

ILLINOIS POLLUTION CONTROL BOARD

November 6, 2014

IN THE MATTER OF:)
SDWA UPDATE, USEPA AMENDMENTS) R15-6
(January 1, 2014 through June 30, 2014)) (Identical-in-Substance
) Rulemaking - Public Water Supply)

Proposed Rule. Proposal for Public Comment.

ORDER OF THE BOARD (by J.A. Burke):

SUMMARY OF THIS ACTION

The Board today proposes amendments to the Illinois regulations that are “identical in substance” to drinking water regulations adopted by the United States Environmental Protection Agency (USEPA). The amendments involved in this docket incorporate into the Illinois drinking water regulation amendments in response to three USEPA actions that occurred during the first half of calendar year 2014. The Board further uses this opportunity to make a limited number of minor corrections to the existing text of various provisions.

The federal actions involved in this docket include the following: (1) the February 26, 2014 corrections to the Revised Total Coliform Rule (RTCR); and (2) the June 19, 2014 summary approval of alternative equivalent methods for drinking water monitoring, (3) which USEPA corrected on June 27, 2014.

Sections 7.2 and 17.5 of the Environmental Protection Act (Act) (415 ILCS 5/7.2 and 17.5 (2012)) provide for quick adoption by the Board of regulations that are identical in substance to federal 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) (2011)). The USEPA National Primary Drinking Water Regulations (NPDWRs) implement Sections 1412(b), 1414(c), 1417(a), and 1445(a) of the federal SDWA (42 U.S.C. §§ 300g-1(a), 300g-3(c), 300g-6(a), and 300j-4(a) (2011)). The federal SDWA regulations are found at 40 C.F.R. 141 through 143. Section 17.5 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 (2012)) do not apply to the Board’s adoption of identical-in-substance regulations.

An accompanying opinion adopted today supports this order. The Board will cause the proposed amendments to be published in the *Illinois Register* and will hold the docket open to receive public comments for 45 days after the date of publication. The Board will then adopt and file the final rules, taking into account the public comments received. The Board specifically requests comment on one aspect of the rules. The Board requests comments on the way the Board has incorporated the RTCR and USEPA-approved alternative equivalent analytical methods into the Illinois regulations.

The Board presently expects that rules will be adopted and filed no later than the statutory due date of February 26, 2015, pursuant to Section 7.2 of the Act (415 ILCS 5/7.2)

(2012)). Adoption of this proposal for public comment today may allow completion by February 2, 2015.

The Board directs the Clerk to provide notice in the *Illinois Register* of the following proposed amendments to the Illinois SDWA National Primary Drinking Water regulations at 35 Ill. Adm. Code 611:

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

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PRIMARY DRINKING WATER STANDARDS

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611.312	Maximum Contaminant Levels (MCLs) for Disinfection Byproducts (DBPs)
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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. _____, 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.

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

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

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

“Colilert® Test” means Standard Methods, 21st ed. Method 9223 B, Chromogenic Substrate Coliform Test (using IDEXX Laboratories, Inc. Colilert® medium).

“Colilert-18® Test” means Standard Methods, 21st ed. Method 9223 B, Chromogenic Substrate Coliform Test (using IDEXX Laboratories, Inc. Colilert-18® medium).

“Colisure™ Test” means “Colisure Presence/Absence Test for Detection and Identification of Coliform Bacteria and Escherichia Coli in Drinking Water,” available from IDEXX Laboratories, Inc.

“Colitag® Test” means “Colitag® Product as a Test for Detection and Identification of Coliforms and E. coli Bacteria in Drinking Water and Source Water as Required in National Primary Drinking Water Regulations,” available from CPI International.

“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.

“Determination of Inorganic Oxyhalide” means “Determination of Inorganic Oxyhalide Disinfection By-Products in Drinking Water Using Ion Chromatography with the Addition of a Postcolumn Reagent for Trace Bromate Analysis,” available from NTIS.

“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.

“EC-MUG” means “Method 9221 F: Multiple-Tube Fermentation Technique for Members of the Coliform Group, Escherichia coli Procedure (Proposed),” available from American Public Health Association and American Waterworks Association.

“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,” 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 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 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, 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,” Revision 1.2, available from NTIS.

“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” means “Determination of Turbidity by Laser Nephelometry,” available from NEMI and Leck Mitchell, PhD.

“Mitchell Method M5331” means “Determination of Turbidity by LED Nephelometry,” available from NEMI and Leck Mitchell, PhD.

“Modified Colitag™ ~~Method Test~~” means “Modified Colitag™ Test Method for Simultaneous Detection of E. coli and other Total Coliforms in Water,” available from NEMI and CPI International.

“NA-MUG” means “Method 9222 G: Membrane Filter Technique for Members of the Coliform Group, MF Partition Procedures,” available from American Public Health Association and American Waterworks Association.

“NCRP Report Number 22” means “Maximum Permissible Body Burdens and Maximum Permissible Concentrations of Radionuclides in Air and in Water for Occupational Exposure,” available from NCRP.

“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.

“ONPG-MUG Test” (meaning “minimal medium ortho-nitrophenyl-beta-d-galactopyranoside-4-methyl-umbelliferyl-beta-d-glucuronide test”), also called the “~~Autoanalysis-Colilert® Test System~~,” is Method 9223, available in “Standard Methods for the Examination of Water and Wastewater,” 18th, 19th, 20th, or 21st ed., from American Public Health Association and the American Water Works Association.

“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® 2000” means “Readycult Coliforms 100 Presence/Absence Test for Detection and Identification of Coliform Bacteria and Escherichia coli in Finished Waters,” v. 1.0, available from EMD Millipore.

“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™ 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 P-A Test Presence/Absence Method for Simultaneous Detection of Total Coliforms and Escherichia coli (E.coli) in Drinking Water.” available from Veolia Water Solutions and Technologies.

“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. Available from NTIS.

“USEPA Method 1600” means “Method 1600: Enterococci in Water by Membrane Filtration Using Membrane-Enterococcus Indoxyl-b-D-Glucoside Agar (mEI),” available from 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 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 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 USEPA, Water Resource Center.

“USEPA NERL Method 200.5 (rev. 4.2)” means Method 200.5, 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, Office of Research and Development.

“USEPA NERL Method 415.3 (rev. 1.1)” means Method 415.3, 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, Office of Research and Development.

“USEPA NERL Method 415.3 (rev. 1.2)” means Method 415.3, 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 USEPA, Office of Research and Development.

“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, Office of Research and Development.

“USEPA NERL Method 549.2” means Method 549.2, 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 USEPA, Office of Research and Development.

“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 NTIS; USEPA, NSCEP; or 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 NTIS; USEPA, NSCEP; or 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. Available from NTIS.

“USEPA Radioactivity Methods” means “Prescribed Procedures for

Measurement of Radioactivity in Drinking Water,” EPA 600/4-80/032, August 1980. Available from NTIS.

“USEPA Radiochemical Analyses” means “Radiochemical Analytical Procedures for Analysis of Environmental Samples,” March 1979. Available from NTIS.

“USEPA Radiochemistry Procedures” means “Radiochemistry Procedures Manual,” EPA 520/5-84/006, December 1987. Available from NTIS.

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

“USGS Methods” means “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) of this Section.

“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.

“Method OIA-1677 DW, Available Cyanide by Flow Injection, Ligand Exchange, and Amperometry,” EPA 821/R-04/001, January 2004 (referred to as “OI Analytical Method OIA-1677”), 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, 1015 Fifteenth Street NW, Washington, DC 20005 202-777-2742.

“Standard Methods for the Examination of Water and Wastewater,” 16th Edition, 1985 (referred to as “Standard Methods, 16th ed.”). See the methods listed separately for the same references under American Waterworks Association.

“Standard Methods for the Examination of Water and Wastewater,” 17th Edition, 1989 (referred to as “Standard Methods, 17th ed.”). See the methods listed separately for the same references under American Waterworks Association.

“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 (collectively referred to as “Standard Methods, 18th ed.”). See the methods listed separately for the same references under American Waterworks Association.

“Standard Methods for the Examination of Water and Wastewater,” 19th Edition, 1995 (referred to as “Standard Methods, 19th ed.”). See the methods listed separately for the same references under American Waterworks Association.

“Standard Methods for the Examination of Water and Wastewater,” 20th Edition, 1998 (referred to as “Standard Methods, 20th ed.”). See the methods listed separately for the same references under American Waterworks Association.

“Standard Methods for the Examination of Water and Wastewater,” 21st Edition, 2005 (referred to as “Standard Methods, 21st ed.”). See the methods listed separately for the same references under American Waterworks Association.

“Standard Methods for the Examination of Water and Wastewater,” 22nd Edition, 2012 (referred to as “Standard Methods, 22nd ed.”). 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:

“Evaluation of Enterolert for Enumeration of Enterococci in Recreational Waters,” *Applied and Environmental Microbiology*, Oct. 1996, vol. 62, no. 10, p. 3881 (referred to as “Enterolert”), 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 (superceded) 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).

“National Field Evaluation of a Defined Substrate Method for the Simultaneous Enumeration of Total Coliforms and Escherichia coli for Drinking Water: Comparison with the Standard Multiple Tube Fermentation Method,” S.C. Edberg, M.J. Allen & D.B. Smith, Applied Environmental Microbiology, vol. 54, iss. 6, pp 1595-1601 (1988), referenced in Appendix D to this Part.

“Standard Methods for the Examination of Water and Wastewater,” 13th Edition, 1971 (referred to as “Standard Methods, 13th ed.”).

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 for the Examination of Water and Wastewater,” 16th Edition, 1985 (referred to as “Standard Methods, 16th ed.”).

Method 907A, Heterotrophic Plate Count, Pour Plate Method, referenced in Section 611.213.

“Standard Methods for the Examination of Water and Wastewater,” 17th Edition, 1989 (referred to as “Standard Methods, 17th ed.”).

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 7500-³H 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 for the Examination of Water and Wastewater,” 18th Edition, 1992 (referred to as “Standard Methods, 18th ed.”).

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-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-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-ClO₂ C, Chlorine Dioxide, Amperometric Method I, referenced in Section 611.531.

Method 4500-ClO₂ D, Chlorine Dioxide, DPD Method, referenced in Section 611.531.

Method 4500-ClO₂ E, Chlorine Dioxide, Amperometric Method II (Proposed), referenced in Section 611.531.

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-NO₂⁻ B, Nitrogen (Nitrite), Colorimetric Method, referenced in Section 611.611.

Method 4500-NO₃⁻ D, Nitrogen (Nitrate), Nitrate Electrode Method, referenced in Section 611.611.

Method 4500-NO₃⁻ E, Nitrogen (Nitrate), Cadmium Reduction Method, referenced in Section 611.611.

Method 4500-NO₃⁻ F, Nitrogen (Nitrate), Automated Cadmium Reduction Method, referenced in Section 611.611.

Method 4500-O₃ 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 7500-³H 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 Sections 611.526 and 611.531.

Method 9221 B, Multiple-Tube Fermentation Technique for Members of the Coliform Group, Standard Total Coliform Fermentation Technique, referenced in Sections 611.526 and 611.531.

Method 9221 C, Multiple-Tube Fermentation Technique for Members of the Coliform Group, Estimation of Bacterial Density, referenced in Sections 611.526 and 611.531.

Method 9221 D, Multiple-Tube Fermentation Technique for Members of the Coliform Group, Presence-Absence (P-A) Coliform Test, referenced in Section 611.526.

Method 9221 E, Multiple-Tube Fermentation Technique for Members of the Coliform Group, Fecal Coliform Procedure, referenced in Sections 611.526 and 611.531.

Method 9222 A, Membrane Filter Technique for Members of the Coliform Group, Introduction, referenced in Sections 611.526 and 611.531.

Method 9222 B, Membrane Filter Technique for Members of the Coliform Group, Standard Total Coliform Membrane Filter Procedure, referenced in Sections 611.526 and 611.531.

Method 9222 C, Membrane Filter Technique for Members of the Coliform Group, Delayed-Incubation Total Coliform Procedure, referenced in Sections 611.526 and 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 “~~Autoanalysis Colilert® Test System~~” and “Colisure™ Test”), referenced in Sections 611.526 and 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 for the Examination of Water and Wastewater,” 19th Edition, 1995 (referred to as “Standard Methods, 19th ed.”).

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-ClO₂ C, Chlorine Dioxide, Amperometric Method I, referenced in Section 611.531.

Method 4500-ClO₂ D, Chlorine Dioxide, DPD Method, referenced in Sections 611.381 and 611.531.

Method 4500-ClO₂ 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-NO₂⁻ B, Nitrogen (Nitrite), Colorimetric

Method, referenced in Section 611.611.

Method 4500-NO₃⁻ D, Nitrogen (Nitrate), Nitrate Electrode Method, referenced in Section 611.611.

Method 4500-NO₃⁻ E, Nitrogen (Nitrate), Cadmium Reduction Method, referenced in Section 611.611.

Method 4500-NO₃⁻ F, Nitrogen (Nitrate), Automated Cadmium Reduction Method, referenced in Section 611.611.

Method 4500-O₃ 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 7500-³H 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 Sections 611.526 and 611.531.

Method 9221 B, Multiple-Tube Fermentation Technique for Members of the Coliform Group, Standard Total Coliform Fermentation Technique, referenced in Sections 611.526 and 611.531.

Method 9221 C, Multiple-Tube Fermentation Technique for Members of the Coliform Group, Estimation of Bacterial Density, referenced in Sections 611.526 and 611.531.

Method 9221 D, Multiple-Tube Fermentation Technique for Members of the Coliform Group, Presence-Absence (P-A) Coliform Test, referenced in Section 611.526.

Method 9221 E, Multiple-Tube Fermentation Technique for Members of the Coliform Group, Fecal Coliform Procedure, referenced in Sections 611.526 and 611.531.

Method 9222 A, Membrane Filter Technique for Members of the Coliform Group, Introduction, referenced in Sections 611.526 and 611.531.

Method 9222 B, Membrane Filter Technique for Members of the Coliform Group, Standard Total Coliform Membrane Filter Procedure, referenced in Sections 611.526 and 611.531.

Method 9222 C, Membrane Filter Technique for Members of the Coliform Group, Delayed-Incubation Total Coliform Procedure, referenced in Sections 611.526 and 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 9222 G, Membrane Filter Technique for Members of the Coliform Group, MF Partition Procedures, referenced in Section 611.526.

Method 9223, Chromogenic Substrate Coliform Test (also referred to as the variations “~~Autoanalysis~~-Colilert® Test System” and “Colisure™ Test”), referenced in Sections 611.526 and 611.531.

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

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 for the Examination of Water and Wastewater,” 20th Edition, 1998 (referred to as “Standard Methods, 20th ed.”).

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-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-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-ClO₂ C, Chlorine Dioxide, Amperometric Method I, referenced in Section 611.531.

Method 4500-ClO₂ D, Chlorine Dioxide, DPD Method, referenced in Section 611.531.

Method 4500-ClO₂ E, Chlorine Dioxide, Amperometric Method II (Proposed), referenced in Section 611.531.

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-NO₂⁻ B, Nitrogen (Nitrite), Colorimetric Method, referenced in Section 611.611.

Method 4500-NO₃⁻ D, Nitrogen (Nitrate), Nitrate Electrode Method, referenced in Section 611.611.

Method 4500-NO₃⁻ E, Nitrogen (Nitrate), Cadmium Reduction Method, referenced in Section 611.611.

Method 4500-NO₃⁻ F, Nitrogen (Nitrate), Automated Cadmium Reduction Method, referenced in Section 611.611.

Method 4500-O₃ 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-SiO₂ C, Silica, Molybdosilicate Method, referenced in Section 611.611.

Method 4500-SiO₂ D, Silica, Heteropoly Blue Method, referenced in Section 611.611.

Method 4500-SiO₂ 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 Sections 611.381 and 611.382.

Method 6251 B, Disinfection By-Products: Haloacetic

Acids and Trichlorophenol, Micro Liquid-Liquid Extraction Gas Chromatographic Method, referenced in Section 611.381.

Method 6610 B, 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 7500-³H 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 Sections 611.526 and 611.531.

Method 9221 B, Multiple-Tube Fermentation Technique for Members of the Coliform Group, Standard Total Coliform Fermentation Technique, referenced in Sections 611.526, 611.531, and 611.1052.

Method 9221 C, Multiple-Tube Fermentation Technique for Members of the Coliform Group, Estimation of Bacterial Density, referenced in Sections 611.526, 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 611.526 and 611.1052.

Method 9221 E, Multiple-Tube Fermentation Technique for Members of the Coliform Group, Fecal Coliform Procedure, referenced in Sections 611.526 and 611.531.

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

Method 9222 A, Membrane Filter Technique for Members of the Coliform Group, Introduction, referenced in Sections 611.526 and 611.531.

Method 9222 B, Membrane Filter Technique for Members of the Coliform Group, Standard Total Coliform Membrane

Filter Procedure, referenced in Sections 611.526, 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 611.526 and 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 9222 G, Membrane Filter Technique for Members of the Coliform Group, MF Partition Procedures, referenced in Section 611.526.

Method 9223, Chromogenic Substrate Coliform Test (also referred to as the variations “~~Autoanalysis-Colilert® Test System~~” and “Colisure™ Test”), referenced in Sections 611.526 and 611.531.

Method 9223 B, Chromogenic Substrate Coliform Test (also referred to as the variations “~~Autoanalysis-Colilert® Test System~~” and “Colisure™ Test”), referenced in Sections 611.526, 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 for the Examination of Water and Wastewater,” 21st Edition, 2005 (referred to as “Standard Methods, 21st ed.”).

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 Section 611.381.

Method 4500-Cl E, Chlorine, Low-Level Amperometric Titration Method, referenced in Section 611.381.

Method 4500-Cl F, Chlorine, DPD Ferrous Titrimetric Method, referenced in Section 611.381.

Method 4500-Cl G, Chlorine, DPD Colorimetric Method, referenced in Section 611.381.

Method 4500-Cl H, Chlorine, Syringaldazine (FACTS) Method, referenced in Section 611.381.

Method 4500-Cl I, Chlorine, Iodometric Electrode Method, referenced in Section 611.381.

Method 4500-ClO₂ C, Chlorine Dioxide, Amperometric Method I, referenced in Section 611.531.

Method 4500-ClO₂ E, Chlorine Dioxide, Amperometric Method II (Proposed), referenced in Section 611.381.

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-NO₂⁻ B, Nitrogen (Nitrite), Colorimetric Method, referenced in Section 611.611.

Method 4500-NO₃⁻ D, Nitrogen (Nitrate), Nitrate Electrode Method, referenced in Section 611.611.

Method 4500-NO₃⁻ E, Nitrogen (Nitrate), Cadmium Reduction Method, referenced in Section 611.611.

Method 4500-NO₃⁻ F, Nitrogen (Nitrate), Automated Cadmium Reduction Method, referenced in Section 611.611.

Method 4500-O₃ 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-SiO₂ C, Silica, Molybdosilicate Method, referenced in Section 611.611.

Method 4500-SiO₂ D, Silica, Heteropoly Blue Method, referenced in Section 611.611.

Method 4500-SiO₂ 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 Sections 611.381 and 611.382.

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 7500-³H 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 Sections 611.526 and 611.531.

Method 9221 B, Multiple-Tube Fermentation Technique for Members of the Coliform Group, Standard Total Coliform Fermentation Technique, referenced in Sections 611.526, 611.531, and 611.1052.

Method 9221 C, Multiple-Tube Fermentation Technique for Members of the Coliform Group, Estimation of Bacterial Density, referenced in Sections 611.526, 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 Section 611.526 and 611.1052.

Method 9221 E, Multiple-Tube Fermentation Technique for Members of the Coliform Group, Fecal Coliform Procedure, referenced in Sections 611.526 and 611.531.

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

Method 9222 A, Membrane Filter Technique for Members of the Coliform Group, Introduction, referenced in Sections 611.526 and 611.531.

Method 9222 B, Membrane Filter Technique for Members of the Coliform Group, Standard Total Coliform Membrane Filter Procedure, referenced in Sections 611.526, 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 611.526 and 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 9222 G, Membrane Filter Technique for Members of the Coliform Group, MF Partition Procedures, referenced in Section 611.526.

Method 9223, Chromogenic Substrate Coliform Test (also referred to as the variations “~~Autoanalysis-Colilert® Test System~~” and “Colisure™ Test”), referenced in Sections 611.526 and 611.531.

Method 9223 B, Chromogenic Substrate Coliform Test (also referred to as the variations “~~Autoanalysis-Colilert® Test, System~~” and “Colisure™ Test,” and “Colilert-18® Test”, based on the particular medium used, available from IDEXX Laboratories, Inc.), referenced in Sections 611.526, 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, 21st ed. which USEPA has cited as available from Standard Methods Online.

“Standard Methods for the Examination of Water and Wastewater,” 22nd Edition, 2012 (referred to as “Standard Methods, 22nd ed.”). See the methods listed separately for the same references under American Waterworks Association.

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 Section 611.381.

Method 4500-Cl E, Chlorine, Low-Level Amperometric Titration Method, referenced in Section 611.381.

Method 4500-Cl F, Chlorine, DPD Ferrous Titrimetric Method, referenced in Section 611.381.

Method 4500-Cl G, Chlorine, DPD Colorimetric Method, referenced in Section 611.381.

Method 4500-Cl H, Chlorine, Syringaldazine (FACTS) Method, referenced in Section 611.381.

Method 4500-Cl I, Chlorine, Iodometric Electrode Method, referenced in Section 611.381.

Method 4500-ClO₂ C, Chlorine Dioxide, Amperometric Method I, referenced in Section 611.531.

Method 4500-ClO₂ E, Chlorine Dioxide, Amperometric Method II (Proposed), referenced in Section 611.381.

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-NO₂⁻ B, Nitrogen (Nitrite), Colorimetric Method, referenced in Section 611.611.

Method 4500-NO₃⁻ D, Nitrogen (Nitrate), Nitrate Electrode Method, referenced in Section 611.611.

Method 4500-NO₃⁻ E, Nitrogen (Nitrate), Cadmium Reduction Method, referenced in Section 611.611.

Method 4500-NO₃⁻ F, Nitrogen (Nitrate), Automated Cadmium Reduction Method, referenced in Section 611.611.

Method 4500-O₃ 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-SiO₂ C, Silica, Molybdosilicate Method, referenced in Section 611.611.

Method 4500-SiO₂ D, Silica, Heteropoly Blue Method, referenced in Section 611.611.

Method 4500-SiO₂ 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 Sections 611.381 and 611.382.

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.

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

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

Method 7500-³H 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 Sections 611.526 and 611.531.

Method 9221 B, Multiple-Tube Fermentation Technique for Members of the Coliform Group, Standard Total Coliform Fermentation Technique, referenced in Sections 611.526, 611.531, and 611.1052.

Method 9221 C, Multiple-Tube Fermentation Technique for Members of the Coliform Group, Estimation of Bacterial Density, referenced in Sections 611.526 and 611.531.

Method 9221 E, Multiple-Tube Fermentation Technique for Members of the Coliform Group, Fecal Coliform Procedure, referenced in Sections 611.526 and 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 Sections 611.526 and 611.531.

Method 9222 B, Membrane Filter Technique for Members of the Coliform Group, Standard Total Coliform Membrane Filter Procedure, referenced in Sections 611.526 and 611.531.

Method 9222 C, Membrane Filter Technique for Members of the Coliform Group, Delayed-Incubation Total Coliform Procedure, referenced in Sections 611.526 and 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 B, Chromogenic Substrate Coliform Test (also referred to as the variations "~~Autoanalysis-Colilert® Test System~~" and "~~Colisure™ Test~~," and "Colilert-18® Test", based on the particular medium used, available from IDEXX Laboratories, Inc.), referenced in Sections 611.526, 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” & “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” & “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” & “Test Method B—Atomic Absorption Spectrophotometric,” approved 2009, 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 D1293-95 A or B, “Standard Test Methods for pH of Water,” “Test Method A—Precise Laboratory Measurement” & “Test Method B—Routine or Continuous Measurement,” approved 1995, referenced in Section 611.611.

ASTM Method D1293-99 A or B, “Standard Test Methods for pH of Water,” “Test Method A—Precise Laboratory Measurement” & “Test Method B—Routine or Continuous Measurement,” 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 or C, “Standard Test Methods for Copper in Water,” “Test Method A—Atomic Absorption, Direct” & “Test Method C—Atomic Absorption, Graphite Furnace,” approved 1995, referenced in Section 611.611.

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

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

ASTM Method D2036-98 A or B, “Standard Test Methods for Cyanide in Water,” “Test Method A—Total Cyanides after Distillation” & “Test Method B—Cyanides Amenable to Chlorination by Difference,” approved 1998, referenced in Section 611.611.

