approved alternative method on June 19, 2014 (at 79 Fed. Reg. 35081). Because Standard Methods, 22nd ed., Method 9221 F is the same version as Standard Methods Online, Method 9221 F-06, the Board has not listed the Standard Methods Online versions separately.

E) E. coli, partition method:

i) EC broth with MUG (EC-MUG): section 1.c(2) of Standard Methods, 20th or 21st ed., Method 9222 G; or

BOARD NOTE: The following changes must be made to the EC broth with MUG (EC-MUG) formulation: potassium dihydrogen phosphate (KH_2PO_4) must be 1.5 g, and 4-methylumbelliferyl-β-D-glucuronide must be 0.05 g.

ii) NA-MUG medium: section 1.c(1) of Standard Methods, 20th or 21st ed., Method 9222 G.

F) E. coli, membrane filtration methods:

i) Membrane filtration using MI medium: USEPA Method 1604.

ii) m-ColiBlue24®~~®~~ Test.

BOARD NOTE: All filtration series must begin with membrane filtration equipment that has been sterilized by autoclaving. Exposure of filtration equipment to UV light is not adequate to ensure sterilization. Subsequent to the initial autoclaving, exposure of the filtration equipment to UV light may be used to sanitize the funnels between filtrations within a filtration series. Alternatively, membrane filtration equipment that is pre-sterilized by the manufacturer (i.e., disposable funnel units) may be used.

iii) Chromocult®~~®~~ Method.

BOARD NOTE: All filtration series must begin with membrane filtration equipment that has been sterilized by autoclaving. Exposure of filtration equipment to UV light is not adequate to ensure sterilization. Subsequent to the initial autoclaving, exposure of the filtration equipment to UV light may be used to

sanitize the funnels between filtrations within a filtration series. Alternatively, membrane filtration equipment that is pre-sterilized by the manufacturer (i.e., disposable funnel units) may be used.

G) E. coli, enzyme substrate methods:

i) Colilert®~~®~~ Test: Standard Methods, 20th, 21st, or 22nd ed., Method 9223 B;

BOARD NOTE: Multiple-tube and multi-well enumerative formats for this method are approved for use in presence-absence determination under this Subpart AA. Because Standard Methods, 20th ed., Method 9223 B is the same version as Standard Methods Online 9223 B-97, the Board has not listed the Standard Methods Online version separately.

ii) Colilert®-18~~®~~ Test: Standard Methods, 20th, 21st, or 22nd ed., Method 9223 B;

iii) Colisure™: Standard Methods, 20th, 21st, or 22nd ed., Method 9223 B;

BOARD NOTE: Multiple-tube and multi-well enumerative formats for this method are approved for use in presence-absence determination under this Subpart AA. Colisure™ results may be read after an incubation time of 24 hours. Because Standard Methods, 20th ed., Method 9223 B is the same version as Standard Methods Online 9223 B-97, the Board has not listed the Standard Methods Online version separately.

iv) E*Colite®~~®~~ Test;

v) Readycult®~~®~~ 2007 Test;

vi) Modified Colitag™ Test; or

vii) Tecta EC/TC P-A Test, ver. 1.0 or 2.0.

BOARD NOTE: USEPA added Standard Methods, 22nd ed., Method 9223 B as an approved alternative method on June 21, 2013 (at 78 Fed. Reg. 37463).: USEPA added Standard Methods Online, Method 9223 B-04, Colilert®-18~~®~~ Test, and Tecta EC/TC

P-A Test, ver. 1.0 as approved alternative methods on June 19, 2014 (at 79 Fed. Reg. 35081). USEPA added Tecta EC/TC P-A Test, ver. 2.0 as an approved alternative method on July 27, 2017 (at 82 Fed. Reg. 34861). Because Standard Methods, 22nd ed., Method 9223 B is the same version as Standard Methods Online, Method 9223 B-04, the Board has not listed the Standard Methods Online versions separately.

b) Laboratory certification. A supplier must have all compliance samples required by this Subpart AA analyzed by a certified laboratory in one of the categories listed in Section 611.490(a). The laboratory used by the supplier must be certified for each method (and associated contaminants) that is used for compliance monitoring analyses under this Subpart AA.

c) This subsection (c) corresponds with 40 CFR 141.1052(c), which is a centralized listing of incorporations by reference for the purposes of subpart Y to 40 CFR 141. The Board has centrally located all incorporations by reference in Section 611.102. This statement maintains structural consistency with the federal rules.

BOARD NOTE: Derived from 40 CFR 141.852 and appendix A to subpart C of 40 CFR 141 (2017) ~~(2016)~~.

(Source: Amended at 43 Ill. Reg. _____, effective _____)