ASTM Method D2036-06 A or B, “Standard Test Methods for Cyanide in Water,” “Test Method A—Total Cyanides after Distillation” & “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 or C, “Standard Test Methods for Arsenic in Water,” “Test Method B—Atomic Absorption, Hydride Generation” & “Test Method C—Atomic Absorption, Graphite Furnace,” approved 1997, referenced in Section 611.611.

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

ASTM Method D2972-08 B or C, “Standard Test Methods for Arsenic in Water,” “Test Method B—Atomic Absorption, Hydride Generation” & “Test Method C—Atomic Absorption, Graphite Furnace,” approved 2008, 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 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 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 D3859-98 A and B, “Standard Test Methods for Selenium in Water,” “Method A—Atomic Absorption, Hydride Method” & “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” & “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” & “Method B—Atomic Absorption, Graphite Furnace,” approved 2008, 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” & “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 D4785-98, “Standard Test Method for Low-Level

Iodine-131 in Water,” approved 1998, 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 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” & “Test Method B—Electrolytically Suppressed Ion Chromatography,” approved 2008, referenced in Section 611.381.

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 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.

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 subsection (b) of this Section.

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

“Fluoride in Water and Wastewater,” Industrial Method #129-71W, December 1972 (referred to as “Technicon Methods, Method #129-71W”). See 40 CFR 141.23(k)(1), footnote 11-~~(2012)~~ (2014), referenced in Section 611.611.

“Fluoride in Water and Wastewater,” #380-75WE, February 1976 (referred to as “Technicon Methods, Method #380-75WE”). See 40 CFR 141.23(k)(1), footnote 11-~~(2012)~~ (2014), referenced in Section 611.611.

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

“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 Section 611.802 and 611.1052 (also available from USEPA, Water Resource Center).

“Fast Phage Test Procedure. Presence/Absence for Coliphage in Ground Water with Same Day Positive Prediction,” version 009 (Nov. 2012) (referred to as “Charm Fast Phage Test”), 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).

“Colitag® Product as a Test for Detection and Identification of Coliforms and E. coli Bacteria in Drinking Water and Source Water as Required in National Primary Drinking Water Regulations,” August 2001, referenced in Section 611.526.

“Modified Colitag™ Test Method for Simultaneous Detection of E. coli and other Total Coliforms in Water (ATP D05-0035),” August 2009 (referred to as “Modified Colitag™ ~~Method Test~~”), referenced in Sections 611.526 and 611.802. 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® Coliform Agar Presence/Absence Membrane Filter Test Method for Detection and Identification of Coliform Bacteria and Escherichia coli in Finished Waters,” November 2000 (referred to as “Chromocult® Method, Version 1.0”), referenced in Sections 611.526, 611.802, and 611.1052.

“Readycult Coliforms 100 Presence/Absence Test for Detection and Identification of Coliform Bacteria and Escherichia coli in Finished Waters,” November 2000 (referred to as “Readycult® 2000”), Version 1.0, referenced in Section 611.526.

“Readycult Coliforms 100 Presence/Absence Test for Detection and Identification of Coliform Bacteria and Escherichia coli in Finished Waters,” Version 1.1, January 2007 (referred to as “Readycult® 2007”), referenced in Section 611.802 and 611.1052.

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

“The Determination of Radium-226 and Radium-228 in Drinking

Water by Gamma-ray Spectrometry Using HPGE or Ge(Li) Detectors,” Revision 1.2, December 2004 (called “Georgia Radium Method”), 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, 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).

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

“Determination of Turbidity by Laser Nephelometry,” January 2000, Revision 2.0 (referred to as “Hach FilterTrak Method 10133”), referenced in Section 611.531.

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

“Fluoride, USEPA SPADNS 2 Method 10225,” revision 2.0, January 2011 (referred to as “Hach SPADNS 2 Method 10225”), referenced in Section 611.611.

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

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

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

“Colisure Presence/Absence Test for Detection and Identification of Coliform Bacteria and Escherichia Coli in Drinking Water,” February 28, 1994 (referred to as “Colisure™ Test”), referenced in Section 611.526.

“IDEXX SimPlate™ HPC Test Method for Heterotrophs in Water,” November 2000 (referred to as “SimPlate method”), referenced in Section 611.531.

Industrial Test Systems, Inc., 1875 Langston St., Rock Hill, SC 29730.

Method D99-003, Revision 3.0, “Free Chlorine Species (HOCl^- and OCl^-) by Test Strip,” November 21, 2003 (referred to as “ITS Method D99-003”), referenced in Section 611.381.

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

“Digestion and distillation of total cyanide in drinking and wastewaters using MICRO DIST and determination of cyanide by flow injection analysis,” Revision 2.1, November 30, 2000 (referred to as “QuikChem Method 10-204-00-1-X”), referenced in Section 611.611.

Leck Mitchell, PhD, PE, 656 Independence Valley Dr., Grand Junction, CO 81507. See also NEMI.

Mitchell Method M5271, “Determination of Turbidity by Laser Nephelometry,” March 2009, referenced in Section 611.531.

Mitchell Method M5331, “Determination of Turbidity by LED Nephelometry,” March 2009, referenced in Section 611.531.

NCRP. National Council on Radiation Protection, 7910 Woodmont Ave., Bethesda, MD (301-657-2652).

NCRP Report Number 22, “Maximum Permissible Body Burdens and Maximum Permissible Concentrations of Radionuclides in Air and in Water for Occupational Exposure,” NCRP Report Number 22, June 5, 1959, referenced in Section 611.101.

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

AMI Turbiwell Method, “Continuous Measurement of Turbidity

Using a SWAN AMI Turbiwell Turbidimeter,” August 2009. See also SWAN Analytische Instrumente AG.

Method ME355.01, Revision 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, “Determination of Turbidity by Laser Nephelometry,” March 2009, referenced in Section 611.531. See also Leck Mitchell, PhD, PE.

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

Modified Colitag™ Method, “Modified Colitag™ Test Method for Simultaneous Detection of E. coli and other Total Coliforms in Water (ATP D05-0035),” August 2009, referenced in Sections 611.526 and 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 (referred to as “Palintest ChloroSense”), referenced in Sections 611.381 and 611.531. See also Palintest.

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

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).

Dioxin and Furan Method 1613, Revision B, “Tetra- through Octa-Chlorinated Dioxins and Furans by Isotope Dilution HRGC/HRMS,” October 1994, 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," Revision 1.2, August 2001, EPA 821/B-01-009, referenced in Section 611.611.

"Maximum Permissible Body Burdens and Maximum Permissible Concentrations of Radionuclides in Air and in Water for Occupational Exposure," NBS (National Bureau of Standards) Handbook 69, as amended August 1963, U.S. Department of Commerce, referenced in Section 611.330.

"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.

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 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 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 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 611.611, 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 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 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.

USEPA OGWDW Methods, Method 326.0, 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 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 Section 611.381. (For methods 300.1 (rev. 1.0), 321.8 (rev. 1.0), and 515.3 (rev. 1.0).) See also 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, 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.) See also 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). See also 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.)

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.)

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)-~~(2012)~~ (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.

"Determination of Radium 228 in Drinking Water," August 1990 (referred to as "New Jersey Radium Method"), referenced in Section 611.720.

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

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

Palintest, Ltd., ~~21 Kenton Lands Road, P.O. Box 18395,~~ 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, "Lead in Drinking Water by Differential Pulse Anodic Stripping Voltammetry," Method 1001, August 1999, referenced in Section 611.611.

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

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 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-(2012) (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-SO₄⁻² C-97, 4500-SO₄⁻² D-97, 4500-SO₄⁻² E-97, and 4500-SO₄⁻² 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.

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

"Atrazine in Drinking Water by Immunoassay," February 2001 (referred to as "Syngenta AG-625"), referenced in Section 611.645.

Systema Scientific LLC, 900 Jorie Blvd., Suite 35, Oak Brook, IL 60523.

Systema Easy (1-Reagent), "Systema Easy (1-Reagent) Nitrate

Method,” February 2009, referenced in Section 611.611. See also NEMI.

Thermo Scientific, 166 Cummings Center, Beverly, MA 01915 (800-225-1480 or www.thermo.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 (referred to as “Technical Bulletin 601”), referenced in Section 611.611.

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.nbl.doe.gov/EML_Legacy_Website/procman.htm. “EML Procedures Manual,” HASL 300, 27th Edition, Volume 1, 1990 (referred to as “EML Procedures Manual (27th ed.)”), referenced in Section 611.720.

“EML Procedures Manual,” HASL 300, 28th ed., 1997 (referred to as “EML Procedures Manual (28th ed.)”), 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).

USEPA Interim Radiochemical Methods, “Interim Radiochemical Methodology for Drinking Water,” EPA 600/4-75/008 (revised), March 1976, referenced in Section 611.720. See also 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); “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. 4.1), 524.2 (rev. 4.1), 525.2 (rev. 2.0), 551.1 (rev. 1.0), and 552.2 (rev. 1.0) only). See also NTIS and USEPA, NSCEP.

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

USEPA, NSCEP. United States Environmental Protection Agency, National Service Center for Environmental Publications, P.O. Box 42419, Cincinnati, OH 45242-0419 (accessible on-line and available by download from <http://www.epa.gov/nscep/>).

Dioxin and Furan Method 1613, Revision 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.

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 Section 611.111.

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.

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.

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.) See also 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 611.611, 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 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.) See also NTIS.

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.

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.

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 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. See also USEPA, OGWDW.

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 Section 611.531. See also 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. 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. 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.

USEPA OGWDW Methods, Method 557, “Determination of Haloacetic Acids, Bromate, and Dalapon in Drinking Water by Ion Chromatography Electrospray Ionization Tandem Mass Spectrometry,” July 2003, EPA 815/B-03/002, referenced in Sections 611.381, 611.382, and 611.645. See also 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. 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 Section 611.381. (Methods 300.1 (rev. 1.0), 321.8 (rev. 1.0), and 515.3 (rev. 1.0) only.) See also 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); “Methods for the Determination of Organic Compounds in Drinking Water—Supplement I,” July 1990, EPA 600/4-90/020, referenced in Section 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. 4.1), 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 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. (For methods 900.0, 901, 901.1, 902, 903, 903.1, 904, 905, 906, 908, 908.1 only.) See also 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. 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)-~~(2012)~~ (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."

USEPA, OGWDW. United States Environmental Protection Agency, Office of Ground Water and Drinking Water (accessible on-line and available by download from <http://www.epa.gov/safewater/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 Section 611.381. 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 Section 611.381. 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 Section 611.381. 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 Section 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.

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. See also 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.

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.

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, 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/R-

07/002, referenced in Section 611.645.

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," July 2003, EPA 815/B-03/002, referenced in Sections 611.381 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.

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.

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.

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.

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.

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 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 <http://www.epa.gov/nerlcwww/ordmeth.htm>).

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.

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.

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.

USEPA NERL Method 525.3, ver. 1.0, "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)," February 2012, EPA 600/R-12/010, referenced in Section 611.645.

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.

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, "EPA 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.

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.

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.

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.

USGS. United States Geological Survey, Federal Center, Box 25286, Denver, CO 80225-0425.

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,” Open File Report 93-125, 1993 (referred to as “USGS Methods”).

I-2601-90, referenced in Section 611.611.

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., USGS Techniques of Water-Resource Investigation: 05-A1, 1989 (referred to as “USGS Methods”).

I-1030-85, referenced in Section 611.611.

I-1601-85, referenced in Section 611.611.

I-1700-85, referenced in Section 611.611.

I-2598-85, referenced in Section 611.611.

I-2700-85, referenced in Section 611.611.

I-3300-85, referenced in Section 611.611.

Methods available upon request by method number from “Methods for Determination of Radioactive Substances in Water and Fluvial Sediments,” Chapter A5 in Book 5 of “Techniques of Water-Resources Investigations of the United States Geological Survey,” 1977.

R-1110-76, referenced in Section 611.720.

R-1111-76, referenced in Section 611.720.

R-1120-76, referenced in Section 611.720.

R-1140-76, referenced in Section 611.720.

R-1141-76, referenced in Section 611.720.

R-1142-76, referenced in Section 611.720.

R-1160-76, referenced in Section 611.720.

R-1171-76, referenced in Section 611.720.

R-1180-76, referenced in Section 611.720.

R-1181-76, referenced in Section 611.720.

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, “Presence/Absence Method for Simultaneous Detection of Total Coliforms and Escherichia coli (E.coli) in Drinking Water,” April 2014, referenced in Section

611.526.

Waters Corporation, Technical Services Division, 34 Maple St., Milford, MA 01757 (800-252-4752 or 508-478-2000, www.waters.com).

“Waters Test Method for Determination of Nitrite/Nitrate in Water Using Single Column Ion Chromatography,” Method B-1011, August 1987 (referred to as “Waters Method B-1011”), referenced in Section 611.611.

- c) The Board incorporates the following federal regulations by reference:

40 CFR 3.2-~~(2013)~~ (2014) (How Does This Part Provide for Electronic Reporting?), referenced in Section 611.105.

40 CFR 3.3-~~(2013)~~ (2014) (What Definitions Are Applicable to This Part?), referenced in Section 611.105.

40 CFR 3.10-~~(2013)~~ (2014) (What Are the Requirements for Electronic Reporting to EPA?), referenced in Section 611.105.

40 CFR 3.2000-~~(2013)~~ (2014) (What Are the Requirements Authorized State, Tribe, and Local Programs’ Reporting Systems Must Meet?), referenced in Section 611.105.

40 CFR 136.3(a)-~~(2013)~~ (2014), referenced in Section 611.1004.

Appendix B to 40 CFR 136-~~(2012)~~ (2014), referenced in Sections 611.359, 611.609, and 611.646.

40 CFR 142.20(b)(1)-~~(2013)~~ (2014), referenced in Section 611.112.

Subpart G of 40 CFR 142-~~(2013)~~ (2014), referenced in Section 611.113.

- d) This Part incorporates no later amendments or editions.

(Source: Amended at 39 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 of this Part.

- 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 for TTHM in appendix A to subpart C of 40 CFR 141 on August 3, 2009 (at 74 Fed. Reg. 38348). USEPA added USEPA OGWDW Methods, Method 524.4 as approved alternative methods for total trihalomethanes in appendix A to subpart C of 40 CFR 141 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.

BOARD NOTE: USEPA added Standard Methods, 21st ed., Method 6251 B as an approved alternative method for HAA5 in appendix A to subpart C of 40 CFR 141 on June 3, 2008 (at 73 Fed. Reg. 31616). USEPA added USEPA OGWDW Methods, Method 557 as approved alternative methods for HAA5 in appendix A to subpart C of 40 CFR 141 on November 10, 2009 (at 74 Fed. Reg. 57908). USEPA added Standard Methods, 22nd ed., Method 6251 B as an approved alternative methods for HAA5 in appendix A to subpart C of 40 CFR 141 on May 31, 2013 (at 78 Fed. Reg. 32558). USEPA added Standard Methods Online, Method 6251 B-07 as an approved alternative method for HAA5 in appendix A to subpart C of 40 CFR 141 on June 19, 2014 (at 79 Fed. Reg. 35081). Because Standard Methods, 22nd ed., Method 6251 B is the same version as Standard Methods Online, Method 9221 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).
- 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 for bromate in appendix A to subpart C of 40 CFR 141 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 or 21st ed., Method 4500-ClO₂ 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).
- ~~iiii)~~ 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.
- ~~iv)~~ By chemically suppressed chromatography: ASTM Method D6581-08 A.
- ~~v)~~ By electrolytically suppressed chromatography: ASTM Method D6581-08 B.

BOARD NOTE: USEPA added Standard Methods, 21st ed., Method 4500-ClO₂ E as an approved alternative method for daily chlorite in appendix A to subpart C of 40 CFR 141 on June 3, 2008 (at 73 Fed. Reg. 31616). USEPA added ASTM Methods D6581-08 A and B as approved alternative methods for chlorite in appendix A to subpart C of 40 CFR 141 on November 10, 2009 (at 74 Fed. Reg. 57908). USEPA added Standard Methods, 22nd ed., Method 4500-ClO₂ E as an approved alternative method for chlorite in appendix A to subpart C of 40 CFR 141 on June 21, 2013 (at 78 Fed. Reg. 37463). USEPA added ChlordioX Plus Test as an approved alternative method for chlorite in appendix A to

subpart C of 40 CFR 141 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) of this Section. To receive certification to conduct analyses for the DBP contaminants listed in Sections 611.312 and 611.381 and Subparts W and Y of this Part, the laboratory must fulfill the requirements of subsections (b)(2)(A), (b)(2)(C), and (b)(2)(D) of this Section.
 - 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) of this Section, subject to the conditions of subsections (b)(2)(C)(xii) and (b)(2)(C)(xiii) of this Section:
 - i) Chloroform (a THM): $\pm 20\%$ of true value;
 - ii) Bromodichloromethane (a THM): $\pm 20\%$ of true value;
 - iii) Dibromochloromethane (a THM): $\pm 20\%$ of true value;
 - iv) Bromoform (a THM): $\pm 20\%$ of true value;
 - v) Monochloroacetic Acid (an HAA5): $\pm 40\%$ of true value;
 - vi) Dichloroacetic Acid (an HAA5): $\pm 40\%$ of true value;
 - vii) Trichloroacetic Acid (an HAA5): $\pm 40\%$ of true value;

- viii) Monobromoacetic Acid (an HAA5): $\pm 40\%$ of true value;
 - ix) Dibromoacetic Acid (an HAA5): $\pm 40\%$ of true value;
 - x) Chlorite: $\pm 30\%$ of true value; and
 - xi) Bromate: $\pm 30\%$ 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) of this Section 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) of this Section 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) of this Section, subject to the limitations of subsections (b)(2)(D)(xii) and (b)(2)(D)(xiii) of this Section, for all DBP samples analyzed for compliance with Sections 611.312 and 611.385 and Subparts W and Y of this Part:
- 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 $\pm 50\%$ 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) of this Section, 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) of this Section, subject to the provisions of subsection (c)(1)(E) of this Section:
 - 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, or D1253-08;
 - 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) of this Section;
- vi) Amperometric sensor: Palintest ChloroSense; or
- vii) On-line chlorine analyzer: USEPA OGWDW Methods, Method 334.0.

BOARD NOTE: USEPA added Standard Methods, 21st ed., Methods 4500-Cl D, F, G, and H as approved alternative methods for free chlorine in appendix A to subpart C of 40 CFR 141 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 for free chlorine in appendix A to subpart C of 40 CFR 141 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 for free chlorine in appendix A to subpart C of 40 CFR 141 on June 21, 2013 (at 78 Fed. Reg. 37463). USEPA added Hach Method 10260 as an approved alternative method for free chlorine in appendix A to subpart C of 40 CFR 141 on June 19, 2014 (at 79 Fed. Reg. 35081).

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, or D1253-08;
- 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 for free chlorine in appendix A to subpart C of 40 CFR 141 on June 3, 2008 (at 73 Fed. Reg. 31616). USEPA added ASTM Method D1253-08 as an approved alternative method for combined chlorine in appendix A to subpart C of 40 CFR 141 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 for combined chlorine in appendix A to subpart C of 40 CFR 141 on June 21, 2013 (at 78 Fed. Reg. 37463). USEPA added Hach Method 10260 as an approved alternative method for combined chlorine in appendix A to subpart C of 40 CFR 141 on June 19, 2014 (at 79 Fed. Reg. 35081).

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, or D1253-08;
- 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 for free chlorine in appendix A to subpart C of 40 CFR 141 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 for total chlorine in appendix A to subpart C of 40 CFR 141 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 for total chlorine in appendix A to subpart C of 40 CFR 141 on June 21, 2013 (at 78 Fed. Reg. 37463). USEPA added Hach Method 10260 as an approved alternative method for total chlorine in appendix A to subpart C of 40 CFR 141 on June 19, 2014 (at 79 Fed. Reg. 35081).

D) Chlorine Dioxide:

- i) DPD: Standard Methods, 19th, 20th, or 21st ed., Method 4500-ClO₂ D;

- ii) Amperometric Method II: Standard Methods, 19th, 20th, 21st, or 22nd ed., Method 4500-ClO₂ E; ~~or~~
- iii) Amperometric sensor: ChlordioX Plus Test; or
- ~~iiiiv)~~ Lissamine Green spectrophotometric: USEPA OGWDW Method 327.0 (rev. 1.1).

BOARD NOTE: USEPA added Standard Methods, 21st ed., Methods 4500-ClO₂ D and E as approved alternative methods for chlorine dioxide in appendix A to subpart C of 40 CFR 141 on June 3, 2008 (at 73 Fed. Reg. 31616). USEPA added Standard Methods, 22nd ed., Method 4500-ClO₂ E as an approved alternative method for chlorine dioxide in appendix A to subpart C of 40 CFR 141 on June 21, 2013 (at 78 Fed. Reg. 37463). USEPA added ChlordioX Plus Test as an approved alternative method for chlorine dioxide in appendix A to subpart C of 40 CFR 141 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 for free chlorine in appendix A to subpart C of 40 CFR 141, added 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) of this Section must use the methods listed below. 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) of this Section, subject to the limitations of subsection (d)(3)(C) of this Section:
 - 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. 1.2)
 - 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. 1.2).
 - 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. 1.2).
 - D) Specific UV_{254} absorbance: USEPA NERL Method 415.3 (rev. 1.1) or 415.3 (rev. 1.2).
 - 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 for total organic carbon in appendix A to subpart C of 40 CFR 141 on June 3, 2008 (at 73 Fed. Reg. 31616). USEPA added USEPA NERL Method 415.3 (rev. 1.2) as an approved alternative method for total organic carbon in appendix A to subpart C of 40 CFR 141 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 for total organic carbon in appendix A to subpart C of 40 CFR 141 on June 21, 2013 (at 78 Fed. Reg. 37463).

- 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) of this Section to measure DOC and the method stipulated in subsection (d)(4)(B) of this Section 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 for dissolved organic carbon in appendix A to subpart C of 40 CFR 141 on June 3, 2008 (at 73 Fed. Reg. 31616). USEPA added USEPA NERL Method 415.3 (rev. 1.2) as an approved alternative method for dissolved organic carbon in appendix A to subpart C of 40 CFR 141 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 for dissolved organic carbon in appendix A to subpart C of 40 CFR 141 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 for ultraviolet absorption at 254 nm in appendix A to subpart C of 40 CFR 141 on June 3, 2008 (at 73 Fed. Reg. 31616). USEPA added USEPA NERL Method 415.3 (rev. 1.2) as an approved alternative method for ultraviolet absorbance in appendix A to subpart C of 40 CFR 141 on November (at 74 Fed. Reg. 57908). USEPA added Standard Methods, 22nd ed., Method 5910 B as an approved alternative method for ultraviolet absorption at 254 nm in appendix A to subpart C of 40 CFR 141 on June 21, 2013 (at 78 Fed. Reg. 37463). USEPA added Standard Methods Online, Method 5910 B-11 as an approved alternative method for ultraviolet absorption at 254 nm in appendix A to subpart C of 40 CFR 141 on June 19, 2014 (at 79 Fed. Reg. 35081). Because Standard Methods, 22nd ed., Method 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-~~(2013)~~ (2014).

(Source: Amended at 39 Ill. Reg. _____, effective _____)

SUBPART L: MICROBIOLOGICAL MONITORING AND ANALYTICAL
REQUIREMENTS

Section 611.526 Analytical Methodology

- a) The standard sample volume required for total coliform analysis, regardless of analytical method used, is 100 ml.
- b) Suppliers need only determine the presence or absence of total coliforms; a determination of total coliform density is not required.
- c) Suppliers must conduct total coliform analyses in accordance with one of the following analytical methods, incorporated by reference in Section 611.102, or in accordance with an alternative method approved by the Agency pursuant to Section 611.480 (the time from sample collection to initiation of analysis may not exceed 30 hours, and the supplier is encouraged but not required to hold samples below 10° C during transit):
 - 1) Total Coliform Fermentation Technique, as set forth in Standard Methods, 18th, 19th, 20th, 21st, or 22nd ed., Methods 9221 A and B, as follows:
 - A) 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;
 - B) 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; and
 - C) No requirement exists to run the completed phase on 10 percent of all total coliform-positive confirmed tubes.
 - 2) Total Coliform Membrane Filter Technique, as set forth in Standard Methods, 18th, 19th, 20th, 21st, or 22nd ed., Methods 9222 A, B, and C.
 - 3) Presence-Absence (P-A) Coliform Test, as set forth in: Standard Methods, 18th, 19th, 20th, 21st, or 22nd ed., Method 9221 D, as follows:
 - A) No requirement exists to run the completed phase on 10 percent of all total coliform-positive confirmed tubes; and
 - B) Six-times formulation strength may be used if the medium is filter-sterilized rather than autoclaved.

- 4) ONPG-MUG test: Standard Methods, 18th, 19th, 20th, 21st, or 22nd ed., Method 9223. (The ONPG-MUG test is also known as the ~~Autoanalysis Colilert® Test System~~.)
- 5) Colisure™ Test (~~Autoanalysis Colilert® Test System~~). (The Colisure™ Test may be read after an incubation time of 24 hours.)

BOARD NOTE: USEPA included the P-A Coliform and Colisure™ Tests for testing finished water under the coliform rule, but did not include them for the purposes of the surface water treatment rule, under Section 611.531, for which quantitation of total coliforms is necessary. For these reasons, USEPA included Standard Methods, Method 9221 C for the surface water treatment rule, but did not include it for the purposes of the total coliform rule, under this Section.

- 6) E*Colite® Test (Charm Sciences, Inc.).
- 7) m-ColiBlue24® Test (Hatch Company).
- 8) ReadyCult® 2000.
- 9) Chromocult® Method.
- 10) Colitag® Test.
- 11) Modified Colitag™ Method.
- 12) Tecta EC/TC P-A Test.

BOARD NOTE: USEPA added Standard Methods, 21st ed., Methods 9221 A, B, and D; 9222 A, B, and C; and 9223 as approved alternative methods in appendix A to subpart C of 40 CFR 141 on June 3, 2008 (at 73 Fed. Reg. 31616). USEPA added Modified Colitag™ Method as an approved alternative method in appendix A to subpart C of 40 CFR 141 on November 10, 2009 (at 74 Fed. Reg. 57908). USEPA added Standard Methods, 22nd ed., Methods 9221 A and B and 9223 B as approved alternative methods for total coliforms in appendix A to subpart C of 40 CFR 141 on May 31, 2013 (at 78 Fed. Reg. 32558). USEPA added Standard Methods Online, Methods 9221 A, B-06 and 9223 B-04 as approved alternative methods for total coliforms in appendix A to subpart C of 40 CFR 141 on June 19, 2014 (at 79 Fed. Reg. 35081). Because Standard Methods, 22nd ed., Methods 9221 A and B and 9223 B are the same version as Standard Methods Online, Methods 9221 A and B-06 and 9223 B-04, the Board has not listed the Standard Methods Online versions separately. USEPA added Tecta EC/TC P-A Test as an approved alternative method for total coliforms in appendix A to subpart C of 40 CFR 141 on June 19, 2014 (at 79 Fed. Reg. 35081).

- d) This subsection corresponds with 40 CFR 141.21(f)(4), which USEPA has marked “reserved.” This statement maintains structural consistency with the

federal regulations.

- e) Suppliers must conduct fecal coliform analysis in accordance with the following procedure:
- 1) When the MTF Technique or P-A Coliform Test is used to test for total coliforms, shake the lactose-positive presumptive tube or P-A vigorously and transfer the growth with a sterile 3-mm loop or sterile applicator stick into brilliant green lactose bile broth and EC medium, defined below, to determine the presence of total and fecal coliforms, respectively.
 - 2) For approved methods that use a membrane filter, transfer the total coliform-positive culture by one of the following methods: remove the membrane containing the total coliform colonies from the substrate with sterile forceps and carefully curl and insert the membrane into a tube of EC medium; (the laboratory may first remove a small portion of selected colonies for verification); swab the entire membrane filter surface with a sterile cotton swab and transfer the inoculum to EC medium (do not leave the cotton swab in the EC medium); or inoculate individual total coliform-positive colonies into EC medium. Gently shake the inoculated tubes of EC medium to insure adequate mixing and incubate in a waterbath at $44.5 \pm 0.2^\circ \text{C}$ for 24 ± 2 hours. Gas production of any amount in the inner fermentation tube of the EC medium indicates a positive fecal coliform test.
 - 3) EC medium is described in Standard Methods, 18th ed., 19th ed., 20th, or 22nd ed., Method 9221 E.
 - 4) Suppliers need only determine the presence or absence of fecal coliforms; a determination of fecal coliform density is not required.

BOARD NOTE: USEPA added Standard Methods, 22nd ed., Method 9221 E as an approved alternative method for fecal coliforms in appendix A to subpart C of 40 CFR 141 on May 31, 2013 (at 78 Fed. Reg. 32558). USEPA added Standard Methods Online, Method 9221 E-06 as an approved alternative method for fecal coliforms in appendix A to subpart C of 40 CFR 141 on June 19, 2014 (at 79 Fed. Reg. 35081). Because Standard Methods, 22nd ed., Method 9221 E is the same version as Standard Methods Online, Method 9221 E-06, the Board has not listed the Standard Methods Online version separately.

- f) Suppliers must conduct analysis of *E. coli* in accordance with one of the following analytical methods, incorporated by reference in Section 611.102:
- 1) EC medium supplemented with $50 \mu\text{g}/\ell$ of MUG (final concentration). EC medium is as described in subsection (e) of this Section. MUG may be added to EC medium before autoclaving. EC medium supplemented with $50 \mu\text{g}/\ell$ MUG is commercially available. At least 10 ml of EC medium supplemented with MUG must be used. The inner inverted

fermentation tube may be omitted. The procedure for transferring a total coliform-positive culture to EC medium supplemented with MUG is as in subsection (e) of this Section for transferring a total coliform-positive culture to EC medium. Observe fluorescence with an ultraviolet light (366 nm) in the dark after incubating tube at $44.5 \pm 2^\circ \text{C}$ for 24 ± 2 hours; or

- 2) Nutrient agar supplemented with $100 \mu\text{g}/\ell$ MUG (final concentration), as described in Standard Methods, 19th ed., 20th, or 22nd ed., Method 9222 G. This test is used to determine if a total coliform-positive sample, as determined by the MF technique, contains *E. coli*. Alternatively, Standard Methods, 18th ed., Method 9221 B may be used if the membrane filter containing a total coliform-positive colony or colonies is transferred to nutrient agar, as described in Method 9221 B (paragraph 3), supplemented with $100 \mu\text{g}/\ell$ MUG. If Method 9221 B is used, incubate the agar plate at 35°C for four hours, then observe the colony or colonies under ultraviolet light (366-nm) in the dark for fluorescence. If fluorescence is visible, *E. coli* are present.
- 3) Minimal Medium ONPG-MUG (MMO-MUG) Test, as set forth in Appendix D of this Part. (~~The Autoanalysis-Colilert® Test System~~ (Colisure™ Test) is a MMO-MUG test.) If the MMO-MUG test is total coliform positive after a 24-hour incubation, test the medium for fluorescence with a 366-nm ultraviolet light (preferably with a six-watt lamp) in the dark. If fluorescence is observed, the sample is *E. coli*-positive. If fluorescence is questionable (cannot be definitively read) after 24 hours incubation, incubate the culture for an additional four hours (but not to exceed 28 hours total), and again test the medium for fluorescence. The MMO-MUG test with hepes buffer is the only approved formulation for the detection of *E. coli*.
- 4) The Colisure™ Test (~~Autoanalysis-Colilert® Test System~~).
- 5) The membrane filter method with MI agar.
- 6) The E*Colite® Test.
- 7) The m-ColiBlue24® Test.
- 8) Readycult® 2000.
- 9) Chromocult® Method.
- 10) Colitag® Test.
- 11) ONPG-MUG Test: Standard Methods, 20th, 21st, or 22nd ed., Method 9223 B.
- 12) Modified Colitag™ Method.

13) Tecta EC/TC P-A Test.

BOARD NOTE: USEPA added Standard Methods, 20th or 21st ed., Method 9223 B and Standard Methods Online, Method 9223 B-97 as approved alternative methods for E. coli in appendix A to subpart C of 40 CFR 141 on November 10, 2009 (at 74 Fed. Reg. 57908). Because Standard Methods, 21st ed., Method 9223 B is the same version as Standard Methods Online, Method 9223 B-97, the Board has not listed the Standard Methods Online version separately. USEPA added Standard Methods, 22nd ed., Method 9223 B as an approved alternative method for E. coli in appendix A to subpart C of 40 CFR 141 on May 31, 2013 (at 78 Fed. Reg. 32558). USEPA added Standard Methods Online, Method 9223 B-04 as approved an alternative method for E. coli in appendix A to subpart C of 40 CFR 141 on June 19, 2014 (at 79 Fed. Reg. 35081). 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. USEPA added Tecta EC/TC P-A Test as an approved alternative method for total coliforms in appendix A to subpart C of 40 CFR 141 on June 19, 2014 (at 79 Fed. Reg. 35081).

- g) As an option to the method set forth in subsection (f)(3) of this Section, a supplier with a total coliform-positive, MUG-negative MMO-MUG test may further analyze the culture for the presence of E. coli by transferring a 0.1 ml, 28-hour MMO-MUG culture to EC medium + MUG with a pipet. The formulation and incubation conditions of the EC medium + MUG, and observation of the results, are described in subsection (f)(1) of this Section.
- h) This subsection corresponds with 40 CFR 141.21(f)(8), a central listing of all documents incorporated by reference into the federal microbiological analytical methods. The corresponding Illinois incorporations by reference are located at Section 611.102. This statement maintains structural parity with USEPA regulations.

BOARD NOTE: Derived from 40 CFR 141.21(f) and appendix A to 40 CFR 141-~~(2013)~~ (2014).

(Source: Amended at 39 Ill. Reg. _____, effective _____)

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; they do not apply to analyses performed for the purposes of Sections 611.521 through 611.527 of this Subpart L. 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 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 Sections 611.521 and 611.532 and Subpart B of this Part 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 ~~Autoanalysis~~ ~~Colilert® Test System~~): Standard Methods, 18th, 19th, 20th, 21st, or 22nd ed., Method 9223.

BOARD NOTE: USEPA included the P-A Coliform and Colisure™ Tests for testing finished water under the coliform rule, under Section 611.526, but did not include them for the purposes of the surface water treatment rule, under this Section, for which quantitation of total coliforms is necessary. For these reasons, USEPA included Standard Methods, Method 9221 C for the surface water treatment

rule, but did not include it for the purposes of the total coliform rule, under Section 611.526.

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 for total coliform in appendix A to subpart C of 40 CFR 141 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 for total coliform in appendix A to subpart C of 40 CFR 141 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 for total coliform in appendix A to subpart C of 40 CFR 141 on June 19, 2014 (at 79 Fed. Reg. 35081). 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 Sections 611.521 and 611.532 and Subpart B of this Part 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 for fecal coliforms in appendix A to subpart C of 40 CFR 141 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 for fecal coliforms in appendix A to subpart C of 40 CFR 141 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 for fecal coliforms in appendix A to subpart C of 40 CFR 141 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 9222 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 for heterotrophic bacteria in appendix A to subpart C of 40 CFR 141 on June 3, 2008 (at 73 Fed. Reg. 31616). USEPA added Standard Methods, 22nd ed., Method 9215 B as an approved alternative method for heterotrophic bacteria in appendix A to subpart C of 40 CFR 141 on June 21, 2013 (at 78 Fed. Reg. 37463). USEPA added Standard Methods Online, Method 9215 B-04 as an approved alternative method for heterotrophic bacteria in appendix A to subpart C of 40 CFR 141 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.
- vi) LED nephelometry (on-line): Mitchell Method M5331 or AMI Turbiwell Method.
- vii) LED nephelometry (portable): Orion Method AQ4500.

BOARD NOTE: USEPA added Standard Methods, 21st ed., Method 9130 B as an approved alternative method for turbidity in appendix A to subpart C of 40 CFR 141 on June 3, 2008 (at 73 Fed. Reg. 31616). USEPA added Mitchell Method M5271 and Orion Method AQ4500 as approved alternative methods for turbidity in appendix A to subpart C of 40 CFR 141 on August 3, 2009 (at 74 Fed. Reg. 38348). USEPA added AMI Turbiwell Method as an approved alternative method for turbidity in appendix A to subpart C of 40 CFR 141 on November 10, 2009 (at 74 Fed. Reg. 57908). USEPA added Standard Methods, 22nd ed., Method 2130 B as an approved alternative method for turbidity in appendix A to subpart C of 40 CFR 141 on June 21, 2013 (at 78 Fed. Reg. 37463).

- E) Temperature: Standard Methods, 18th, 19th, 20th, or 21st ed., Method 2550.
- 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-CI D.
 - ii) ASTM Method D1253-03 or D1253-08.
 - B) DPD Ferrous Titrimetric: Standard Methods, 18th, 19th, 20th, 21st, or 22nd ed., Method 4500-CI F.
 - C) DPD Colimetric: ~~Standard Methods, 18th, 19th, 20th, 21st, or 22nd ed., Method 4500-CI G.~~
 - i) Standard Methods, 18th, 19th, 20th, 21st, or 22nd ed., Method 4500-CI 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.

BOARD NOTE: USEPA added Standard Methods, 21st ed., Methods 4500-Cl D, F, G, and H; Method 4500-ClO₂ C and E as approved alternative methods for free chlorine in appendix A to subpart C of 40 CFR 141, added 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 for free chlorine in appendix A to subpart C of 40 CFR 141 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 for free chlorine in appendix A to subpart C of 40 CFR 141 on June 21, 2013 (at 78 Fed. Reg. 37463). USEPA added Hach Method 10260 as an approved alternative method for total chlorine in appendix A to subpart C of 40 CFR 141 on June 19, 2014 (at 79 Fed. Reg. 35081).

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 or D1253-08.
- 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: ~~Standard Methods, 18th, 19th, 20th, 21st, or 22nd ed., Method 4500-Cl G.~~
 - 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 for total chlorine in appendix A to subpart C of 40 CFR 141, added 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 for total chlorine in appendix A to subpart C of 40 CFR 141 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 for total chlorine in appendix A to subpart C of 40 CFR 141 on June 21, 2013 (at 78 Fed. Reg. 37463). USEPA added Hach Method 10260 as an approved alternative method for total chlorine in appendix A to subpart C of 40 CFR 141 on June 19, 2014 (at 79 Fed. Reg. 35081).

- 3) Chlorine dioxide.

- A) Amperometric Titration: ~~Standard Methods, 18th, 19th, 20th, 21st, or 22nd ed., Method 4500-ClO₂ C or E.~~

i) Standard Methods, 18th, 19th, 20th, 21st, or 22nd ed., Method 4500-ClO₂ C or E; or

ii) ChlordioX Plus Test.

- B) DPD Method: Standard Methods, 18th, 19th, or 20th ed., Method 4500-ClO₂ D.

- C) Spectrophotometric: USEPA OGWDW Methods, Method 327.0 (rev. 1.1).

BOARD NOTE: USEPA added Standard Methods, 21st ed., Method 4500-ClO₂ C, D, and E and Method 4500-O₃ B as approved alternative methods for chlorine dioxide in appendix A to subpart C of 40 CFR 141, added on June 3, 2008 (at 73 Fed. Reg. 31616). USEPA added Standard Methods, 22nd ed., Methods 4500-ClO₂ C and E as approved alternative methods for chlorine dioxide in appendix A to subpart C of 40 CFR 141 on May 31, 2013 (at 78 Fed. Reg. 32558). USEPA added Hach Method 10260 as an approved alternative method for free chlorine and total chlorine and ChlordioX Plus Test as an approved alternative method for chlorine dioxide in appendix A to subpart C of 40 CFR 141 on June 19, 2014 (at 79 Fed. Reg. 35081).

- 4) Ozone: Indigo Method: Standard Methods, 18th, 19th, 20th, 21st, or 22nd ed., Method 4500-O₃ B.

BOARD NOTE: USEPA added Standard Methods, 21st ed., Method Method 4500-O₃ B as an approved alternative method for ozone in appendix A to subpart C of 40 CFR 141, added on June 3, 2008 (at 73 Fed. Reg. 31616). USEPA added Standard Methods, 22nd ed., Method 4500-O₃ B as an approved alternative method for ozone in appendix A to subpart C of 40 CFR 141 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-(2013) (2014).

(Source: Amended at 39 Ill. Reg. _____, effective _____)

SUBPART N: INORGANIC MONITORING AND ANALYTICAL REQUIREMENTS

Section 611.600 Applicability

The following types of suppliers must conduct monitoring to determine compliance with the old MCLs in Section 611.300 and the revised MCLs in 611.301, as appropriate, in accordance with this Subpart N:

- a) CWS suppliers.
- b) NTNCWS suppliers.
- c) Transient non-CWS suppliers to determine compliance with the nitrate and nitrite MCLs.
- d) Detection limits. The following are detection limits for purposes of this Subpart

N (MCLs from Section 611.301 are set forth for information purposes only):

Contaminant	MCL (mg/ℓ, except asbestos)	Method	Detection Limit (mg/ℓ)
Antimony	0.006	Atomic absorption-furnace technique	0.003
		Atomic absorption-furnace technique (stabilized temperature)	0.0008 ⁵
		Inductively coupled plasma-mass spectrometry	0.0004
		Atomic absorption-gaseous hydride technique	0.001
Arsenic	0.010	Atomic absorption-furnace technique	0.001
		Atomic absorption-furnace technique (stabilized temperature)	0.00005 ⁶
		Atomic absorption-gaseous hydride technique	0.001
		Inductively coupled plasma-mass spectrometry	0.0014 ⁷
Asbestos	7 MFL ¹	Transmission electron microscopy	0.01 MFL
Barium	2	Atomic absorption-furnace technique	0.002
		Atomic absorption-direct aspiration technique	0.1
		Inductively coupled plasma arc furnace	0.002
		Inductively coupled plasma	0.001

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Beryllium	0.004	Atomic absorption-furnace technique	0.0002
		Atomic absorption-furnace technique (stabilized temperature)	0.00002 ⁵
		Inductively coupled plasma ²	0.0003
		Inductively coupled plasma-mass spectrometry	0.0003
Cadmium	0.005	Atomic absorption-furnace technique	0.0001
		Inductively coupled plasma	0.001
Chromium	0.1	Atomic absorption-furnace technique	0.001
		Inductively coupled plasma	0.007
		Inductively coupled plasma	0.001
Cyanide	0.2	Distillation, spectrophotometric ³	0.02
		Automated distillation, spectrophotometric ³	0.005
		Distillation, selective electrode ³	0.05
		Distillation, amenable, spectrophotometric ⁴	0.02
		UV, distillation, spectrophotometric ⁸	0.0005
		Micro distillation, flow injection, spectrophotometric ³	0.0006
		Ligand exchange with amperometry ⁴	0.0005
Mercury	0.002	Manual cold vapor technique	0.0002
		Automated cold vapor	0.0002

technique

Nickel	No MCL	Atomic absorption-furnace technique	0.001
		Atomic absorption-furnace technique (stabilized temperature)	0.0006 ⁵
		Inductively coupled plasma ²	0.005
		Inductively coupled plasma-mass spectrometry	0.0005
Nitrate (as N)	10	Manual cadmium reduction	0.01
		Automated hydrazine reduction	0.01
		Automated cadmium reduction	0.05
		Ion-selective electrode	1
		Ion chromatography	0.01
		Capillary ion electrophoresis	0.076
Nitrite (as N)	1	Spectrophotometric	0.01
		Automated cadmium reduction	0.05
		Manual cadmium reduction	0.01
		Ion chromatography	0.004
		Capillary ion electrophoresis	0.103
Selenium	0.05	Atomic absorption-furnace technique	0.002
		Atomic absorption-gaseous hydride technique	0.002
Thallium	0.002	Atomic absorption-furnace technique	0.001

Atomic absorption-furnace technique (stabilized temperature)	0.0007 ⁵
Inductively coupled plasma-mass spectrometry	0.0003

Footnotes.

- 1 “MFL” means millions of fibers per liter less than 10 μm .
- 2 Using a 2 \times preconcentration step as noted in Method 200.7. Lower MDLs may be achieved when using a 4 \times preconcentration.
- 3 Screening method for total cyanides.
- 4 Measures “free” cyanides when distillation, digestion, or ligand exchange is omitted.
- 5 Lower MDLs are reported using stabilized temperature graphite furnace atomic absorption.
- 6 The MDL reported for USEPA Method 200.9 (atomic absorption-platform furnace (stabilized temperature)) was determined using a 2 \times concentration step during sample digestion. The MDL determined for samples analyzed using direct analyses (i.e., no sample digestion) will be higher. Using multiple depositions, USEPA Method 200.9 is capable of obtaining an MDL of 0.0001 mg/ ℓ .
- 7 Using selective ion monitoring, USEPA Method 200.8 (ICP-MS) is capable of obtaining an MDL of 0.0001 mg/ ℓ .
- 8 Measures total cyanides when UV-digestor is used, and “free” cyanides when UV-digestor is bypassed.

BOARD NOTE: Subsections (a) through (c) of this Section are derived from 40 CFR 141.23 preamble-~~(2012)~~ (2014), and subsection (d) of this Section is derived from 40 CFR 141.23(a)(4)(i) and appendix A to subpart C of 40 CFR 141-~~(2012)~~ (2014). See the Board Note at Section 611.301(b) relating to the MCL for nickel.

(Source: Amended at 39 Ill. Reg. _____, effective _____)

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, 18th, 19th, or 21st ed., 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; ~~or,~~
 - iii) ~~Standard Methods Online, Method 3113 B-04.~~
 - B) Electrometric titration: USGS Methods, Method I-1030-85.

BOARD NOTE: USEPA added Standard Methods, 21st ed., Method 2320 B as an approved alternative method for alkalinity in appendix A to subpart C of 40 CFR 141 on June 3, 2008 (at 73 Fed. Reg. 31616). ~~USEPA added ASTM Method D1067-06 B and Standard Methods Online, Method 3113 B-04 as approved alternative methods for alkalinity in appendix A to subpart C of 40 CFR 141 on June 24, 2011 (at 76 Fed. Reg. 37014).~~ USEPA added Standard Methods, 22nd ed., Method 2320 B and ASTM Method D1067-11 B as approved alternative methods for alkalinity in appendix A to subpart C of 40 CFR 141 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, or D3697-07.
- 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 for antimony in appendix A to subpart C of 40 CFR 141 on June 3, 2008 (at 73 Fed. Reg. 31616). USEPA added ASTM Method D3697-07 as an approved alternative method for antimony in appendix A to subpart C of 40 CFR 141 on November 10, 2009 (at 74 Fed. Reg. 57908). USEPA added Standard Methods Online, Method 3113 B-04 as an approved alternative method for antimony in appendix A to subpart C of 40 CFR 141 on June 24, 2011 (at 76 Fed. Reg. 37014). USEPA added Standard Methods, 22nd ed., Method 3113 B as an approved alternative method for antimony in appendix A to subpart C of 40 CFR 141 on May 31, 2013 (at 78 Fed. Reg. 32558). USEPA added Standard Methods Online, Method 3113 B-10 as an approved alternative method for antimony in appendix A to subpart C of 40 CFR 141 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 9223 B-10, the Board has not listed the Standard Methods Online versions separately.

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;
 - 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;
 - 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 for arsenic in appendix A to subpart C of 40 CFR 141 on June 3, 2008 (at 73 Fed. Reg. 31616). USEPA added ASTM Methods D2972-08 B and C as approved alternative methods for arsenic in appendix A to subpart C of 40 CFR 141 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 for arsenic in appendix A to subpart C of 40 CFR 141 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 for arsenic in appendix A to subpart C of 40 CFR 141 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 for arsenic in appendix A to subpart C of 40 CFR 141 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 9223 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 for barium in appendix A to subpart C of 40 CFR 141 on June 3, 2008 (at 73 Fed. Reg. 31616). USEPA added Standard Methods Online, Method 3113 B-04 as an approved alternative method for barium in appendix A to subpart C of 40 CFR 141 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 for barium in appendix A to subpart C of 40 CFR 141 on May 31, 2013 (at 78 Fed. Reg. 32558). USEPA added Standard Methods Online, Method 3113 B-10 as an approved alternative method for barium in appendix A to subpart C of 40 CFR 141 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 9223 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;
 - 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 for beryllium in appendix A to subpart C of 40 CFR 141 on June 3, 2008 (at 73 Fed. Reg. 31616). USEPA added ASTM Method D3645-08 B as an approved alternative method for beryllium in appendix A to subpart C of 40 CFR 141 on November 10, 2009 (at 74 Fed. Reg. 57908). USEPA added Standard Methods Online, Method 3113 B-04 as an approved alternative method for beryllium in appendix A to subpart C of 40 CFR 141 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 for beryllium in appendix A to subpart C of 40 CFR 141 on May 31, 2013 (at 78 Fed. Reg. 32558). USEPA added Standard Methods Online, Method 3113 B-10 as an approved alternative method for beryllium in appendix A to subpart C of 40 CFR 141 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 9223 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 for cadmium in appendix A to subpart C of 40 CFR 141 on June 3, 2008 (at 73 Fed. Reg. 31616). USEPA added Standard Methods Online, Method 3113 B-04 as an approved alternative method for cadmium in appendix A to subpart C of 40 CFR 141 on June 24, 2011 (at 76 Fed. Reg. 37014). USEPA added Standard Methods, 22nd ed., Method 3113 B as an approved alternative method for cadmium in appendix A to subpart C of 40 CFR 141 on May 31, 2013 (at 78 Fed. Reg. 32558). USEPA added Standard Methods Online, Method 3113 B-10 as an approved alternative method for cadmium in appendix A to subpart C of 40 CFR 141 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 9223 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, or D511-09 A; 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, or D511-09 B; 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 for calcium in appendix A to subpart C of 40 CFR 141 on June 3, 2008 (at 73 Fed. Reg. 31616). USEPA added ASTM Methods D511-09 A and B as approved alternative methods for calcium in appendix A to subpart C of 40 CFR 141 on November 10, 2009 (at 74 Fed. Reg. 57908). USEPA added ASTM Method D6919-09 as an approved alternative method for calcium in appendix A to subpart C of 40 CFR 141 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 for calcium in appendix A to subpart C of 40 CFR 141 on May 31, 2013 (at 78 Fed. Reg. 32558).

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 for chromium in appendix A to subpart C of 40 CFR 141 on June 3, 2008 (at 73 Fed. Reg. 31616). USEPA added Standard Methods Online, Method 3113 B-04 as an approved alternative method for chromium in appendix A to subpart C of 40 CFR 141 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 for chromium in appendix A to subpart C of 40 CFR 141 on May 31, 2013 (at 78 Fed. Reg. 32558). USEPA added Standard Methods Online, Method 3113 B-10 as an approved alternative method for chromium in appendix A to subpart C of 40 CFR 141 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 9223 B-10, the Board has not listed the Standard Methods Online versions separately.

~~10) Conductivity; Conductance.~~

~~A) ASTM Method D1125-95(1999) 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 for conductivity in appendix A to subpart C of 40 CFR 141 on June 3, 2008 (at 73 Fed. Reg. 31616). USEPA added Standard Methods, 22nd ed., Method 2510 B as an approved alternative method for conductivity in appendix A to subpart C of 40 CFR 141 on May 31, 2013 (at 78 Fed. Reg. 32558).~~

10) Copper.

A) Atomic absorption, furnace technique.

i) ASTM Method D1688-95 C, D1688-02 C, or D1688-07 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, or D1688-07 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.

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 for copper in appendix A to subpart C of 40 CFR 141 on June 3, 2008 (at 73 Fed. Reg. 31616). USEPA added ASTM Methods D1688-07 A and C as approved alternative methods for copper in appendix A to subpart C of 40 CFR 141 on November 10, 2009 (at 74 Fed. Reg. 57908). USEPA added Standard Methods Online, Method 3113 B-04 as an approved alternative method for copper in appendix A to subpart C of 40 CFR 141 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 for copper in appendix A to subpart C of 40 CFR 141 on May 31, 2013 (at 78 Fed. Reg. 32558). USEPA added Standard Methods Online, Method 3113 B-10 as an approved alternative method for copper in appendix A to subpart C of 40 CFR 141 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 9223 B-10, the Board has not listed the Standard Methods Online versions separately.

11) Conductivity; Conductance.

- A) ASTM Method D1125-95(1999) 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 for conductivity in appendix A to subpart C of 40 CFR 141 on June 3, 2008 (at 73 Fed. Reg. 31616). USEPA added Standard Methods, 22nd ed., Method 2510 B as an approved alternative method for conductivity in appendix A to subpart C

of 40 CFR 141 on May 31, 2013 (at 78 Fed. Reg. 32558).

- 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 Methods, 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 for cyanide in appendix A to subpart C of 40 CFR 141 on June 3, 2008 (at 73 Fed. Reg. 31616). USEPA added Method ME355.01 as an approved alternative method for cyanide in appendix A to

subpart C of 40 CFR 141 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 for cyanide in appendix A to subpart C of 40 CFR 141 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, ~~or 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 for fluoride in appendix A to subpart C of 40 CFR 141 on June 3, 2008 (at 73 Fed. Reg. 31616). USEPA added Hach SPADNS 2 Method 10225 as an approved alternative method for fluoride in appendix A to subpart C of 40 CFR 141 on June 24, 2011 (at 76 Fed. Reg. 37014). USEPA added ASTM Method D1179-10 B as an approved alternative method for fluoride in appendix A to subpart C of 40 CFR 141 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 for fluoride in appendix A to subpart C of 40 CFR 141 on May 31, 2013 (at 78 Fed. Reg. 32558). USEPA added ASTM Method D4327-11 as an approved an alternative method for fluoride in appendix A to subpart C of 40 CFR 141 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;
 - 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 for lead in appendix A to subpart C of 40 CFR 141 on June 3, 2008 (at 73 Fed. Reg. 31616). USEPA added ASTM Method D3559-08 D as an approved alternative method for lead in appendix A to subpart C of 40 CFR 141 on November 10, 2009 (at 74 Fed. Reg. 57908). USEPA added Standard Methods Online, Method 3113 B-04 as an approved alternative method for lead in appendix A to subpart C of 40 CFR 141 on June 24, 2011 (at 76 Fed. Reg. 37014). USEPA added Standard Methods, 22nd

ed., Method 3113 B as an approved alternative method for lead in appendix A to subpart C of 40 CFR 141 on May 31, 2013 (at 78 Fed. Reg. 32558). USEPA added Standard Methods Online, Method 3113 B-10 as an approved alternative method for lead in appendix A to subpart C of 40 CFR 141 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 9223 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, or D511-09 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, or D511-09 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 for magnesium in appendix A to subpart C of 40 CFR 141 on June 3, 2008 (at 73 Fed. Reg. 31616). USEPA added ASTM Methods D511-09 A and B as approved alternative methods for magnesium in appendix A to subpart C of 40 CFR 141 on November 10, 2009 (at 74 Fed. Reg. 57908). USEPA added ASTM Method D6919-09 as an approved alternative method for magnesium in appendix A to subpart C of 40 CFR 141 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 for magnesium in appendix A to subpart C of 40 CFR 141 on May 31, 2013 (at 78 Fed. Reg. 32558).

- 16) Mercury.
- A) Manual cold vapor technique.
 - i) USEPA Environmental Metals Methods, Method 245.1 (rev. 3.0);
 - ii) ASTM Method D3223-97, ~~or 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 for mercury in appendix A to subpart C of 40 CFR 141 on June 3, 2008 (at 73 Fed. Reg. 31616). USEPA added Standard Methods Online, Method 3112 B-09 as an approved alternative method for mercury in appendix A to subpart C of 40 CFR 141 on June 28, 2012 (at 77 Fed. Reg. 38523). USEPA added Standard Methods, 22nd ed., Method 3112 B as an approved alternative method for mercury in appendix A to subpart C of 40 CFR 141 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 for mercury in appendix A to subpart C of 40 CFR 141 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 for nickel in appendix A to subpart C of 40 CFR 141 on June 3, 2008 (at 73 Fed. Reg. 31616). USEPA added Standard Methods Online, Method 3113 B-04 as an approved alternative method for nickel in appendix A to subpart C of 40 CFR 141 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 for nickel in appendix A to subpart C of 40 CFR 141 on May 31, 2013 (at 78 Fed. Reg. 32558). USEPA added Standard Methods Online, Method 3113 B-10 as an approved alternative method for nickel in appendix A to subpart C of 40 CFR 141 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 9223 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, ~~or~~ D4327-03, or D4327-11;
 - iii) Standard Methods, 18th, 19th, 20th, 21st, or 22nd ed., Method 4110 B; or
 - iv) Waters Test 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-NO₃⁻ F.
- C) Ion selective electrode.
 - i) Standard Methods, 18th, 19th, 20th, 21st, or 22nd ed., Method 4500-NO₃⁻ 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-NO₃⁻ E.
- E) Capillary ion electrophoresis: ASTM Method D6508-00(2005).
- F) Reduction-colorimetric: Systea Easy (1-Reagent).
- G) Direct colorimetric: Hach TNTplus 835/836 Method 10206.

BOARD NOTE: USEPA added Standard Methods, 21st ed., Methods 4110 B and 4500-NO₃⁻ D, E, and F as approved alternative methods for nitrate in appendix A to subpart C of 40 CFR 141 on June 3, 2008 (at 73 Fed. Reg. 31616). USEPA added Systea Easy (1-Reagent) as an approved alternative method for nitrate in appendix A to subpart C of 40 CFR 141 on August 3, 2009 (at 73 Fed. Reg. 38348). USEPA added Hach TNTplus 835/836 Method 10206 as an approved alternative method for nitrate in appendix A to subpart C of 40 CFR 141 on June 24, 2011 (at 76 Fed. Reg. 37014). USEPA added Standard Methods, 22nd ed., Methods 4110 B and 4500-NO₃⁻ D, E, and F as approved alternative methods for nitrate in appendix A to subpart C of 40 CFR 141 on May 31, 2013 (at 78 Fed. Reg. 32558). USEPA added ASTM D4327-11 as an approved alternative method for nitrate in appendix A to subpart C of 40 CFR 141 on June 19, 2014 (at 79 Fed. Reg. 35081).

- 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, ~~or D4327-03,~~ or D4327-11;
 - iii) Standard Methods, 18th, 19th, 20th, 21st, or 22nd ed., Method 4110 B; or
 - iv) Waters Test 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-NO₃⁻ F.
- C) Manual cadmium reduction.
- i) ASTM Method D3867-90 B; or
 - ii) Standard Methods, 18th, 19th, 20th, 21st, or 22nd ed., Method 4500-NO₃⁻ E.
- D) Spectrophotometric: Standard Methods, 18th, 19th, 20th, 21st, or 22nd ed., Method 4500-NO₂⁻ B.
- E) Capillary ion electrophoresis: ASTM Method D6508-00(2005).
- F) Reduction-colorimetric: Systea Easy (1-Reagent).

BOARD NOTE: USEPA added Standard Methods, 21st ed., Methods 4110 B, 4500-NO₃⁻ E and F; and 4500-NO₂⁻ B as approved alternative methods for nitrite in appendix A to subpart C of 40 CFR 141 on June 3, 2008 (at 73 Fed. Reg. 31616). USEPA added Systea Easy (1-Reagent) as an approved alternative method for nitrite in appendix A to subpart C of 40 CFR 141 on August 3, 2009 (at 73 Fed. Reg. 38348). USEPA added Standard Methods, 22nd ed., Methods 4110 B, 4500-NO₃⁻ E and F, and 4500-NO₂⁻ B as approved alternative methods for nitrite in appendix A to subpart C of 40 CFR 141 on May 31, 2013 (at 78 Fed. Reg. 32558). USEPA added ASTM D4327-11 as an approved alternative method for

nitrite in appendix A to subpart C of 40 CFR 141 on June 19, 2014 (at 79 Fed. Reg. 35081).

- 20) Orthophosphate (unfiltered, without digestion or hydrolysis).
- A) Automated colorimetric, ascorbic acid.
 - i) USEPA Environmental Inorganic Methods, Method 365.1 (rev. 2.0); or
 - ii) Standard Methods, 18th, 19th, 20th, 21st, or 22nd ed., Method 4500-P F.
 - 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 Methods, Method I-1601-85.
 - D) Colorimetric, phosphomolybdate, automated-segmented flow: USGS Methods, Method I-2601-90.
 - E) Colorimetric, phosphomolybdate, automated discrete: USGS Methods, 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, ~~or 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).

BOARD NOTE: USEPA added Standard Methods, 21st ed., Methods 4110 B and 4500-P E and F as approved alternative methods for orthophosphate in appendix A to subpart C of 40 CFR 141 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 for orthophosphate in appendix A to subpart C of 40 CFR 141 on May 31, 2013 (at 78 Fed. Reg. 32558). USEPA added ASTM D4327-11 as an approved alternative method for orthophosphate in appendix A to subpart C of 40 CFR 141 on June 19, 2014 (at 79 Fed. Reg. 35081).

- 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.

BOARD NOTE: USEPA added Standard Methods, 21st ed., Method 4500-H⁺ B as an approved alternative method for pH in appendix A to subpart C of 40 CFR 141 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 for pH in appendix A to subpart C of 40 CFR 141 on May 31, 2013 (at 78 Fed. Reg. 32558).

- 22) Selenium.
- A) Atomic absorption, hydride.
 - i) ASTM Method D3859-98 A, D3859-03 A, or D3859-08 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;
 - 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 for selenium in appendix A to subpart C of 40 CFR 141 on June 3, 2008 (at 73 Fed. Reg. 31616). USEPA added ASTM Methods D3859-08 A and B as approved alternative methods for selenium in appendix A to subpart C of 40 CFR 141 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 for selenium in appendix A to subpart C of 40 CFR 141 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 for selenium in appendix A to subpart C of 40 CFR 141 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 for selenium in appendix A to subpart C of 40 CFR 141 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 9223 B-10, the Board has not listed the Standard Methods Online versions separately.

23) Silica.

- A) Colorimetric, molybdate blue: USGS Methods, Method I-1700-85.
- B) Colorimetric, molybdate blue, automated-segmented flow: USGS Methods, 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-SiO₂ C.
- E) Heteropoly blue: Standard Methods, 18th or 19th ed., Method 4500-Si E or Standard Methods, 20th, 21st, or 22nd ed., Method 4500-SiO₂ 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-SiO₂ 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-SiO₂ C, D, and E; and USEPA NERL Method 200.5 as approved alternative methods for silica in appendix A to subpart C of 40 CFR 141 on June 3, 2008 (at 73 Fed. Reg. 31616). USEPA added ASTM Method D859-10 as an approved alternative method for silica in appendix A to subpart C of 40 CFR 141 on June 28, 2012 (at 77 Fed. Reg. 38523). USEPA added Standard Methods, 22nd ed., Methods 3120 B and 4500-SiO₂ C, D, and E as approved alternative methods for silica in appendix A to subpart C of 40 CFR 141 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 3113 B and USEPA NERL Method 200.5 as approved alternative methods for sodium in appendix A to subpart C of 40 CFR 141 on June 3, 2008 (at 73 Fed. Reg. 31616). USEPA added ASTM Method D6919-09 as an approved alternative method for sodium in appendix A to subpart C of 40 CFR 141 on June 24, 2011 (at 76 Fed. Reg. 37014). USEPA added Standard Methods, 22nd ed., Method 3111 B as an approved alternative method for sodium in appendix A to subpart C of 40 CFR 141 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 for temperature in appendix A to subpart C of 40 CFR 141 on June 3, 2008 (at 73 Fed. Reg. 31616).

USEPA added Standard Methods, 22nd ed., Method 2550 as an approved alternative method for temperature in appendix A to subpart C of 40 CFR 141 on May 31, 2013 (at 78 Fed. Reg. 32558). USEPA added Standard Methods Online, Method 2550-10 as an approved alternative method for temperature in appendix A to subpart C of 40 CFR 141 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: $\pm 30\%$ at greater than or equal to 0.006 mg/l.
 - B) Arsenic: $\pm 30\%$ at greater than or equal to 0.003 mg/l.

- C) Asbestos: 2 standard deviations based on study statistics.
- D) Barium: $\pm 15\%$ at greater than or equal to 0.15 mg/l.
- E) Beryllium: $\pm 15\%$ at greater than or equal to 0.001 mg/l.
- F) Cadmium: $\pm 20\%$ at greater than or equal to 0.002 mg/l.
- G) Chromium: $\pm 15\%$ at greater than or equal to 0.01 mg/l.
- H) Cyanide: $\pm 25\%$ at greater than or equal to 0.1 mg/l.
- I) Fluoride: $\pm 10\%$ at 1 to 10 mg/l.
- J) Mercury: $\pm 30\%$ at greater than or equal to 0.0005 mg/l.
- K) Nickel: $\pm 15\%$ at greater than or equal to 0.01 mg/l.
- L) Nitrate: $\pm 10\%$ at greater than or equal to 0.4 mg/l.
- M) Nitrite: $\pm 15\%$ at greater than or equal to 0.4 mg/l.
- N) Selenium: $\pm 20\%$ at greater than or equal to 0.01 mg/l.
- O) Thallium: $\pm 30\%$ 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-(2013) (2014).

(Source: Amended at 39 Ill. Reg. _____, effective _____)

Section 611.612 Monitoring Requirements for Old Inorganic MCLs

- a) Analyses for the purpose of determining compliance with the old inorganic MCLs of Section 611.300 are required as follows:
 - 1) Analyses for all CWSs utilizing surface water sources must be repeated at yearly intervals.
 - 2) Analyses for all CWSs utilizing only groundwater sources must be repeated at three-year intervals.
 - 3) This subsection (a)(3) corresponds with 40 CFR 141.23(1)(3), which requires monitoring for the repealed old MCL for nitrate at a frequency specified by the state. The Board has followed the USEPA lead and repealed that old MCL. This statement maintains structural consistency with USEPA rules.
 - 4) This subsection (a)(4) corresponds with 40 CFR 141.23(1)(4), which

authorizes the state to determine compliance and initiate enforcement action. This statement maintains structural consistency with USEPA rules.

- b) If the result of an analysis made under subsection (a) of this Section indicates that the level of any contaminant listed in Section 611.300 exceeds the old MCL, the supplier must report to the Agency within seven days and initiate three additional analyses at the same sampling point within one month.
- c) When the average of four analyses made pursuant to subsection (b) of this Section, rounded to the same number of significant figures as the old MCL for the substance in question, exceeds the old MCL, the supplier must notify the Agency and give notice to the public pursuant to Subpart V of this Part. Monitoring after public notification must be at a frequency designated by the Agency by a SEP issued pursuant to Section 611.110 and must continue until the old MCL has not been exceeded in two successive samples or until a different monitoring schedule becomes effective as a condition to a variance, an adjusted standard, a site specific rule, an enforcement action, or another SEP issued pursuant to Section 611.110.
- d) This subsection (d) corresponds with 40 CFR 141.23(o), which pertains to monitoring for the repealed old MCL for nitrate. This statement maintains structural consistency with USEPA rules.
- e) This subsection (e) corresponds with 40 CFR 141.23(p), which pertains to the use of existing data up until a date long since expired. This statement maintains structural consistency with USEPA rules.
- f) Analyses conducted to determine compliance with the old MCLs of Section 611.300 must be made in accordance with the following methods, incorporated by reference in Section 611.102, or alternative methods approved by the Agency pursuant to Section 611.480.
 - 1) Fluoride: The methods specified in Section 611.611(c) must apply for the purposes of this Section.
 - 2) Iron.
 - A) Standard Methods.
 - i) Method 3111 B, 18th, 19th, 21st, or 22nd ed.;
 - ii) Method 3113 B, 18th, 19th, 21st, or 22nd ed.; or
 - iii) Method 3120 B, 18th, 19th, 20th, 21st, or 22nd ed.
 - B) Standard Methods Online, Method 3113 B-04.

- C) USEPA Environmental Metals Methods.
 - i) Method 200.7 (rev. 4.4); or
 - ii) Method 200.9 (rev. 2.2).
- D) Axially viewed inductively coupled plasma-atomic emission spectrometry (AVICP-AES): USEPA NERL Method 200.5.

BOARD NOTE: USEPA added USEPA NERL Method 200.5 as an approved alternative method in appendix A to subpart C of 40 CFR 141 on June 3, 2008 (at 73 Fed. Reg. 31616). USEPA added Standard Methods, 21st ed.; Methods 3111 B, 3113 B, and 3120 B and USEPA NERL Method 200.5 as approved alternative methods for iron in appendix A to subpart C of 40 CFR 141 on June 3, 2008 (at 73 Fed. Reg. 31616). USEPA added Standard Methods Online, Method 3113 B-04 as an approved alternative method for iron in appendix A to subpart C of 40 CFR 141 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 for iron in appendix A to subpart C of 40 CFR 141 on June 21, 2013 (at 78 Fed. Reg. 37463). USEPA added Standard Methods Online, Method 3113 B-10 as an approved alternative method for iron in appendix A to subpart C of 40 CFR 141 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 9223 B-10, the Board has not listed the Standard Methods Online versions separately.

- 3) Manganese.
 - A) Standard Methods.
 - i) Method 3111 B, 18th, 19th, 21st, or 22nd ed.;
 - ii) Method 3113 B, 18th, 19th, 21st, or 22nd ed.; or
 - iii) Method 3120 B, 18th, 19th, 20th, 21st, or 22nd ed.
 - B) Standard Methods Online, Method 3113 B-04.
 - C) USEPA Environmental Metals Methods.
 - i) Method 200.7 (rev. 4.4);
 - ii) Method 200.8 (rev. 5.3); or
 - iii) Method 200.9 (rev. 2.2).

- D) 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 for manganese in appendix A to subpart C of 40 CFR 141 on June 3, 2008 (at 73 Fed. Reg. 31616). USEPA added Standard Methods Online, Method 3113 B-04 as an approved alternative method for manganese in appendix A to subpart C of 40 CFR 141 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 for manganese in appendix A to subpart C of 40 CFR 141 on June 21, 2013 (at 78 Fed. Reg. 37463). USEPA added Standard Methods Online, Method 3113 B-10 as an approved alternative method for manganese in appendix A to subpart C of 40 CFR 141 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 9223 B-10, the Board has not listed the Standard Methods Online versions separately.

- 4) Zinc.
- A) Standard Methods.
- i) Method 3111 B, 18th, 19th, 21st, or 22nd ed.; or
 - ii) Method 3120 B, 18th, 19th, 20th, 21st, or 22nd ed.
- B) USEPA Environmental Metals Methods.
- i) Method 200.7 (rev. 4.4); or
 - ii) Method 200.8 (rev. 5.3).
- C) 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 and 3120 B and USEPA NERL Method 200.5 as approved alternative methods for zinc in appendix A to subpart C of 40 CFR 141 on June 3, 2008 (at 73 Fed. Reg. 31616). USEPA added Standard Methods, 22nd ed., Methods 3111 B and 3120 B as approved alternative methods for zinc in appendix A to subpart C of 40 CFR 141 on June 21, 2013 (at 78 Fed. Reg. 37463).

BOARD NOTE: The provisions of subsections (a) through (e) of this Section derive from 40 CFR 141.23(l) through (p) ~~(2013)~~ (2014). Subsections (f)(2) through (f)(4) of this Section relate exclusively to additional State requirements. The Board retained subsection (f) of this Section to

set forth methods for the inorganic contaminants for which there is a State-only MCL. The methods specified are those set forth in 40 CFR 143.4(b) and appendix A to subpart C of 40 CFR 141 ~~(2013)~~ (2014), for secondary MCLs.

(Source: Amended at 39 Ill. Reg. _____, effective _____)

SUBPART O: ORGANIC MONITORING AND ANALYTICAL REQUIREMENTS

Section 611.645 Analytical Methods for Organic Chemical Contaminants

Analysis for the Section 611.311(a) VOCs under Section 611.646; the Section 611.311(c) SOCs under Section 611.648; the Section 611.310 old MCLs under Section 611.641; and for THMs, TTHMs, and TTHM potential must be conducted using the methods listed in this Section. All methods are incorporated by reference in Section 611.102. Other required analytical test procedures germane to the conduct of these analyses are contained in the USEPA document, "Technical Notes of Drinking Water Methods," incorporated by reference in Section 611.102.

a) Volatile Organic Chemical Contaminants (VOCs).

Contaminant	Analytical Methods
Benzene	USEPA Organic Methods, Methods 502.2 (rev. 2.1) and 524.2 (rev. 4.1); USEPA OGWDW Methods, Method 524.3 (rev. 1.0)
Carbon tetrachloride	USEPA Organic Methods, Methods 502.2 (rev. 2.1) and 524.2 (rev. 4.1); USEPA OGWDW Methods, Methods 524.3 (rev. 1.0), 524.4, and 551.1 (rev. 1.0)
Chlorobenzene	USEPA Organic Methods, Methods 502.2 (rev. 2.1) and 524.2 (rev. 4.1); USEPA OGWDW Methods, Methods 524.3 (rev. 1.0) and 524.4
1,2-Dichlorobenzene	USEPA Organic Methods, Methods 502.2 (rev. 2.1) and 524.2 (rev. 4.1); USEPA OGWDW Methods, Methods 524.3 (rev. 1.0) and 524.4
1,4-Dichlorobenzene	USEPA Organic Methods, Methods 502.2 (rev. 2.1) and 524.2 (rev. 4.1); USEPA OGWDW Methods, Methods 524.3 (rev. 1.0) and 524.4

1,2-Dichloroethane	USEPA Organic Methods, Methods 502.2 (rev. 2.1) and 524.2 (rev. 4.1); USEPA OGWDW Methods, Methods 524.3 (rev. 1.0) and 524.4
1,1-Dichloroethylene	USEPA Organic Methods, Methods 502.2 (rev. 2.1) and 524.2 (rev. 4.1); USEPA OGWDW Methods, Methods 524.3 (rev. 1.0) and 524.4
cis-Dichloroethylene	USEPA Organic Methods, Methods 502.2 (rev. 2.1) and 524.2 (rev. 4.1); USEPA OGWDW Methods, Methods 524.3 (rev. 1.0) and 524.4
trans-Dichloroethylene	USEPA Organic Methods, Methods 502.2 (rev. 2.1) and 524.2 (rev. 4.1); USEPA OGWDW Methods, Methods 524.3 (rev. 1.0) and 524.4
Dichloromethane	USEPA Organic Methods, Methods 502.2 (rev. 2.1) and 524.2 (rev. 4.1); USEPA OGWDW Methods, Methods 524.3 (rev. 1.0) and 524.4
1,2-Dichloropropane	USEPA Organic Methods, Methods 502.2 (rev. 2.1) and 524.2 (rev. 4.1); USEPA OGWDW Methods, Methods 524.3 (rev. 1.0) and 524.4
Ethylbenzene	USEPA Organic Methods, Methods 502.2 (rev. 2.1) and 524.2 (rev. 4.1); USEPA OGWDW Methods, Methods 524.3 (rev. 1.0) and 524.4
Styrene	USEPA Organic Methods, Methods 502.2 (rev. 2.1) and 524.2 (rev. 4.1); USEPA OGWDW Methods, Methods 524.3 (rev. 1.0) and 524.4
Tetrachloroethylene	USEPA Organic Methods, Methods 502.2 (rev. 2.1) and 524.2 (rev. 4.1); USEPA OGWDW Methods, Methods 524.3 (rev. 1.0), 524.4, and 551.1 (rev. 1.0)

Toluene	USEPA Organic Methods, Methods 502.2 (rev. 2.1) and 524.2 (rev. 4.1); USEPA OGWDW Methods, Methods 524.3 (rev. 1.0) and 524.4
1,1,1-Trichloroethane	USEPA Organic Methods, Methods 502.2 (rev. 2.1) and 524.2 (rev. 4.1); USEPA OGWDW Methods, Methods 524.3 (rev. 1.0), 524.4, and 551.1 (rev. 1.0)
Trichloroethylene	USEPA Organic Methods, Methods 502.2 (rev. 2.1) and 524.2 (rev. 4.1); USEPA OGWDW Methods, Methods 524.3 (rev. 1.0), 524.4, and 551.1 (rev. 1.0)
Toluene	USEPA Organic Methods, Methods 502.2 (rev. 2.1) and 524.2 (rev. 4.1); USEPA OGWDW Methods, Method 524.3 (rev. 1.0)
1,2,4-Trichlorobenzene	USEPA Organic Methods, Methods 502.2 (rev. 2.1) and 524.2 (rev. 4.1); USEPA OGWDW Methods, Methods 524.3 (rev. 1.0) and 524.4
1,1,2-Trichloroethane	USEPA Organic Methods, Methods 502.2 (rev. 2.1) and 524.2 (rev. 4.1); USEPA OGWDW Methods, Methods 524.3 (rev. 1.0) and 524.4
Vinyl chloride	USEPA Organic Methods, Methods 502.2 (rev. 2.1) and 524.2 (rev. 4.1); USEPA OGWDW Methods, Methods 524.3 (rev. 1.0) and 524.4
Xylenes (total)	USEPA Organic Methods, Methods 502.2 (rev. 2.1) and 524.2 (rev. 4.1); USEPA OGWDW Methods, Methods 524.3 (rev. 1.0) and 524.4

BOARD NOTE: USEPA added USEPA OGWDW Method 524.3 (rev. 1.0) as an alternative method for all of the VOCs in appendix A to subpart C of 40 CFR 141 on August 3, 2009 (at 74 Fed. Reg. 38348). USEPA added USEPA OGWDW Method 524.4 as an approved alternative method for all of the VOCs in appendix A to subpart C of 40 CFR 141 on May 31, 2013 (at 78 Fed. Reg. 32558).

b) Synthetic Organic Chemical Contaminants (SOCs).

Contaminant	Analytical Methods
2,3,7,8-Tetrachlorodibenzo-dioxin (2,3,7,8-TCDD or dioxin)	Dioxin and Furan Method 1613 (rev. B)
2,4-D	USEPA Organic Methods, Methods 515.2 (rev. 1.1), 555 (rev. 1.0), and 515.1 (rev. 4.0); USEPA Organic and Inorganic Methods, Method 515.3 (rev. 1.0); USEPA OGWDW Methods, Method 515.4 (rev. 1.0); ASTM Method D5317-93 or D5317-98(2003); Standard Methods, 21st or 22nd ed., Method 6640 B
2,4,5-TP (Silvex)	USEPA Organic Methods, Methods 515.2 (rev. 1.1), 555 (rev. 1.0), and 515.1 (rev. 4.0); USEPA Organic and Inorganic Methods, Method 515.3 (rev. 1.0); USEPA OGWDW Methods, Method 515.4 (rev. 1.0); ASTM Method D5317-93 or D5317-98(2003); Standard Methods, 21st or 22nd ed., Method 6640 B
Alachlor	USEPA Organic Methods, Methods 505 (rev. 2.1) ¹ , 507 (rev. 2.1), 508.1 (rev. 2.0), 525.2 (rev. 2.0), 525.3 (rev. 1.0), and 551.1 (rev. 1.0)
Atrazine	USEPA Organic Methods, Methods 505 (rev. 2.1) ¹ , 507 (rev. 2.1), 508.1 (rev. 2.1), 523 (rev. 1.0), 525.2 (rev. 2.0), 525.3 (rev. 1.0), 536 (rev. 1.0), and 551.1 (rev. 1.0); Syngenta AG-625 ²
Benzo(a)pyrene	USEPA Organic Methods, Methods 525.2 (rev. 2.0), 525.3 (rev. 1.0), 550, and 550.1

Carbofuran	USEPA Organic Methods, Methods 531.1 (rev. 3.1); USEPA OGWDW Methods, Method 531.2 (rev. 1.0); Standard Methods, 18th ed. Supplement, 19th ed., or 20th ed., Method 6610; Standard Methods, 21st or 22nd ed., Method 6610 B
Chlordane	USEPA Organic Methods, Methods 505 (rev. 2.1), 508 (rev. 3.1), 508.1 (rev. 2.1), 525.2 (rev. 2.0), and 525.3 (ver. 1.0)
Dalapon	USEPA Organic Methods, Methods 515.1 (rev. 4.0), 552.1 (rev. 1.0), and 552.2 (rev. 1.0); USEPA Organic and Inorganic Methods, Method 515.3 (rev. 1.0); USEPA OGWDW Methods, Methods 515.4 (rev. 1.0), 552.3 (rev. 1.0), and 557; Standard Methods, 21st or 22nd ed., Method 6640 B
Di(2-ethylhexyl)adipate	USEPA Organic Methods, Methods 506 (rev. 1.1) 525.2 (rev. 2.0), and 525.3 (ver. 1.0)
Di(2-ethylhexyl)phthalate	USEPA Organic Methods, Methods 506 (rev. 1.1) 525.2 (rev. 2.0), and 525.3 (ver. 1.0)
Dibromochloropropane (DBCP)	USEPA Organic Methods, Methods 504.1 (rev. 1.1), USEPA OGWDW Methods, Methods 524.3 (rev. 1.0) and 551.1 (rev. 1.0)
Dinoseb	USEPA Organic Methods, Methods 515.1 (rev. 4.0) and 515.2 (rev. 1.1); USEPA Organic and Inorganic Methods, Method 515.3 (rev. 1.0); USEPA OGWDW Methods, Methods 515.4 (rev. 1.0) and 555 (rev. 1.0); Standard Methods, 21st or 22nd ed., Method 6640 B

Diquat	USEPA NERL Method 549.2 (rev. 1.0)
Endothall	USEPA Organic Methods, Method 548.1 (rev. 1.0)
Endrin	USEPA Organic Methods, Methods 505 (rev. 2.1), 508 (rev. 3.1), 508.1 (rev. 2.0), 525.2 (rev. 2.0), 525.3 (ver. 1.0), and 551.1 (rev. 1.0)
Ethylene dibromide (EDB)	USEPA Organic Methods, Method 504.1 (rev. 1.1); USEPA OGWDW Methods, Methods 524.3 (rev. 1.0) and 551.1 (rev. 1.0)
Glyphosate	USEPA Organic Methods, Method 547; Standard Methods, 18th ed., 19th ed., 20th, 21st, or 22nd ed., Method 6651 B
Heptachlor	USEPA Organic Methods, Methods 505 (rev. 2.1), 508 (rev. 3.1), 508.1 (rev. 2.0), 525.2 (rev. 2.0), 525.3 (ver. 1.0), and 551.1 (rev. 1.0)
Heptachlor Epoxide	USEPA Organic Methods, Methods 505 (rev. 2.1), 508 (rev. 3.1), 508.1 (rev. 2.0), 525.2 (rev. 2.0), 525.3 (ver. 1.0), and 551.1 (rev. 1.0)
Hexachlorobenzene	USEPA Organic Methods, Methods 505 (rev. 2.1), 508 (rev. 3.1), 508.1 (rev. 2.0), 525.2 (rev. 2.0), 525.3 (ver. 1.0), and 551.1 (rev. 1.0)
Hexachlorocyclopentadiene	USEPA Organic Methods, Methods 505 (rev. 2.1), 508 (rev. 3.1), 508.1 (rev. 2.0), 525.2 (rev. 2.0), 525.3 (ver. 1.0), and 551.1 (rev. 1.0)
Lindane	USEPA Organic Methods, Methods 505 (rev. 2.1), 508 (rev. 3.1), 508.1 (rev. 2.0), 525.2 (rev. 2.0), 525.3 (ver. 1.0), and 551.1 (rev. 1.0)

Methoxychlor	USEPA Organic Methods, Methods 505 (rev. 2.1), 508 (rev. 3.1), 508.1 (rev. 2.0), 525.2 (rev. 2.0), 525.3 (ver. 1.0), and 551.1 (rev. 1.0)
Oxamyl	USEPA Organic Methods, Method 531.1 (rev. 3.1); USEPA OGWDW Methods, Method 531.2 (rev. 1.0); Standard Methods, 18th ed. Supplement, 19th ed., or 20th ed., Method 6610; Standard Methods, 21st or 22nd ed., Method 6610 B
PCBs (measured for compliance purposes as decachlorobiphenyl)	USEPA Organic Methods, Method 508A (rev. 1.0)
PCBs (qualitatively identified as Aroclors)	USEPA Organic Methods, Methods 505 (rev. 2.1), 508 (rev. 3.1), 508.1 (rev. 2.0), 525.2 (rev. 2.0), and 525.3 (ver. 1.0)
Pentachlorophenol	USEPA Organic Methods, Methods 515.1 (rev. 4.0), 515.2 (rev. 1.1), 525.2 (rev. 2.0), 525.3 (ver. 1.0), and 555 (rev. 1.0); USEPA Organic and Inorganic Methods, Method 515.3 (rev. 1.0); USEPA OGWDW Methods, Method 515.4 (rev. 1.0); ASTM Method D5317-93 or D5317-98(2003); Standard Methods, 21st or 22nd ed., Method 6640 B

Picloram	USEPA Organic Methods, Methods 515.1 (rev. 4.0), 515.2 (rev. 1.1), and 555 (rev. 1.0); USEPA Organic and Inorganic Methods, Method 515.3 (rev. 1.0); USEPA OGWDW Methods, Method 515.4 (rev. 1.0); ASTM Method D5317-93 or D5317-98(2003); Standard Methods, 21st or 22nd ed., Method 6640 B
Simazine	USEPA Organic Methods, Methods 505 (rev. 2.1) ¹ , 507 (rev. 2.1), 508.1 (rev. 2.0), 523 (ver. 1.0), 525.2 (rev. 2.0), 525.3 (ver. 1.0), 536 (ver. 1.0), and 551.1 (rev. 1.0)
Toxaphene	USEPA Organic Methods, Methods 505 (rev. 2.1), 508 (rev. 2.1), 508.1 (rev. 2.0), 525.2 (rev. 2.0), and 525.3 (ver. 1.0)

BOARD NOTE: USEPA added Standard Methods, 21st ed., Method 6610 B and Standard Methods Online, Method 6610 B-04 as approved alternative methods for carbofuran and oxamyl on June 3, 2008 (at 73 Fed. Reg. 31616). USEPA added USEPA OGWDW Method 524.3 (rev. 1.0) as an alternative method for dibromochloropropane and ethylene dibromide in appendix A to subpart C of 40 CFR 141 on August 3, 2009 (at 74 Fed. Reg. 38348). USEPA approved Standard Methods, 21st ed., Method 6640 B and Standard Methods Online, Method 6640 B-01 and USEPA OGWDW Methods, Method 557 as approved alternative methods for dalapon in appendix A to subpart C of 40 CFR 141 on June 8, 2010 (at 75 Fed. Reg. 32295). USEPA added Standard Methods, 21st ed., Method 6640 B as an approved alternative method for 2,4-D, 2,4,5-TP (Silvex), dinoseb, pentachlorophenol, and picloram in appendix A to subpart C of 40 CFR 141 on June 24, 2011 (at 76 Fed. Reg. 37014). USEPA added Standard Methods, Online, Method 6640 B-01 as an approved alternative method for 2,4-D, 2,4,5-TP (Silvex), dalapon, dinoseb, pentachlorophenol, and picloram and in appendix A to subpart C of 40 CFR 141 on June 24, 2011 (at 76 Fed. Reg. 37014). Since the version of Method 6640 B that appears in Standard Methods Online is the same as that which appears in Standard Methods, 21st ed., the Board has cited only to Standard Methods, 21st ed. USEPA added Standard Methods, 21st ed., Method 6651 B as an approved alternative method for glyphosate in appendix A to subpart C of 40 CFR 141 on June 24, 2011 (at 76 Fed. Reg. 37014). USEPA added Standard Methods Online, Method 6651 B-00 as an approved alternative method for glyphosate in appendix A to subpart C of 40 CFR 141 on June 24,

2011 (at 76 Fed. Reg. 37014). Since the version of Method 6651 B that appears in Standard Methods Online is the same as that which appears in Standard Methods, 21st ed., the Board has cited only to Standard Methods, 21st ed. USEPA approved USEPA OGWDW Methods, Method 523 (ver. 1.0) and Method 536 (ver. 1.0) as approved alternative methods for atrazine and simazine and USEPA NERL Methods, Method 525.3 as an approved alternative method for alachlor, atrazine, benzo(a)pyrene, chlordane, di(2-ethylhexyl)adipate, di(2-ethylhexyl)phthalate, endrin, heptachlor, heptachlor epoxide, hexachlorobenzene, hexachlorocyclopentadiene, lindane, methoxychlor, PCBs (as aroclors), pentachlorophenol, simazine, and toxaphene in appendix A to subpart C of 40 CFR 141 on June 8, 2012 (at 77 Fed. Reg. 38523). USEPA added Standard Methods, 22nd ed., Method 6610 B and Standard Methods Online, Method 6610 B-04 as an approved alternative method for carbofuran and oxamyl; Standard Methods, 22nd ed., Method 6640 B and Standard Methods Online, Method 6640 B-01 as an approved method for 2,4-D, 2,4,5-TP (silvex), dalapon, dinoseb, pentachlorophenol, and picloram; and Standard Methods, 22nd ed., Method 6651 B for glyphosate in appendix A to subpart C of 40 CFR 141 on May 31, 2013 (at 78 Fed. Reg. 32558). Because Standard Methods, 22nd ed., Methods 6610 B and 6640 B-01 are the same versions as Standard Methods Online 6610 B-04 and 6640 B-01, the Board has not listed the Standard Methods Online versions separately. USEPA added Standard Methods Online, Method 6640 B-06 as an approved alternative method for 2,4-D, 2,4,5-TP (silvex), dalapon, dinoseb, pentachlorophenol, and picloram and Method 6651B-05 for glyphosate in appendix A to subpart C of 40 CFR 141 on June 19, 2014 (at 79 Fed. Reg. 35081). Because Standard Methods, 22nd ed., Methods 6640 B and 6651 B are the same versions as Standard Methods Online, Methods 6640 B-06 and 6651 B-05, the Board has not listed the Standard Methods Online versions separately.

c) Total Trihalomethanes (TTHMs).

Contaminant	Analytical Methods
Total Trihalomethanes (TTHMs), Trihalomethanes (THMs), and Maximum Total Trihalomethane Potential	USEPA Organic Methods, Methods 502.2 (rev. 2.1) and 524.2 (rev. 4.1); USEPA OGWDW Methods, Methods 524.3 (rev. 1.0), 524.4, and 551.1 (rev. 1.0)

BOARD NOTE: USEPA added USEPA OGWDW Method 524.3 (rev. 1.0) as an alternative method for total trihalomethane in appendix A to subpart C of 40 CFR 141 on August 3, 2009 (at 74 Fed. Reg. 38348). USEPA added USEPA OGWDW Method 524.4 as an approved alternative method for total trihalomethanes in appendix A to subpart C of 40 CFR 141 on May 31, 2013 (at 78 Fed. Reg. 32558).

- d) State-Only MCLs (for which a method is not listed in subsections (a) through (c) of this Section).

Contaminant	Analytical Methods
Aldrin	USEPA Organic Methods, Methods 505 (rev. 2.1), 508 (rev. 3.1), 508.1 (rev. 2.0), and 525.2 (rev. 2.0)
DDT	USEPA Organic Methods, Methods 505 (rev. 2.1) and 508 (rev. 3.1)
Dieldrin	USEPA Organic Methods, Methods 505 (rev. 2.1), 508 (rev. 3.1), 508.1 (rev. 2.0), and 525.2 (rev. 2.0)

- e) The following footnotes are appended to method entries in subsections (a) and (b) of this Section:

¹ denotes that, for the particular contaminant, a nitrogen-phosphorus detector should be substituted for the electron capture detector in method 505 (or another approved method should be used) to determine alachlor, atrazine, and simazine if lower detection limits are required.

² denotes that Syngenta Method AG-625 may not be used for the analysis of atrazine in any system where chlorine dioxide is used for drinking water treatment. In samples from all other systems, any result for atrazine generated by Syngenta Method AG-625 that is greater than one-half the maximum contaminant level (MCL) (in other words, greater than 0.0015 mg/ℓ or 1.5 µg/ℓ) must be confirmed using another approved method for this contaminant and should use additional volume of the original sample collected for compliance monitoring. In instances where a result from Syngenta Method AG-625 triggers such confirmatory testing, the confirmatory result is to be used to determine compliance.

BOARD NOTE: Derived from 40 CFR 141.24(e) and appendix A to subpart C of 40 CFR 141 (~~2013~~) (2014).

(Source: Amended at 39 Ill. Reg. _____, effective _____)

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

Section 611.742 Disinfection Profiling and Benchmarking

- a) Determination of a supplier required to profile. A PWS supplier subject to the requirements of this Subpart R must determine its TTHM annual average using

the procedure in subsection (a)(1) of this Section and its HAA5 annual average using the procedure in subsection (a)(2) of this Section. The annual average is the arithmetic average of the quarterly averages of four consecutive quarters of monitoring.

- 1) The TTHM annual average that is used must be the annual average during the same period as the HAA5 annual average.
 - A) A supplier that collected data under the provisions of 40 CFR 141 Subpart M (Information Collection Rule) must use the results of the samples collected during the last four quarters of required monitoring under former 40 CFR 141.42 (1995).
 - B) A supplier that uses “grandfathered” HAA5 occurrence data that meet the provisions of subsection (a)(2)(B) of this Section must use TTHM data collected at the same time under the provisions of former Section 611.680.
 - C) A supplier that uses HAA5 occurrence data that meet the provisions of subsection (a)(2)(C)(i) of this Section must use TTHM data collected at the same time under the provisions of ~~Sections~~ Section 611.310 and former Section 611.680.
- 2) The HAA5 annual average that is used must be the annual average during the same period as the TTHM annual average.
 - A) A supplier that collected data under the provisions of 40 CFR 141 Subpart M (Information Collection Rule) must use the results of the samples collected during the last four quarters of required monitoring under former 40 CFR 141.42 (1995).
 - B) A supplier that has collected four quarters of HAA5 occurrence data that meets the routine monitoring sample number and location requirements for TTHM in former Section 611.680 and handling and analytical method requirements of former Section 611.685 may use that data to determine whether the requirements of this Section apply.
 - C) A supplier that had not collected four quarters of HAA5 occurrence data that meets the provisions of either subsection (a)(2)(A) or (a)(2)(B) of this Section by March 31, 1999 must do either of the following:
 - i) Conduct monitoring for HAA5 that meets the routine monitoring sample number and location requirements for TTHM in former Section 611.680 and handling and analytical method requirements of former Section 611.685 to determine the HAA5 annual average and whether the

requirements of subsection (b) of this Section apply; or

- ii) Comply with all other provisions of this Section as if the HAA5 monitoring had been conducted and the results required compliance with subsection (b) of this Section.
- 3) The supplier may request that the Agency approve a more representative annual data set than the data set determined under subsection (a)(1) or (a)(2) of this Section for the purpose of determining applicability of the requirements of this Section.
- 4) The Agency may require that a supplier use a more representative annual data set than the data set determined under subsection (a)(1) or (a)(2) of this Section for the purpose of determining the applicability of the requirements of this Section.
- 5) The supplier must submit data to the Agency on the schedule in subsections (a)(5)(A) through (a)(5)(E) of this Section.
 - A) A supplier that collected TTHM and HAA5 data under the provisions of 40 CFR Subpart M (Information Collection Rule), as required by subsections (a)(1)(A) and (a)(2)(A) of this Section, must have submitted the results of the samples collected during the last 12 months of required monitoring under former Section 611.685 not later than December 31, 1999.
 - B) A supplier that had collected four consecutive quarters of HAA5 occurrence data that meets the routine monitoring sample number and location for TTHM in former 40 CFR 141.42 (1994), and handling and analytical method requirements of former Section 611.685, as allowed by subsections (a)(1)(B) and (a)(2)(B) of this Section, must have submitted that data to the Agency not later than April 30, 1999. Until the Agency has approved the data, the supplier must conduct monitoring for HAA5 using the monitoring requirements specified under subsection (a)(2)(C) of this Section.
 - C) A supplier that conducted monitoring for HAA5 using the monitoring requirements specified by subsections (a)(1)(C) and (a)(2)(C)(i) of this Section must have submitted TTHM and HAA5 data not later than March 31, 2000.
 - D) A supplier that elected to comply with all other provisions of this Section as if the HAA5 monitoring had been conducted and the results required compliance with this Section, as allowed under subsection (a)(2)(C)(ii) of this Section, must have notified the Agency in writing of its election not later than December 31, 1999.
 - E) If the supplier elected to request that the Agency approve a more

representative data set than the data set determined under subsection (a)(2)(A) of this Section, the supplier must have submitted this request in writing not later than December 31, 1999.

- 6) Any supplier ~~having that had~~ either a TTHM annual average \geq (greater than or equal to) 0.064 mg/l or an HAA5 annual average \geq 0.048 mg/l during the period identified in subsections (a)(1) and (a)(2) of this Section must comply with subsection (b) of this Section.

BOARD NOTE: Former Sections 611.680 and 611.685 originally derived from 40 CFR 141.30(a), (b), and (e). USEPA removed 40 CFR 141.30 in its entirety in 2006. The Board repealed former Section 611.685 in 2007 and Section 611.680 in 2012. The references to former Sections 611.680 and 611.685 in this subsection (a) relate to use of existing monitoring data collected under those provisions as they existed before their repeal.

- b) Disinfection profiling.
- 1) Any supplier that meets the standards in subsection (a)(6) of this Section must ~~develop~~ have developed a disinfection profile of its disinfection practice for a period of up to three years. The Agency must ~~determine~~ have determined the period of the disinfection profile, with a minimum period of one year.
 - 2) The supplier must ~~monitor~~ must have monitored daily for a period of 12 consecutive calendar months to determine the total logs of inactivation for each day of operation, based on the $CT_{99,9}$ values in Appendix B of this Part, as appropriate, through the entire treatment plant. The supplier must have begun this monitoring not later than April 1, 2000. As a minimum, the supplier with a single point of disinfectant application prior to entrance to the distribution system must ~~conduct~~ have conducted the monitoring in subsections (b)(2)(A) through (b)(2)(D) of this Section. A supplier with more than one point of disinfectant application must ~~conduct~~ have conducted the monitoring in subsections (b)(2)(A) through (b)(2)(D) of this Section for each disinfection segment. The supplier must ~~monitor~~ have monitored the parameters necessary to determine the total inactivation ratio, using analytical methods in Section 611.531, as follows:
 - A) The temperature of the disinfected water must ~~be~~ have been measured once per day at each residual disinfectant concentration sampling point during peak hourly flow.
 - B) If the supplier uses chlorine, the pH of the disinfected water must ~~be~~ have been measured once per day at each chlorine residual disinfectant concentration sampling point during peak hourly flow.
 - C) The disinfectant contact times (“T”) must ~~be~~ have been determined

for each day during peak hourly flow.

- D) The residual disinfectant concentrations (“C”) of the water before or at the first customer and prior to each additional point of disinfection must ~~be~~ have been measured each day during peak hourly flow.
- 3) In lieu of the monitoring conducted under the provisions of subsection (b)(2) of this Section to develop the disinfection profile, the supplier may ~~elect~~ have elected to meet the requirements of subsection (b)(3)(A) of this Section. In addition to the monitoring conducted under the provisions of subsection (b)(2) of this Section to develop the disinfection profile, the supplier may ~~elect~~ have elected to meet the requirements of subsection (b)(3)(B) of this Section.
- A) A PWS supplier that had three years of existing operational data may have submitted that data, a profile generated using that data, and a request that the Agency approve use of that data in lieu of monitoring under the provisions of subsection (b)(2) of this Section not later than March 31, 2000. The Agency must ~~determine~~ have determined whether the operational data is substantially equivalent to data collected under the provisions of subsection (b)(2) of this Section. The data must also ~~be~~ have been representative of Giardia lamblia inactivation through the entire treatment plant and not just of certain treatment segments. If the Agency ~~determines~~ determined that the operational data ~~is~~ was substantially equivalent, the Agency must ~~approve~~ have approved the request. Until the Agency ~~approves~~ approved this request, the system ~~is~~ was required to conduct monitoring under the provisions of subsection (b)(2) of this Section.
- B) In addition to the disinfection profile generated under subsection (b)(2) of this Section, a PWS supplier that ~~has~~ had existing operational data may ~~use~~ have used that data to develop a disinfection profile for additional years. The Agency must ~~determine~~ have determined whether the operational data ~~is~~ was substantially equivalent to data collected under the provisions of subsection (b)(2) of this Section. The data must also ~~be~~ have been representative of inactivation through the entire treatment plant and not just of certain treatment segments. If the Agency ~~determines~~ determined that the operational data ~~is~~ was substantially equivalent, such systems may ~~use~~ have used these additional yearly disinfection profiles to develop a benchmark under the provisions of subsection (c) of this Section.
- 4) The supplier must calculate the total inactivation ratio as follows:

- A) If the supplier uses only one point of disinfectant application, the system may determine the total inactivation ratio for the disinfection segment based on either of the methods in subsection (b)(4)(A)(i) or (b)(4)(A)(ii) of this Section.
- i) Determine one inactivation ratio ($CT_{\text{calc}}/CT_{99.9}$) before or at the first customer during peak hourly flow.
 - ii) Determine successive $CT_{\text{calc}}/CT_{99.9}$ values, representing sequential inactivation ratios, between the point of disinfectant application and a point before or at the first customer during peak hourly flow. Under this alternative, the supplier must calculate the total inactivation ratio ($\Sigma(CT_{\text{calc}}/CT_{99.9})$) by determining $CT_{\text{calc}}/CT_{99.9}$ for each sequence and then adding the $CT_{\text{calc}}/CT_{99.9}$ values together to determine $\Sigma(CT_{\text{calc}}/CT_{99.9})$.
- B) If the supplier uses more than one point of disinfectant application before the first customer, the system must determine the CT value of each disinfection segment immediately prior to the next point of disinfectant application, or for the final segment, before or at the first customer, during peak hourly flow. The ($CT_{\text{calc}}/CT_{99.9}$) value of each segment and ($\Sigma(CT_{\text{calc}}/CT_{99.9})$) must be calculated using the method in subsection (b)(4)(A) of this Section.
- C) The supplier must determine the total logs of inactivation by multiplying the value calculated in subsection (b)(4)(A) or (b)(4)(B) of this Section by 3.0.
- 5) A supplier that uses either chloramines or ozone for primary disinfection must also calculate the logs of inactivation for viruses using a method approved by the Agency.
- 6) The supplier must retain disinfection profile data in graphic form, as a spreadsheet, or in some other format acceptable to the Agency for review as part of sanitary surveys conducted by the Agency.
- c) Disinfection benchmarking.
- 1) Any supplier required to develop a disinfection profile under the provisions of subsections (a) and (b) of this Section and that decides to make a significant change to its disinfection practice must consult with the Agency prior to making such change. Significant changes to disinfection practice are the following:
 - A) Changes to the point of disinfection;
 - B) Changes to the disinfectants used in the treatment plant;

- C) Changes to the disinfection process; and
 - D) Any other modification identified by the Agency.
- 2) Any supplier that is modifying its disinfection practice must calculate its disinfection benchmark using the procedure specified in subsections (c)(2)(A) and (c)(2)(B) of this Section.
- A) For each year of profiling data collected and calculated under subsection (b) of this Section, the supplier must determine the lowest average monthly Giardia lamblia inactivation in each year of profiling data. The supplier must determine the average Giardia lamblia inactivation for each calendar month for each year of profiling data by dividing the sum of daily Giardia lamblia of inactivation by the number of values calculated for that month.
 - B) The disinfection benchmark is the lowest monthly average value (for systems with one year of profiling data) or average of lowest monthly average values (for systems with more than one year of profiling data) of the monthly logs of Giardia lamblia inactivation in each year of profiling data.
- 3) A supplier that uses either chloramines or ozone for primary disinfection must also calculate the disinfection benchmark for viruses using a method approved by the Agency.
- 4) The supplier must submit information in subsections (c)(4)(A) through (c)(4)(C) of this Section to the Agency as part of its consultation process.
- A) A description of the proposed change;
 - B) The disinfection profile for Giardia lamblia (and, if necessary, viruses) under subsection (b) of this Section and benchmark as required by subsection (c)(2) of this Section; and
 - C) An analysis of how the proposed change will affect the current levels of disinfection.

BOARD NOTE: Derived from 40 CFR 141.172-~~(2003)~~ (2014).

(Source: Amended at 39 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 conditions in either subsections (a)(1)(A) and (a)(1)(B) or (a)(1)(A) and (a)(1)(C) of this Section 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) Until March 31, 2016, the supplier is notified that a sample collected pursuant to Section 611.521 is total coliform-positive, and the sample is not invalidated by the Agency pursuant to Section 611.523.
 - C) Beginning April 1, 2016, 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 Section 611.521 until March 31, 2016, or collected pursuant to Sections 611.1054 through 611.1057 beginning April 1, 2016, except as provided in subsection (a)(2)(B) of this Section.
 - 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) Until March 31, 2016, 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 Section 611.522 and to satisfy the monitoring requirements of subsection (a)(2) of this Section for that groundwater source only if the Agency approves the use of E. coli as a fecal indicator for source water monitoring pursuant to this subsection (a) by a SEP issued pursuant to Section 611.110. If the repeat sample collected from the groundwater source is E.coli positive, the system must comply with subsection (a)(3) of this Section.

- D) Beginning April 1, 2016, a GWS supplier that serves 1,000 or fewer people may use a repeat sample collected from a ground water source to meet both the requirements of Subpart AA of this Part and to satisfy the monitoring requirements of subsection (a)(2) of this Section 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) of this Section.
- 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) of this Section that is not invalidated pursuant to subsection (d) of this Section, 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 Section 611.521 until March 31, 2016, or pursuant to Sections 611.1054 through 611.1057 beginning April 1, 2016, 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 Section 611.521 until March 31, 2016, or collected pursuant to Sections 611.1054 through 611.1057

beginning April 1, 2016, is total coliform-positive must, within 24 hours after being notified, collect a sample from its groundwater sources pursuant to subsection (a)(2) of this Section and analyze it for a fecal indicator pursuant to subsection (c) of this Section.

- ii) If the sample collected pursuant to subsection (a)(4)(B)(i) of this section 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 of being notified of the groundwater source sample monitoring result and must meet the requirements of subsection (a)(3) of this Section.
- 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) of this Section 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 Section 611.521 until March 31, 2016, or collected pursuant to Sections 611.1054 through 611.1057 beginning April 1, 2016, is caused by a distribution system deficiency; or
 - B) The total coliform-positive sample collected pursuant to Section 611.521 until March 31, 2016, or collected pursuant to Sections 611.1054 through 611.1057 beginning April 1, 2016, 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) of this Section to meet the requirements of subsection (b) of this Section. 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) of this Section 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) of this Section 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) of this Section using one of the analytical methods listed in subsections (c)(2)(A) through (c)(2)(C) of this Section, 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) of this Section, for the presence of E. coli, enterococci, or coliphage:
 - A) E. coli:
 - i) ~~Autoanalysis-Colilert® Test System~~, 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™ Method.
- xi) Chromocult® Method.
- xii) Tecta EC/TC P-A Test.

BOARD NOTE: EC–MUG (Standard Methods, Method 9221F) or NA–MUG (Standard Methods, Method 9222G) can be used for E. coli testing step, as described in Section 611.526(f)(1) or (f)(2) after use of Standard Methods, 18th, 19th, 20th, or 21st 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 for E. coli on June 3, 2008 (at 73 Fed. Reg. 31616). USEPA added ReadyCult® 2007, Modified Colitag™ Method, and Chromocult® Method as approved alternative methods for E. coli 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 for E. coli in appendix A to subpart C of 40 CFR 141 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 as approved alternative methods for E. coli in appendix A to subpart C of 40 CFR 141 on June 19, 2014 (at 79 Fed. Reg. 35081). Because Standard Methods, 22nd ed., Methods 9223 B and 9221 F are the same versions as Standard Methods Online, Method 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) of this Section, 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 for enterococci 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) of this Section 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) of this Section 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) of this Section. 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) of this Section 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) of this Section 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 after November 30, 2009 must conduct assessment source water monitoring pursuant to subsection (b) of this Section. 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) of this Section that is fecal indicator-positive and which is not invalidated pursuant to subsection (d) of this Section, 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) of this Section 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 ~~(2013)~~ (2014).

(Source: Amended at 39 Ill. Reg. _____, effective _____)

SUBPART U: CONSUMER CONFIDENCE REPORTS

Section 611.883 Content of the Reports

- a) Each CWS must provide to its customers an annual report that contains the information specified in this Section and Section 611.884.
- b) Information on the source of the water delivered.

- 1) Each report must identify the sources of the water delivered by the CWS by providing information on the following:
 - A) The type of the water (e.g., surface water, groundwater); and
 - B) The commonly used name (if any) and location of the body (or bodies) of water.
 - 2) If a source water assessment has been completed, the report must notify consumers of the availability of this information and the means to obtain it. In addition, systems are encouraged to highlight in the report significant sources of contamination in the source water area if they have readily available information. Where a system has received a source water assessment from the Agency, the report must include a brief summary of the system's susceptibility to potential sources of contamination, using language provided by the Agency or written by the supplier.
- c) Definitions.
- 1) Each report must include the following definitions:
 - A) Maximum Contaminant Level Goal or MCLG: The level of a contaminant in drinking water below which there is no known or expected risk to health. MCLGs allow for a margin of safety.

BOARD NOTE: Although an MCLG is not an NPDWR that the Board must include in the Illinois SDWA regulations, the use of this definition is mandatory where the term "MCLG" is defined.
 - B) Maximum Contaminant Level or MCL: The highest level of a contaminant that is allowed in drinking water. MCLs are set as close to the MCLGs as feasible using the best available treatment technology.
 - 2) A report for a CWS operating under relief from an NPDWR issued under Section 611.111, 611.112, 611.130, or 611.131 must include the following definition: "Variances, Adjusted Standards, and Site-specific Rules: State permission not to meet an MCL or a treatment technique under certain conditions."
 - 3) A report that contains data on contaminants that USEPA regulates using any of the following terms must include the applicable definitions:
 - A) Treatment technique: A required process intended to reduce the level of a contaminant in drinking water.
 - B) Action level: The concentration of a contaminant that, if exceeded, triggers treatment or other requirements that a water system must

follow.

- C) Maximum residual disinfectant level goal or MRDLG: The level of a drinking water disinfectant below which there is no known or expected risk to health. MRDLGs do not reflect the benefits of the use of disinfectants to control microbial contaminants.

BOARD NOTE: Although an MRDLG is not an NPDWR that the Board must include in the Illinois SDWA regulations, the use of this definition is mandatory where the term “MRDLG” is defined.

- D) Maximum residual disinfectant level or MRDL: The highest level of a disinfectant allowed in drinking water. There is convincing evidence that addition of a disinfectant is necessary for control of microbial contaminants.

- 4) A report that contains information regarding a Level 1 or Level 2 assessment required under Subpart AA of this Part must include the applicable of the following definitions:

- A) “Level 1 assessment: A Level 1 assessment is a study of the water system to identify potential problems and determine (if possible) why total coliform bacteria have been found in our water system.”
- B) “Level 2 assessment: A Level 2 assessment is a very detailed study of the water system to identify potential problems and determine (if possible) why an E. coli MCL violation has occurred or why total coliform bacteria have been found in our water system on multiple occasions.”

- d) Information on detected contaminants.

- 1) This subsection (d) specifies the requirements for information to be included in each report for contaminants subject to mandatory monitoring (except *Cryptosporidium*). It applies to the following:
- A) Contaminants subject to an MCL, action level, MRDL, or treatment technique (regulated contaminants);
- B) Contaminants for which monitoring is required by ~~Section 611.510~~ USEPA pursuant to 40 CFR 141.40 (unregulated contaminants); and
- C) Disinfection byproducts or microbial contaminants for which monitoring is required by Section 611.382 and Subpart L of this Part, except as provided under subsection (e)(1) of this Section, and which are detected in the finished water.
- 2) The data relating to these contaminants must be displayed in one table or in

several adjacent tables. Any additional monitoring results that a CWS chooses to include in its report must be displayed separately.

- 3) The data must have been derived from data collected to comply with monitoring and analytical requirements during calendar year 1998 for the first report and must be derived from the data collected in subsequent calendar years, except that the following requirements also apply:
 - A) Where a system is allowed to monitor for regulated contaminants less often than once a year, the tables must include the date and results of the most recent sampling, and the report must include a brief statement indicating that the data presented in the report is from the most recent testing done in accordance with the regulations. No data older than five years need be included.
 - B) Results of monitoring in compliance with Section 611.382 and Subpart L need only be included for five years from the date of last sample or until any of the detected contaminants becomes regulated and subject to routine monitoring requirements, whichever comes first.
- 4) For detected regulated contaminants (listed in Appendix A of this Part), the tables must contain the following:
 - A) The MCL for that contaminant expressed as a number equal to or greater than 1.0 (as provided in Appendix A of this Part);
 - B) The federal Maximum Contaminant Level Goal (MCLG) for that contaminant expressed in the same units as the MCL;
 - C) If there is no MCL for a detected contaminant, the table must indicate that there is a treatment technique, or specify the action level, applicable to that contaminant, and the report must include the definitions for treatment technique or action level, as appropriate, specified in subsection (c)(3) of this Section;
 - D) For contaminants subject to an MCL, except turbidity, total coliforms, fecal coliforms, and E. coli, the highest contaminant level used to determine compliance with an NPDWR, and the range of detected levels, as follows:
 - i) When compliance with the MCL is determined annually or less frequently: the highest detected level at any sampling point and the range of detected levels expressed in the same units as the MCL.
 - ii) When compliance with the MCL is determined by calculating a running annual average of all samples taken at

a monitoring location: the highest average of any of the monitoring locations and the range of all monitoring locations expressed in the same units as the MCL. For the MCLs for TTHM and HAA5 in Section 611.312(b)(2), the supplier must include the highest locational running annual average for TTHM and HAA5 and the range of individual sample results for all monitoring locations expressed in the same units as the MCL. If results from more than one location exceed the TTHM or HAA5 MCL, the supplier must include the locational running annual average for each location whose results exceed the MCL.

- iii) When compliance with the MCL is determined on a system-wide basis by calculating a running annual average of all samples at all monitoring locations: the average and range of detection expressed in the same units as the MCL. The supplier is required to include individual sample results for the IDSE conducted under Subpart W of this Part when determining the range of TTHM and HAA5 results to be reported in the annual consumer confidence report for the calendar year that the IDSE samples were taken.

BOARD NOTE to subsection (d)(4)(D): When rounding of results to determine compliance with the MCL is allowed by the regulations, rounding should be done prior to multiplying the results by the factor listed in Appendix A of this Part; derived from 40 CFR ~~153-(2013)~~ (2014).

- E) For turbidity the following:
 - i) When it is reported pursuant to Section 611.560: the highest average monthly value.
 - ii) When it is reported pursuant to the requirements of Section 611.211(b): the highest monthly value. The report must include an explanation of the reasons for measuring turbidity.
 - iii) When it is reported pursuant to Section 611.250, 611.743, or 611.955(b): the highest single measurement and the lowest monthly percentage of samples meeting the turbidity limits specified in Section 611.250, 611.743, or 611.955(b) for the filtration technology being used. The report must include an explanation of the reasons for measuring turbidity;
- F) For lead and copper the following: the 90th percentile value of the most recent round of sampling and the number of sampling sites

exceeding the action level;

- G) For total coliform analytical results until March 31, 2016, the following:
 - i) The highest monthly number of positive samples for systems collecting fewer than 40 samples per month; or
 - ii) The highest monthly percentage of positive samples for systems collecting at least 40 samples per month;
 - H) For fecal coliform and E. coli until March 31, 2016, the following: the total number of positive samples;
 - I) The likely sources of detected contaminants to the best of the supplier's knowledge. Specific information regarding contaminants may be available in sanitary surveys and source water assessments, and must be used when available to the supplier. If the supplier lacks specific information on the likely source, the report must include one or more of the typical sources for that contaminant listed in Appendix G of this Part that are most applicable to the CWS; and
 - J) For E. coli analytical results under Subpart AA of this Part, the total number of positive samples.
- 5) If a CWS distributes water to its customers from multiple hydraulically independent distribution systems that are fed by different raw water sources, the table must contain a separate column for each service area and the report must identify each separate distribution system. Alternatively, a CWS may produce separate reports tailored to include data for each service area.
 - 6) The tables must clearly identify any data indicating violations of MCLs, MRDLs, or treatment techniques, and the report must contain a clear and readily understandable explanation of the violation including the following: the length of the violation, the potential adverse health effects, and actions taken by the CWS to address the violation. To describe the potential health effects, the CWS must use the relevant language of Appendix A of this Part.
 - 7) For detected unregulated contaminants for which monitoring is required by USEPA pursuant to 40 C.F.R. 141.40 (except Cryptosporidium), the tables must contain the average and range at which the contaminant was detected. The report may include a brief explanation of the reasons for monitoring for unregulated contaminants.
- e) Information on Cryptosporidium, radon, and other contaminants as follows:
 - 1) If the CWS has performed any monitoring for Cryptosporidium, including

monitoring performed to satisfy the requirements of Subpart L of this Part, that indicates that *Cryptosporidium* may be present in the source water or the finished water, the report must include the following:

- A) A summary of the results of the monitoring; and
 - B) An explanation of the significance of the results.
- 2) If the CWS has performed any monitoring for radon that indicates that radon may be present in the finished water, the report must include the following:
- A) The results of the monitoring; and
 - B) An explanation of the significance of the results.
- 3) If the CWS has performed additional monitoring that indicates the presence of other contaminants in the finished water, the report must include the following:
- A) The results of the monitoring; and
 - B) An explanation of the significance of the results noting the existence of any health advisory or proposed regulation.
- f) Compliance with an NPDWR. In addition to the requirements of subsection (d)(6) of this Section, the report must note any violation that occurred during the year covered by the report of a requirement listed below, and include a clear and readily understandable explanation of the violation, any potential adverse health effects, and the steps the CWS has taken to correct the violation.
- 1) Monitoring and reporting of compliance data.
 - 2) Filtration and disinfection prescribed by Subpart B of this Part. For CWSs that have failed to install adequate filtration or disinfection equipment or processes, or have had a failure of such equipment or processes that constitutes a violation, the report must include the following language as part of the explanation of potential adverse health effects: Inadequately treated water may contain disease-causing organisms. These organisms include bacteria, viruses, and parasites that can cause symptoms such as nausea, cramps, diarrhea, and associated headaches.
 - 3) Lead and copper control requirements prescribed by Subpart G of this Part. For systems that fail to take one or more actions prescribed by Section 611.350(d), 611.351, 611.352, 611.353, or 611.354, the report must include the applicable language of Appendix A of this Part for lead, copper, or both.

- 4) Treatment techniques for acrylamide and epichlorohydrin prescribed by Section 611.296. For systems that violate the requirements of Section 611.296, the report must include the relevant language from Appendix A of this Part.
 - 5) Recordkeeping of compliance data.
 - 6) Special monitoring requirements prescribed by Sections 611.510 and 611.630.
 - 7) Violation of the terms of a variance, adjusted standard, site-specific rule, or administrative or judicial order.
- g) Variances, adjusted standards, and site-specific rules. If a system is operating under the terms of a variance, adjusted standard, or site-specific rule issued under Section 611.111, 611.112, or 611.131, the report must contain the following:
- 1) An explanation of the reasons for the variance, adjusted standard, or site-specific rule;
 - 2) The date on which the variance, adjusted standard, or site-specific rule was issued;
 - 3) A brief status report on the steps the CWS is taking to install treatment, find alternative sources of water, or otherwise comply with the terms and schedules of the variance, adjusted standard, or site-specific rule; and
 - 4) A notice of any opportunity for public input in the review, or renewal, of the variance, adjusted standard, or site-specific rule.
- h) Additional information.
- 1) The report must contain a brief explanation regarding contaminants that may reasonably be expected to be found in drinking water, including bottled water. This explanation may include the language of subsections (h)(1)(A) through (h)(1)(C) of this Section or CWSs may use their own comparable language. The report also must include the language of subsection (h)(1)(D) of this Section.
 - A) The sources of drinking water (both tap water and bottled water) include rivers, lakes, streams, ponds, reservoirs, springs, and wells. As water travels over the surface of the land or through the ground, it dissolves naturally-occurring minerals and, in some cases, radioactive material, and can pick up substances resulting from the presence of animals or from human activity.
 - B) Contaminants that may be present in source water include the following:

- i) Microbial contaminants, such as viruses and bacteria, which may come from sewage treatment plants, septic systems, agricultural livestock operations, and wildlife;
 - ii) Inorganic contaminants, such as salts and metals, which can be naturally-occurring or result from urban stormwater runoff, industrial or domestic wastewater discharges, oil and gas production, mining, or farming;
 - iii) Pesticides and herbicides, which may come from a variety of sources such as agriculture, urban stormwater runoff, and residential uses;
 - iv) Organic chemical contaminants, including synthetic and volatile organic chemicals, which are byproducts of industrial processes and petroleum production, and can also come from gas stations, urban stormwater runoff, and septic systems; and
 - v) Radioactive contaminants, which can be naturally-occurring or be the result of oil and gas production and mining activities.
- C) In order to ensure that tap water is safe to drink, USEPA prescribes regulations that limit the amount of certain contaminants in water provided by public water systems. United States Food and Drug Administration (USFDA) regulations establish limits for contaminants in bottled water that must provide the same protection for public health.
- D) Drinking water, including bottled water, may reasonably be expected to contain at least small amounts of some contaminants. The presence of contaminants does not necessarily indicate that water poses a health risk. More information about contaminants and potential health effects can be obtained by calling the USEPA Safe Drinking Water Hotline (800-426-4791).
- 2) The report must include the telephone number of the owner, operator, or designee of the CWS as a source of additional information concerning the report.
 - 3) In communities with a large proportion of non-English speaking residents, as determined by the Agency, the report must contain information in the appropriate languages regarding the importance of the report or contain a telephone number or address where such residents may contact the system to obtain a translated copy of the report or assistance in the appropriate language.

- 4) The report must include information about opportunities for public participation in decisions that may affect the quality of the water.
- 5) The CWS may include such additional information as it deems necessary for public education consistent with, and not detracting from, the purpose of the report.
- 6) Suppliers required to comply with Subpart S of this Part.
 - A) Any GWS supplier that receives written notice from the Agency of a significant deficiency or which receives notice from a laboratory of a fecal indicator-positive groundwater source sample that is not invalidated by the Agency pursuant to Section 611.802(d) must inform its customers of any significant deficiency that is uncorrected at the time of the next report or of any fecal indicator-positive groundwater source sample in the next report. The supplier must continue to inform the public annually until the Agency, by a SEP issued pursuant to Section 611.110, determines that particular significant deficiency is corrected or the fecal contamination in the groundwater source is addressed pursuant to Section 611.803(a). Each report must include the following information:
 - i) The nature of the particular significant deficiency or the source of the fecal contamination (if the source is known) and the date the significant deficiency was identified by the Agency or the dates of the fecal indicator-positive groundwater source samples;
 - ii) Whether or not the fecal contamination in the groundwater source has been addressed pursuant to Section 611.803(a) and the date of such action;
 - iii) For each significant deficiency or fecal contamination in the groundwater source that has not been addressed pursuant to Section 611.803(a), the Agency-approved plan and schedule for correction, including interim measures, progress to date, and any interim measures completed; and
 - iv) If the system receives notice of a fecal indicator-positive groundwater source sample that is not invalidated by the Agency pursuant to Section 611.802(d), the potential health effects using the health effects language of Appendix A of this Part.
 - B) If directed by the Agency by a SEP issued pursuant to Section 611.110, a supplier with significant deficiencies that have been corrected before the next report is issued must inform its customers

of the significant deficiency, how the deficiency was corrected, and the date of correction pursuant to subsection (h)(6)(A) of this Section.

- 7) Suppliers required to comply with Subpart AA of this Part.
- A) Any supplier required to comply with the Level 1 assessment requirement or a Level 2 assessment requirement that is not due to an E. coli MCL violation must include in the report the text found in subsections (h)(7)(A)(i) and (h)(7)(A)(ii) or (h)(7)(A)(i) and (h)(7)(A)(iii) of this Section, as appropriate, filling in the blanks accordingly and the text found in subsection (h)(7)(A)(iv) of this Section, if appropriate.
- i) “Coliforms are bacteria that are naturally present in the environment and are used as an indicator that other, potentially harmful, waterborne pathogens may be present or that a potential pathway exists through which contamination may enter the drinking water distribution system. We found coliforms indicating the need to look for potential problems in water treatment or distribution. When this occurs, we are required to conduct assessment(s) to identify problems and to correct any problems that were found during these assessments.”
- ii) “During the past year we were required to conduct [insert number of level 1 assessments] Level 1 assessment(s). [insert number of level 1 assessments] Level 1 assessment(s) were completed. In addition, we were required to take [insert number of corrective actions] corrective actions and we completed [insert number of corrective actions] of these actions.”
- iii) “During the past year [insert number of Level 2 assessments] Level 2 assessments were required to be completed for our water system. [insert number of Level 2 assessments] Level 2 assessments were completed. In addition, we were required to take [insert number of corrective actions] corrective actions and we completed [insert number of corrective actions] of these actions.”
- iv) Any supplier that has failed to complete all the required assessments or correct all identified sanitary defects, is in violation of the treatment technique requirement and must also include one or both of the following statements, as appropriate: “During the past year we failed to conduct all of the required assessment(s).” or “During the past year we

failed to correct all identified defects that were found during the assessment.”

- B) Any supplier required to conduct a Level 2 assessment due to an *E. coli* MCL violation must include in the report the text found in subsections (h)(7)(B)(i) and (h)(7)(B)(ii) of this Section, filling in the blanks accordingly and the appropriate alternative text found in subsection (h)(7)(B)(ii) of this Section, if appropriate.
- i) “*E. coli* are bacteria whose presence indicates that the water may be contaminated with human or animal wastes. Human pathogens in these wastes can cause short-term effects, such as diarrhea, cramps, nausea, headaches, or other symptoms. They may pose a greater health risk for infants, young children, the elderly, and people with severely compromised immune systems. We found *E. coli* bacteria, indicating the need to look for potential problems in water treatment or distribution. When this occurs, we are required to conduct assessment(s) to identify problems and to correct any problems that were found during these assessments.”
 - ii) “We were required to complete a Level 2 assessment because we found *E. coli* in our water system. In addition, we were required to take [insert number of corrective actions] corrective actions and we completed [insert number of corrective actions] of these actions.”
 - iii) Any supplier that has failed to complete the required assessment or correct all identified sanitary defects, is in violation of the treatment technique requirement and must also include one or both of the following statements, as appropriate: “We failed to conduct the required assessment.” or “We failed to correct all sanitary defects that were identified during the assessment that we conducted.”
- C) If a supplier detects *E. coli* and has violated the *E. coli* MCL, in addition to completing the table, as required in subsection (d)(4) of this Section, the supplier must include one or more of the following statements to describe any noncompliance, as applicable:
- i) “We had an *E. coli*-positive repeat sample following a total coliform-positive routine sample.”
 - ii) “We had a total coliform-positive repeat sample following an *E. coli*-positive routine sample.”

- iii) “We failed to take all required repeat samples following an E. coli-positive routine sample.”
 - iv) “We failed to test for E. coli when any repeat sample tested positive for total coliform.”
- D) If a supplier detects E. coli and has not violated the E. coli MCL, in addition to completing the table as required in subsection (d)(4) of this Section, the supplier may include a statement that explains that although they have detected E. coli, they are not in violation of the E. coli MCL.

BOARD NOTE: Derived from 40 CFR 141.153 ~~(2013)~~ (2014).

(Source: Amended at 39 Ill. Reg. _____, effective _____)

Section 611.884 Required Additional Health Information

- a) All reports must prominently display the following language: “Some people may be more vulnerable to contaminants in drinking water than the general population. Immuno-compromised persons such as persons with cancer undergoing chemotherapy, persons who have undergone organ transplants, people with HIV/AIDS or other immune system disorders, some elderly, and infants can be particularly at risk from infections. These people should seek advice about drinking water from their health care providers. USEPA or Centers for Disease Control and Prevention guidelines on appropriate means to lessen the risk of infection by Cryptosporidium and other microbial contaminants are available from the USEPA Safe Drinking Water Hotline (800-426-4791).”
- b) A supplier that detects arsenic above 0.005 mg/ℓ and up to and including 0.010 mg/ℓ must do the following:
 - 1) The supplier must include in its report a short informational statement about arsenic, using the following language: “While your drinking water meets USEPA’s standard for arsenic, it does contain low levels of arsenic. USEPA’s standard balances the current understanding of arsenic’s possible health effects against the costs of removing arsenic from drinking water. USEPA continues to research the health effects of low levels of arsenic, which is a naturally-occurring mineral known to cause cancer in humans at high concentrations and is linked to other health effects such as skin damage and circulatory problems.”; or
 - 2) The supplier may write its own educational statement, but only in consultation with the Agency.
- c) A supplier that detects nitrate at levels above 5 mg/ℓ, but below the MCL, must do the following:

- 1) The supplier must include a short informational statement about the impacts of nitrate on children, using the following language: “Nitrate in drinking water at levels above 10 ppm is a health risk for infants of less than six months of age. High nitrate levels in drinking water can cause blue baby syndrome. Nitrate levels may rise quickly for short periods of time because of rainfall or agricultural activity. If you are caring for an infant you should ask advice from your health care provider”; or
 - 2) The CWS supplier may write its own educational statement, but only in consultation with the Agency.
- d) Every report must include the following lead-specific information:
- 1) A short informational statement about lead in drinking water and its effects on children. The statement must include the following information:

If present, elevated levels of lead can cause serious health problems, especially for pregnant women and young children. Lead in drinking water is primarily from materials and components associated with service lines and home plumbing. [NAME OF SUPPLIER] is responsible for providing high quality drinking water, but cannot control the variety of materials used in plumbing components. When your water has been sitting for several hours, you can minimize the potential for lead exposure by flushing your tap for 30 seconds to two minutes before using water for drinking or cooking. If you are concerned about lead in your water, you may wish to have your water tested. Information on lead in drinking water, testing methods, and steps you can take to minimize exposure is available from the Safe Drinking Water Hotline or at <http://www.epa.gov/safewater/lead>.
 - 2) A supplier may write its own educational statement, but only in consultation with the Agency.
- e) A CWS supplier that detects TTHM above 0.080 mg/ℓ, but below the MCL in Section 611.312, as an annual average, monitored and calculated under the provisions of former Section 611.680, must include the health effects language prescribed by Appendix A of this Part.

BOARD NOTE: Former Section 611.680 originally derived from 40 CFR 141.30(a) and (b). USEPA removed 40 CFR 141.30 in its entirety in 2006. The Board repealed former Section 611.680 in 2012. The references to former Section 611.680 in this subsection (e) relates to use of existing monitoring data collected under those provisions as they existed before their repeal.

BOARD NOTE: Derived from 40 CFR 141.154-(2012) (2014).

(Source: Amended at 39 Ill. Reg. _____, effective _____)

SUBPART V: PUBLIC NOTIFICATION OF DRINKING WATER VIOLATIONS

Section 611.901 General Public Notification Requirements

The requirements of this Subpart V replace former notice requirements.

- a) Who must give public notice. Each owner or operator of a public water system (a CWS, an NTNCWS, or a transient non-CWS) must give notice for all violations of an NPDWR and for other situations, as listed in this subsection (a). The term “NPDWR violation” is used in this Subpart V to include violations of an MCL, an MRDL, a treatment technique, monitoring requirements, or a testing procedure set forth in this Part. Appendix G to this Part identifies the tier assignment for each specific violation or situation requiring a public notice.
 - 1) NPDWR violations.
 - A) A failure to comply with an applicable MCL or MRDL.
 - B) A failure to comply with a prescribed treatment technique.
 - C) A failure to perform water quality monitoring, as required by this Part.
 - D) A failure to comply with testing procedures as prescribed by this Part.
 - 2) Relief equivalent to a variance and exemptions under sections 1415 and 1416 of SDWA.
 - A) Operation under relief equivalent to a SDWA section 1415 variance, under Section 611.111, or a SDWA section 1416 exemption, under Section 611.112.
 - B) A failure to comply with the requirements of any schedule that has been set under relief equivalent to a SDWA section 1415 variance, under Section 611.111, or a SDWA section 1415 exemption, under Section 611.112.
 - 3) Special public notices.
 - A) The occurrence of a waterborne disease outbreak or other waterborne emergency.
 - B) An exceedence of the nitrate MCL by a non-CWS, where granted permission by the Agency under Section 611.300(d).

- C) An exceedence of the secondary fluoride standard of Section 611.858.
 - D) The availability of unregulated contaminant monitoring data collected as required by USEPA pursuant to 40 C.F.R. 141.40.
 - E) Other violations and situations determined by the Agency by a SEP issued pursuant to Section 611.110 to require a public notice under this Subpart V, not already listed in Appendix G of this Part.
- b) The type of public notice required for each violation or situation. The public notice requirements of this Subpart V are divided into three tiers, to take into account the seriousness of the violation or situation and of any potential adverse health effects that may be involved. The public notice requirements for each violation or situation listed in subsection (a) of this Section are determined by the tier to which it is assigned. This subsection (b) provides the definition of each tier. Appendix G of this Part identifies the tier assignment for each specific violation or situation.
- 1) Tier 1 public notice: required for NPDWR violations and situations with significant potential to have serious adverse effects on human health as a result of short-term exposure.
 - 2) Tier 2 public notice: required for all other NPDWR violations and situations with potential to have serious adverse effects on human health.
 - 3) Tier 3 public notice: required for all other NPDWR violations and situations not included in Tier 1 and Tier 2.
- c) Who must receive notice.
- 1) Each PWS supplier must provide public notice to persons served by the water supplier, in accordance with this Subpart V. A PWS supplier that sells or otherwise provides drinking water to another PWS supplier (i.e., to a consecutive system) is required to give public notice to the owner or operator of the consecutive system; the consecutive system supplier is responsible for providing public notice to the persons it serves.
 - 2) If a PWS supplier has a violation in a portion of the distribution system that is physically or hydraulically isolated from other parts of the distribution system, the Agency may allow the system to limit distribution of the public notice to only persons served by that portion of the system that is out of compliance. Permission by the Agency for limiting distribution of the notice must be granted in writing, by a SEP issued pursuant to Section 611.110.
 - 3) A copy of the notice must also be sent to the Agency, in accordance with the requirements under Section 611.840(d).

BOARD NOTE: Derived from 40 CFR 141.201 ~~(2013)~~ (2014).

(Source: Amended at 39 Ill. Reg. _____, effective _____)

Section 611.907 Special Notice of the Availability of Unregulated Contaminant Monitoring Results

- a) When to give special notice. The owner or operator of a CWS supplier or an NTNCWS supplier required to monitor for unregulated contaminants ~~under Section 611.510~~ by USEPA pursuant to 40 C.F.R. 141.40 must notify persons served by the supplier of the availability of the results of such sampling no later than 12 months after the monitoring results are known.
- b) The form and manner of a special notice. The form and manner of the public notice must follow the requirements for a Tier 3 public notice prescribed in Sections 611.904(c), (d)(1), and (d)(3). The notice must also identify a person and provide the telephone number to contact for information on the monitoring results.

BOARD NOTE: Derived from 40 CFR 141.207 ~~(2002)~~ (2014).

(Source: Amended at 39 Ill. Reg. _____, effective _____)

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

Section 611.953 Disinfection Profile

- a) Applicability. A disinfection profile is a graphical representation of a system's level of *Giardia lamblia* or virus inactivation measured during the course of a year. A Subpart B community or non-transient non-community water system that serves fewer than 10,000 persons must develop a disinfection profile unless the Agency, by a SEP issued pursuant to Section 611.110, determines that a profile is unnecessary. The Agency may approve the use of a more representative data set for disinfection profiling than the data set required under subsections (c) through (g) of this Section.
- b) Determination that a disinfection profile is not necessary. The Agency may only determine that a disinfection profile is not necessary if the system's TTHM and HAA5 levels are below 0.064 mg/l and 0.048 mg/l, respectively. To determine these levels, TTHM and HAA5 samples must have been collected after January 1, 1998, during the month with the warmest water temperature, and at the point of maximum residence time in the distribution system. The Agency may, by a SEP issued pursuant to Section 611.110, approve the use of a different data set to determine these levels if it determines that the data set is representative TTHM and HAA5 data.
- c) Development of a disinfection profile. A disinfection profile consists of the

following three steps:

- 1) First, the supplier must collect data for several parameters from the plant, as discussed in subsection (d) of this Section, over the course of 12 months. If the supplier serves between 500 and 9,999 persons it must have begun to collect data no later than July 1, 2003. If the supplier serves fewer than 500 persons, it must begin to collect data no later than January 1, 2004.
 - 2) Second, the supplier must use this data to calculate weekly log inactivation as discussed in subsections (e) and (f) of this Section; and
 - 3) Third, the supplier must use these weekly log inactivations to develop a disinfection profile as specified in subsection (g) of this Section.
- d) Data required for a disinfection profile. A supplier must monitor the following parameters to determine the total log inactivation using the analytical methods in ~~Section 611.231~~ 611.531, once per week on the same calendar day, over 12 consecutive months:
- 1) The temperature of the disinfected water at each residual disinfectant concentration sampling point during peak hourly flow;
 - 2) If a supplier uses chlorine, the pH of the disinfected water at each residual disinfectant concentration sampling point during peak hourly flow;
 - 3) The disinfectant contact times (“T”) during peak hourly flow; and
 - 4) The residual disinfectant concentrations (“C”) of the water before or at the first customer and prior to each additional point of disinfection during peak hourly flow.
- e) Calculations based on the data collected. The tables in Appendix B of this Part must be used to determine the appropriate $CT_{99,9}$ value. The supplier must calculate the total inactivation ratio as follows, and multiply the value by 3.0 to determine log inactivation of *Giardia lamblia*:
- 1) If the supplier uses only one point of disinfectant application, it must determine either of the following:
 - A) One inactivation ratio ($CT_{calc}/CT_{99,9}$) before or at the first customer during peak hourly flow; or
 - B) Successive $CT_{calc}/CT_{99,9}$ values, representing sequential inactivation ratios, between the point of disinfectant application and a point before or at the first customer during peak hourly flow. Under this alternative, the supplier must calculate the total inactivation ratio by determining $CT_{calc}/CT_{99,9}$ for each sequence

and then adding the $CT_{\text{calc}}/CT_{99.9}$ values together to determine $\sum CT_{\text{calc}}/CT_{99.9}$.

- 2) If the supplier uses more than one point of disinfectant application before the first customer, it must determine the $CT_{\text{calc}}/CT_{99.9}$ value of each disinfection segment immediately prior to the next point of disinfectant application, or for the final segment, before or at the first customer, during peak hourly flow using the procedure specified in subsection (e)(1)(B) of this Section.
- f) Use of chloramines, ozone, or chlorine dioxide as a primary disinfectant. If a supplier uses chloramines, ozone, or chlorine dioxide for primary disinfection, the supplier must also calculate the logs of inactivation for viruses and develop an additional disinfection profile for viruses using methods approved by the Agency.
- g) Development and maintenance of the disinfection profile in graphic form. Each log inactivation serves as a data point in the supplier's disinfection profile. A supplier will have obtained 52 measurements (one for every week of the year). This will allow the supplier and the Agency the opportunity to evaluate how microbial inactivation varied over the course of the year by looking at all 52 measurements (the supplier's disinfection profile). The supplier must retain the disinfection profile data in graphic form, such as a spreadsheet, which must be available for review by the Agency as part of a sanitary survey. The supplier must use this data to calculate a benchmark if the supplier is considering changes to disinfection practices.

BOARD NOTE: Derived from 40 CFR 141.530 through 141.536-~~(2003)~~ (2014).

(Source: Amended at 39 Ill. Reg. _____, effective _____)

Section 611.955 Combined Filter Effluent Turbidity Limits

- a) **Applicability.** A Subpart B system supplier that serves fewer than 10,000 persons, which is required to filter, and which utilizes filtration other than slow sand filtration or diatomaceous earth filtration must meet the combined filter effluent turbidity requirements of subsections (b) through (d) of this Section . If the supplier uses slow sand or diatomaceous earth filtration the supplier is not required to meet the combined filter effluent turbidity limits of this Subpart X, but the supplier must continue to meet the combined filter effluent turbidity limits in Section 611.250.
- b) **Combined filter effluent turbidity limits.** A supplier must meet two strengthened combined filter effluent turbidity limits.
 - 1) The first combined filter effluent turbidity limit is a "95th percentile" turbidity limit that a supplier must meet in at least 95 percent of the turbidity measurements taken each month. Measurements must continue to be taken as described in Sections ~~611.231 and 233~~ 611.531 and

611.533. Monthly reporting must be completed according to Section 611.957(a). The following are the required limits for specific filtration technologies:

- A) For a system with conventional filtration or direct filtration, the 95th percentile turbidity value is 0.3 NTU.
- B) For a system with any other alternative filter technology, the 95th percentile turbidity value is a value (not to exceed 1 NTU) to be determined by the Agency, by a SEP issued pursuant to Section 611.110, based on the demonstration described in subsection (c) of this Section.

- 2) The second combined filter effluent turbidity limit is a “maximum” turbidity limit that a supplier may at no time exceed during the month. Measurements must continue to be taken as described in Sections ~~611.231 and 611.233~~ 611.531 and 611.533. Monthly reporting must be completed according to Section 611.957(a). The following are the required limits for specific filtration technologies:

- A) For a system with conventional filtration or direct filtration, the maximum turbidity value is 1 NTU.
- B) For a system with any other alternative filter technology, the maximum turbidity value is a value (not to exceed 5 NTU) to be determined by the Agency, by a SEP issued pursuant to Section 611.110, based on the demonstration described in subsection (c) of this Section.

c) Requirements for an alternative filtration system.

- 1) If a supplier’s system consists of alternative filtration (filtration other than slow sand filtration, diatomaceous earth filtration, conventional filtration, or direct filtration) the supplier is required to conduct a demonstration (see tables in subsection (b) of this Section). The supplier must demonstrate to the Agency, using pilot plant studies or other means, that its system’s filtration, in combination with disinfection treatment, consistently achieves the following:
 - A) 99 percent removal of *Cryptosporidium* oocysts;
 - B) 99.9 percent removal or inactivation of *Giardia lamblia* cysts; and
 - C) 99.99 percent removal or inactivation of viruses.
- 2) This subsection (c)(2) corresponds with 40 CFR 141.552(b), which USEPA has designated as “reserved.” This statement maintains structural correspondence with the corresponding federal regulation.

- d) Requirements for a lime-softening system. If a supplier practices lime softening, the supplier may acidify representative combined filter effluent turbidity samples prior to analysis using a protocol approved by the Agency.

BOARD NOTE: Derived from 40 CFR 141.550 through 141.553-~~(2002)~~ (2014).

(Source: Amended at 39 Ill. Reg. _____, effective _____)

Section 611.956 Individual Filter Turbidity Requirements

- a) **Applicability.** A Subpart B system supplier that serves fewer than 10,000 persons and utilizing conventional filtration or direct filtration must conduct continuous monitoring of turbidity for each individual filter in a supplier's system. The following requirements apply to continuous turbidity monitoring:
- 1) Monitoring must be conducted using an approved method in Section ~~611.231~~ 611.531;
 - 2) Calibration of turbidimeters must be conducted using procedures specified by the manufacturer;
 - 3) Results of turbidity monitoring must be recorded at least every 15 minutes;
 - 4) Monthly reporting must be completed according to Section 611.957(a); and
 - 5) Records must be maintained according to Section 611.957(b).
- b) **Failure of turbidity monitoring equipment.** If there is a failure in the continuous turbidity monitoring equipment, the supplier must conduct grab sampling every four hours in lieu of continuous monitoring until the turbidimeter is back on-line. The supplier has 14 days to resume continuous monitoring before a violation is incurred.
- c) **Special requirements for systems with two or fewer filters.** If a supplier's system only consists of two or fewer filters, the supplier may conduct continuous monitoring of combined filter effluent turbidity in lieu of individual filter effluent turbidity monitoring. Continuous monitoring must meet the same requirements set forth in subsections (a)(1) through (a)(4) and (b) of this Section.
- d) **Follow-up action.** Follow-up action is required according to the following requirements:
- 1) If the turbidity of an individual filter (or the turbidity of combined filter effluent (CFE) for a system with two filters that monitor CFE in lieu of individual filters) exceeds 1.0 NTU in two consecutive recordings 15 minutes apart, the supplier must report to the Agency by the 10th of the

following month and include the filter numbers, corresponding dates, turbidity values that exceeded 1.0 NTU, and the cause (if known) for the exceedences.

- 2) If a supplier was required to report to the Agency for three months in a row and turbidity exceeded 1.0 NTU in two consecutive recordings 15 minutes apart at the same filter (or CFE for systems with two filters that monitor CFE in lieu of individual filters), the supplier must conduct a self-assessment of the filters within 14 days of the day on which the filter exceeded 1.0 NTU in two consecutive measurements for the third straight month, unless a CPE, as specified in subsection (d)(3) of this Section, was required. A supplier that has a system with two filters that monitor CFE in lieu of individual filters must conduct a self assessment on both filters. The self-assessment must consist of at least the following components: assessment of filter performance, development of a filter profile, identification and prioritization of factors limiting filter performance, assessment of the applicability of corrections, and preparation of a filter self-assessment report.
- 3) If a supplier was required to report to the Agency for two months in a row and turbidity exceeded 2.0 NTU in two consecutive recordings 15 minutes apart at the same filter (or CFE for systems with two filters that monitor CFE in lieu of individual filters), the supplier must arrange to have a comprehensive performance evaluation (CPE) conducted by the Agency or a third party approved by the Agency not later than 60 days following the day the filter exceeded 2.0 NTU in two consecutive measurements for the second straight month. If a CPE has been completed by the Agency or a third party approved by the Agency within the 12 prior months or the system and Agency are jointly participating in an ongoing comprehensive technical assistance (CTA) project at the system, a new CPE is not required. If conducted, a CPE must be completed and submitted to the Agency no later than 120 days following the day the filter exceeded 2.0 NTU in two consecutive measurements for the second straight month.
- e) Special individual filter monitoring for a lime-softening system. If a supplier's system utilizes lime softening, the supplier may apply to the Agency for alternative turbidity exceedence levels for the levels specified in subsection (d) of this Section. The supplier must be able to demonstrate to the Agency that higher turbidity levels are due to lime carryover only, and not due to degraded filter performance.

BOARD NOTE: Derived from 40 CFR 141.560 through 141.564-(2003)-(2014).

(Source: Amended at 39 Ill. Reg. _____, effective _____)

SUBPART Z: ENHANCED TREATMENT FOR CRYPTOSPORIDIUM

Section 611.1004 Source Water Monitoring Requirements: Analytical Methods

- a) Cryptosporidium. A supplier must analyze for Cryptosporidium using USEPA OGWDW Methods, Method 1623 (05), 1623.1, or 1622 (05), each incorporated by reference in Section 611.102, or alternative methods approved by the Agency pursuant to Section 611.480.
 - 1) The supplier must analyze at least a 10 ℓ sample or a packed pellet volume of at least 2 mℓ as generated by the methods listed in subsection (a) of this Section. A supplier unable to process a 10 ℓ sample must analyze as much sample volume as can be filtered by two filters approved by USEPA for the methods listed in subsection (a) of this Section, up to a packed pellet volume of at least 2 mℓ.
 - 2) Matrix spike (MS) samples.
 - A) MS samples, as required by the methods in subsection (a) of this Section, must be spiked and filtered by a laboratory approved for Cryptosporidium analysis pursuant to Section 611.1005.
 - B) If the volume of the MS sample is greater than 10 ℓ, the supplier may filter all but 10 ℓ of the MS sample in the field, and ship the filtered sample and the remaining 10 ℓ of source water to the laboratory. In this case, the laboratory must spike the remaining 10 ℓ of water and filter it through the filter used to collect the balance of the sample in the field.
 - 3) Flow cytometer-counted spiking suspensions must be used for MS samples and ongoing precision and recovery samples.
- b) E. coli. A supplier must use methods for enumeration of E. coli in source water approved in 40 CFR 136.3(a), incorporated by reference in Section 611.102, or alternative methods approved by the Agency pursuant to Section 611.480.
 - 1) The time from sample collection to initiation of analysis may not exceed 30 hours, unless the supplier meets the condition of subsection (b)(2) of this Section.
 - 2) The Agency may, by a SEP issued pursuant to Section 611.110, approve on a case-by-case basis the holding of an E. coli sample for up to 48 hours between sample collection and initiation of analysis if it determines that analyzing an E. coli sample within 30 hours is not feasible. E. coli samples held between 30 to 48 hours must be analyzed by the ~~Autoanalysis Colilert® Test System~~ reagent version of Standard Methods, 18th, 19th, or 20th ed., Method 9223 B incorporated by reference in Section 611.102.

- 3) A supplier must maintain the temperature of its samples between 0°C and 10°C during storage and transit to the laboratory.
- 4) The supplier may use the membrane filtration, two-step procedure described in Standard Methods, 20th ed., Method 9222 D and G, incorporated by reference in Section 611.102.

BOARD NOTE: On June 3, 2008 (at 73 Fed. Reg. 31616), USEPA added appendix A to subpart C of 40 CFR 141, which authorized alternative methods to those listed for E. coli by multiple-tube technique at corresponding 40 CFR 141.402(c)(2) to allow the use of Standard Methods for the Examination of Water and Wastewater, 20th ed., Method 9222 D and G.

- c) Turbidity. A supplier must use methods for turbidity measurement approved in Section 611.531(a).

BOARD NOTE: Derived from 40 CFR 141.704 and appendix A to subpart C of 40 CFR 141-(2012)-(2014).

(Source: Amended at 39 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 10° C during transit.
 - 4) If water having residual chlorine (measured as free, combined, or total chlorine) is to be analyzed, sufficient sodium thiosulfate (Na₂S₂O₃) 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 for total coliforms in appendix A to subpart C of 40 CFR 141 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 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.

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.

- ~~iii~~iv) ~~E*Colite[®]-test~~ Test;
- ~~iv~~v) ~~Readycult[®] 2007-test~~ Test;
- ~~v~~vi) ~~Modified Colitag[™]-test~~ Test; or
- vii) Tecta EC/TC P-A Test.

BOARD NOTE: USEPA added Standard Methods Online, Method 9223 B-04, Colilert-18[®] Test, and Tecta EC/TC P-A Test as approved alternative methods for total coliforms in appendix A to subpart C of 40 CFR 141 on June 19, 2014 (at 79 Fed. Reg. 35081). Because Standard Methods, 22nd ed., Method 9223 B is the same version as Standard Methods Online, Method 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 21st ed., 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 for E. coli in appendix A to subpart C of 40 CFR 141 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 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 (KH₂PO₄) 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~~ 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.

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~~ Test;
- v) ReadyCult[®] 2007-~~test~~ Test;
- vi) Modified Colitag[™]-~~test~~ Test; or
- vii) Tecta EC/TC P-A Test.

BOARD NOTE: USEPA added of Standard Methods, 22nd ed., Methods 9221 B (sections 1 and 2) and 9223 B as approved alternative methods for total coliforms and Standard Methods, 22nd ed., Methods 9221 F (section 1) and 9223 B for as approved alternative methods for E. coli in appendix A to subpart C of 40 CFR 141 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 as approved alternative methods for E.coli in appendix A to subpart C of 40 CFR 141 on June 19, 2014 (at 79 Fed. Reg. 35081). Because Standard Methods, 22nd ed., Method 9223 B is the same version as Standard Methods Online, Method 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 (2014).

(Source: Amended at 39 Ill. Reg. _____, effective _____)

Section 611.1055 Routine Monitoring Requirements for CWSs That Serve 1,000 or Fewer People Using Only Groundwater

- a) General.
 - 1) This Section applies to CWS suppliers that use only ground water (except ground water under the direct influence of surface water, as defined in Section 611.102) and which serve 1,000 or fewer people.
 - 2) Following any total coliform-positive sample taken under the provisions of this Section, the supplier must comply with the repeat monitoring requirements and E. coli analytical requirements in Section 611.1058.
 - 3) Once all monitoring required by this Section and Section 611.1058 for a calendar month has been completed, the supplier must determine whether any coliform treatment technique triggers specified in Section 611.1059 have been exceeded. If any trigger has been exceeded, the supplier must complete assessments as required by Section 611.1059.
- b) Monitoring frequency for total coliforms. The monitoring frequency for total coliforms is one sample per month, except as provided for under subsections (c) through (f) of this Section.
- c) Transition to Subpart AA.
 - 1) A supplier must continue to monitor according to the total coliform monitoring schedules under Sections 611.521 through 611.527 that were in effect on March 31, 2016, unless any of the conditions in subsection (e) of this Section are triggered on or after April 1, 2016, or unless otherwise directed by the Agency, by a SEP issued pursuant to Section 611.110.
 - 2) Beginning April 1, 2016, the Agency must perform a special monitoring evaluation during each sanitary survey to review the status of the supplier's system, including the distribution system, to determine whether the system is on an appropriate monitoring schedule. After the Agency has performed the special monitoring evaluation during each sanitary survey, the Agency may, by a SEP issued pursuant to Section 611.110, modify the supplier's monitoring schedule, as necessary. Alternatively, the Agency may allow the supplier to stay on its existing monitoring schedule, consistent with the provisions of this Section. The Agency may not allow a supplier to begin less frequent monitoring under the special monitoring evaluation unless the supplier has already met the applicable criteria for less frequent monitoring in this Section.
- d) Criteria for reduced monitoring.
 - 1) The Agency may, by a SEP issued pursuant to Section 611.110, reduce the monitoring frequency from monthly monitoring to no less than quarterly

monitoring if the supplier is in compliance with Agency-certified operator provisions and demonstrates that it meets the criteria in subsections (d)(1)(A) through (d)(1)(C) of this Section. A supplier that loses its certified operator must return to monthly monitoring the month following that loss.

- A) The supplier has a clean compliance history for a minimum of 12 months.
- B) The most recent sanitary survey shows the supplier is free of sanitary defects (or has an approved plan and schedule to correct them and is in compliance with the plan and the schedule), has a protected water source, and meets Agency-approved construction standards.
- C) The supplier meets at least one of the following criteria:
 - i) An annual site visit by the Agency that is equivalent to a Level 2 assessment or an annual Level 2 assessment by a party approved by the Agency and correction of all identified sanitary defects (or an approved plan and schedule to correct them and is in compliance with the plan and schedule).
 - ii) Cross connection control, as approved by the Agency.
 - iii) Continuous disinfection entering the distribution system and a residual in the distribution system in accordance with criteria specified by the Agency.
 - iv) Demonstration of maintenance of at least a 4-log removal or inactivation of viruses as provided for under Section 611.803(b)(3).
 - v) Other equivalent enhancements to water system barriers as approved by the Agency.

2) This subsection (d)(2) corresponds with 40 CFR 141.855(d)(2), which USEPA has marked "reserved." This statement maintains structural consistency with the corresponding federal provision.

- e) Return to routine monthly monitoring requirements. A supplier on quarterly monitoring that experience any of the events in subsections (e)(1) through (e)(4) of this Section must begin monthly monitoring the month following the event. The supplier must continue monthly monitoring until it meets the reduced monitoring requirements in subsection (d) of this Section.
 - 1) The supplier triggers a Level 2 assessment or two Level 1 assessments in a

rolling 12-month period.

- 2) The supplier has an E. coli MCL violation.
 - 3) The supplier has a coliform treatment technique violation.
 - 4) The supplier has two Subpart AA monitoring violations in a rolling 12-month period.
- f) Additional routine monitoring the month following a total coliform-positive sample. A supplier collecting samples on a quarterly frequency must conduct additional routine monitoring the month following one or more total coliform-positive samples (with or without a Level 1 treatment technique trigger). A supplier must collect at least three routine samples during the next month, except that the Agency may, by a SEP issued pursuant to Section 611.110, waive this requirement if the conditions of subsection (f)(1), (f)(2), or (f)(3) of this Section are met. A supplier may either collect samples at regular time intervals throughout the month or may collect all required routine samples on a single day if samples are taken from different sites. A supplier must use the results of additional routine samples in coliform treatment technique trigger calculations.
- 1) The Agency may, by a SEP issued pursuant to Section 611.110, waive the requirement to collect three routine samples the next month in which the supplier's system provides water to the public if the Agency, or an agent approved by the Agency, performs a site visit before the end of the next month in which the supplier's system provides water to the public. Although a sanitary survey need not be performed, the site visit must be sufficiently detailed to allow the Agency to determine whether additional monitoring or any corrective action is needed. The Agency cannot approve an employee of the supplier to perform this site visit, even if the employee is an agent approved by the Agency to perform sanitary surveys.
 - 2) The Agency may, by a SEP issued pursuant to Section 611.110, waive the requirement to collect three routine samples the next month in which the supplier's system provides water to the public if the Agency has determined why the sample was total coliform-positive and has established that the supplier has corrected the problem or will correct the problem before the end of the next month in which the supplier's system serves water to the public. In this case, the Agency must document this decision to waive the following month's additional monitoring requirement in writing, have it approved and signed by the supervisor of the Agency official who recommends such a decision, and make this document available to USEPA and the public. The written documentation must describe the specific cause of the total coliform-positive sample and what action the supplier has taken or will take to correct this problem.
 - 3) The Agency may not waive the requirement to collect three additional

routine samples the next month in which the supplier's system provides water to the public solely on the grounds that all repeat samples are total coliform-negative. If the Agency determines that the supplier has corrected the contamination problem before the supplier takes the set of repeat samples required in Section 611.1058, and all repeat samples were total coliform-negative, the Agency may, by a SEP issued pursuant to Section 611.110, waive the requirement for additional routine monitoring the next month.

BOARD NOTE: Derived from 40 CFR 141.855-~~(2013)~~ (2014).

(Source: Amended at 39 Ill. Reg. _____, effective _____)

Section 611.1061 Reporting and Recordkeeping

- a) Reporting.
 - 1) E. coli.
 - A) A supplier must notify the Agency by the end of the day when the system learns of an E. coli MCL violation, unless the supplier learns of the violation after the Agency office is closed and the Agency does not have either an after-hours phone line or an alternative notification procedure, in which case the supplier must notify the Agency before the end of the next business day, and the supplier notifies the public in accordance with Subpart V of this Part.
 - B) A supplier must notify the Agency by the end of the day when the supplier is notified of an E. coli-positive routine sample, unless the supplier is notified of the result after the Agency office is closed and the Agency does not have either an after-hours phone line or an alternative notification procedure, in which case the supplier must notify the Agency before the end of the next business day.
 - 2) A supplier that has violated the treatment technique for coliforms in Section 611.1059 must report the violation to the Agency no later than the end of the next business day after it learns of the violation, and notify the public in accordance with Subpart V of this Part.
 - 3) A supplier required to conduct an assessment under the provisions of Section 611.1059 must submit the assessment report within 30 days. The supplier must notify the Agency in accordance with Section 611.1059(c) when each scheduled corrective action is completed for corrections not completed by the time of submission of the assessment form.
 - 4) A supplier that has failed to comply with a coliform monitoring requirement must report the monitoring violation to the Agency within 10

days after the supplier discovers the violation, and notify the public in accordance with Subpart V of this Part.

- 5) A seasonal system supplier must certify, prior to serving water to the public, that it has complied with the Agency-approved start-up procedure.
- b) Recordkeeping.
- 1) The supplier must maintain any assessment form, regardless of who conducts the assessment, and documentation of corrective actions completed as a result of those assessments, or other available summary documentation of the sanitary defects and corrective actions taken under Section ~~611.1058~~ 611.1059 for Agency review. This record must be maintained by the supplier for a period not less than five years after completion of the assessment or corrective action.
 - 2) The supplier must maintain a record of any repeat sample taken that meets Agency criteria for an extension of the 24- hour period for collecting repeat samples as provided for under Section 611.1058(a)(1).

BOARD NOTE: Derived from 40 CFR 141.861 ~~(2013)~~ (2014).

(Source: Amended at 39 Ill. Reg. _____, effective _____)

Section 611.APPENDIX G NPDWR Violations and Situations Requiring Public Notice

See note 1 at the end of this Appendix G for an explanation of the Agency’s authority to alter the magnitude of a violation from that set forth in the following table.

Contaminant	MCL/MRDL/TT violations ²		Monitoring & testing procedure violations	
	Tier of public notice required	Citation	Tier of public notice required	Citation

I. Violations of National Primary Drinking Water Regulations (NPDWR):³

A. Microbiological Contaminants

1a. Total coliform bacteria, until March 31, 2016	2	611.325(a)	3	611.521-611.525
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1b. Total coliform (Monitoring or TT violations resulting from failure to perform assessments or corrective actions, <u>monitoring violations, and reporting violations</u>), beginning April 1, 2016	2	141.860(b) <u>611.1060(b)(1)</u>	3	141.860(e) <u>611.1060(c)(1)</u> <u>611.1060(d)(1)</u>
1c. Seasonal system failure to follow State-approved start-up plan prior to serving water to the public <u>or failure to provide certification to the Agency</u> , beginning April 1, 2016	2	141.860(b)(2) <u>611.1060(b)(2)</u>	<u>3</u>	<u>611.1060(d)(3)</u>
2a. Fecal coliform/E. coli, until March 31, 2016	1	611.325(b)	⁴ 1, 3	611.525
2b. E. coli <u>MCL, monitoring, and reporting violations</u>), beginning April 1, 2016	1	141.860(a) <u>611.1060(a)</u>	3	141.860(e) <u>611.1060(c)</u> 141.860(d)(2) <u>611.1060(d)(2)</u>
2c. E.coli (TT violations resulting from failure to perform Level 2 assessments or corrective action), beginning April 1, 2016	2	141.860(b) <u>611.1060(b)(1)</u>		
3. Turbidity MCL	2	611.320(a)	3	611.560
4. Turbidity MCL (average of two days' samples greater than 5 NTU)	⁵ 2, 1	611.320(b)	3	611.560
5. Turbidity (for TT violations resulting from a single exceedence of maximum allowable turbidity level)	⁶ 2, 1	611.231(b), 611.233(b)(1), 611.250(a)(2), 611.250(b)(2), 611.250(c)(2), 611.250(d), 611.743(a)(2), 611.743(b), 611.955(b)(2)	3	611.531(a), 611.532(b), 611.533(a), 611.744, 611.956(a)(1)- (a)(3), 611.956(b)

6. Surface Water Treatment Rule violations, other than violations resulting from single exceedence of max. allowable turbidity level (TT)	2	611.211, 611.213, 611.220, 611.230- 611.233, 611.240- 611.242, 611.250	3	611.531- 611.533
7. Interim Enhanced Surface Water Treatment Rule violations, other than violations resulting from single exceedence of max. turbidity level (TT)	2	⁷ 611.740- 611.743, 611.950- 611.955	3	611.742, 611.744, 611.953, 611.954, 611.956
8. Filter Backwash Recycling Rule violations	2	611.276(c)	3	611.276(b), (d)
9. Long Term 1 Enhanced Surface Water Treatment Rule violations	2	611.950- 611.955	3	611.953, 611.954, 611.956
10. LT2ESWTR violations	2	611.1010- 611.1020	¹⁹ 2, 3	611.1001- 611.1005 and 611.1008- 611.1009
11. Groundwater Rule violations	2	611.804	3	611.802(h)

B. Inorganic Chemicals (IOCs)

1. Antimony	2	611.301(b)	3	611.600, 611.601, 611.603
2. Arsenic	2	611.301(b)	3	611.601, 611.603
3. Asbestos (fibers greater than 10 µm)	2	611.301(b)	3	611.600, 611.601, 611.602
4. Barium	2	611.301(b)	3	611.600, 611.601, 611.603

5. Beryllium	2	611.301(b)	3	611.600, 611.601, 611.603
6. Cadmium	2	611.301(b)	3	611.600, 611.601, 611.603
7. Chromium (total)	2	611.301(b)	3	611.600, 611.601, 611.603
8. Cyanide	2	611.301(b)	3	611.600, 611.601, 611.603
9. Fluoride	2	611.301(b)	3	611.600, 611.601, 611.603
10. Mercury (inorganic)	2	611.301(b)	3	611.600, 611.601, 611.603
11. Nitrate	1	611.301(b)	⁸ 1, 3	611.600, 611.601, 611.604, 611.606
12. Nitrite	1	611.301(b)	⁸ 1, 3	611.600, 611.601, 611.605, 611.606
13. Total Nitrate and Nitrite	1	611.301(b)	3	611.600, 611.601
14. Selenium	2	611.301(b)	3	611.600, 611.601, 611.603
15. Thallium	2	611.301(b)	3	611.600, 611.601, 611.603

C. Lead and Copper Rule (Action Level for lead is 0.015 mg/ℓ, for copper is 1.3 mg/ℓ)

1. Lead and Copper Rule (TT)	2	611.350-611.355	3	611.356-611.359
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D. Synthetic Organic Chemicals (SOCs)

1. 2,4-D	2	611.310(c)	3	611.648
2. 2,4,5-TP (silvex)	2	611.310(c)	3	611.648
3. Alachlor	2	611.310(c)	3	611.648
4. Atrazine	2	611.310(c)	3	611.648
5. Benzo(a)pyrene (PAHs)	2	611.310(c)	3	611.648
6. Carbofuran	2	611.310(c)	3	611.648
7. Chlordane	2	611.310(c)	3	611.648
8. Dalapon	2	611.310(c)	3	611.648
9. Di(2-ethylhexyl)adipate	2	611.310(c)	3	611.648
10. Di(2-ethylhexyl)phthalate	2	611.310(c)	3	611.648
11. Dibromochloropropane (DBCP)	2	611.310(c)	3	611.648
12. Dinoseb	2	611.310(c)	3	611.648
13. Dioxin (2,3,7,8-TCDD)	2	611.310(c)	3	611.648
14. Diquat	2	611.310(c)	3	611.648
15. Endothall	2	611.310(c)	3	611.648
16. Endrin	2	611.310(c)	3	611.648
17. Ethylene dibromide	2	611.310(c)	3	611.648
18. Glyphosate	2	611.310(c)	3	611.648
19. Heptachlor	2	611.310(c)	3	611.648
20. Heptachlor epoxide	2	611.310(c)	3	611.648

21. Hexachlorobenzene	2	611.310(c)	3	611.648
22. Hexachlorocyclopentadiene	2	611.310(c)	3	611.648
23. Lindane	2	611.310(c)	3	611.648
24. Methoxychlor	2	611.310(c)	3	611.648
25. Oxamyl (Vydate)	2	611.310(c)	3	611.648
26. Pentachlorophenol	2	611.310(c)	3	611.648
27. Picloram	2	611.310(c)	3	611.648
28. Polychlorinated biphenyls (PCBs)	2	611.310(c)	3	611.648
29. Simazine	2	611.310(c)	3	611.648
30. Toxaphene	2	611.310(c)	3	611.648

E. Volatile Organic Chemicals (VOCs)

1. Benzene	2	611.310(a)	3	611.646
2. Carbon tetrachloride	2	611.310(a)	3	611.646
3. Chlorobenzene (monochlorobenzene)	2	611.310(a)	3	611.646
4. o-Dichlorobenzene	2	611.310(a)	3	611.646
5. p-Dichlorobenzene	2	611.310(a)	3	611.646
6. 1,2-Dichloroethane	2	611.310(a)	3	611.646
7. 1,1-Dichloroethylene	2	611.310(a)	3	611.646
8. cis-1,2-Dichloroethylene	2	611.310(a)	3	611.646
9. trans-1,2-Dichloroethylene	2	611.310(a)	3	611.646
10. Dichloromethane	2	611.310(a)	3	611.646
11. 1,2-Dichloropropane	2	611.310(a)	3	611.646
12. Ethylbenzene	2	611.310(a)	3	611.646

13. Styrene	2	611.310(a)	3	611.646
14. Tetrachloroethylene	2	611.310(a)	3	611.646
15. Toluene	2	611.310(a)	3	611.646
16. 1,2,4-Trichlorobenzene	2	611.310(a)	3	611.646
17. 1,1,1-Trichloroethane	2	611.310(a)	3	611.646
18. 1,1,2-Trichloroethane	2	611.310(a)	3	611.646
19. Trichloroethylene	2	611.310(a)	3	611.646
20. Vinyl chloride	2	611.310(a)	3	611.646
21. Xylenes (total)	2	611.310(a)	3	611.646

F. Radioactive Contaminants

1. Beta/photon emitters	2	611.330(d)	3	611.720(a), 611.732
2. Alpha emitters	2	611.330(c)	3	611.720(a), 611.731
3. Combined radium (226 & 228)	2	611.330(b)	3	611.720(a), 611.731
4. Uranium	2	611.330(e)	3	611.720(a), 611.731

G. Disinfection Byproducts (DBPs), Byproduct Precursors, Disinfectant Residuals. Where disinfection is used in the treatment of drinking water, disinfectants combine with organic and inorganic matter present in water to form chemicals called disinfection byproducts (DBPs). USEPA sets standards for controlling the levels of disinfectants and DBPs in drinking water, including trihalomethanes (THMs) and haloacetic acids (HAAs).¹³

1. Total trihalomethanes (TTHMs)	2	¹¹ 611.312(b)	3	Subparts W and Y of this Part
2. Haloacetic Acids (HAA5)	2	611.312(b)	3	Subpart Y of this Part
3. Bromate	2	611.312(a)	3	611.382(a)-(b)

4. Chlorite	2	611.312(a)	3	611.382(a)-(b)
5. Chlorine (MRDL)	2	611.313(a)	3	611.382(a), (c)
6. Chloramine (MRDL)	2	611.313(a)	3	611.382(a), (c)
7. Chlorine dioxide (MRDL), where any two consecutive daily samples at entrance to distribution system only are above MRDL	2	611.313(a), 611.383(c)(3)	2 ¹² , 3	611.382(a), (c), 611.383(c)(2)
8. Chlorine dioxide (MRDL), where samples in distribution system the next day are also above MRDL	¹³ 1	611.313(a), 611.383(c)(3)	1	611.382(a), (c), 611.383(c)(2)
9. Control of DBP precursors—TOC (TT)	2	611.385(a)-(b)	3	611.382(a), (d)
10. Benchmarking and disinfection profiling	N/A	N/A	3	611.742, 611.953, 611.954
11. Development of monitoring plan	N/A	N/A	3	611.382(f)

H. Other Treatment Techniques

1. Acrylamide (TT)	2	611.296	N/A	N/A
2. Epichlorohydrin (TT)	2	611.296	N/A	N/A

II. Unregulated Contaminant Monitoring:¹⁴

A. Unregulated contaminants	N/A	N/A	3	611.510 as required by USEPA pursuant to 40 CFR 141.40
B. Nickel	N/A	N/A	3	611.603, 611.611

III. Public Notification for Relief Equivalent to a SDWA section 1415 Variance or a section 1416 Exemption.

A. Operation under relief equivalent to a SDWA section 1415 variance or a section 1416 exemption	3	¹⁵ 1415, 1416	N/A	N/A
B. Violation of conditions of relief equivalent to a SDWA section 1415 variance or a section 1416 exemption	2	1415, 1416, ¹⁶ 611.111, 611.112	N/A	N/A

IV. Other Situations Requiring Public Notification.

A. Fluoride secondary maximum contaminant level (SMCL) exceedence	3	611.858	N/A	N/A
B. Exceedence of nitrate MCL for a non-CWS supplier, as allowed by the Agency	1	611.300(d)	N/A	N/A
C. Availability of unregulated contaminant monitoring data	3	611.510 as required by USEPA pursuant to 40 CFR 141.40	N/A	N/A
D. Waterborne disease outbreak	1	611.101, 611.233(b)(2)	N/A	N/A
E. Other waterborne emergency ¹⁷	1	N/A	N/A	N/A
F. Source water sample positive for Groundwater Rule fecal indicators: E. coli, enterococci, or coliphage	1	611.802(g)	N/A	N/A
G. Other situations as determined by the Agency by a SEP issued pursuant to Section 611.110	¹⁸ 1, 2, 3	N/A	N/A	N/A

Appendix G—Endnotes

1. Violations and other situations not listed in this table (e.g., failure to prepare Consumer Confidence Reports) do not require notice, unless otherwise determined by the Agency by a SEP issued pursuant to Section 611.110. The Agency may, by a SEP issued pursuant to Section 611.110, further require a more stringent public notice tier (e.g., Tier 1 instead of Tier 2 or Tier 2 instead of Tier 3) for specific violations and situations listed in this Appendix, as authorized under Sections 611.902(a) and 611.903(a).
2. Definition of the abbreviations used: “MCL” means maximum contaminant level, “MRDL” means maximum residual disinfectant level, and “TT” means treatment technique.
3. The term “violations of National Primary Drinking Water Regulations (NPDWR)” is used here to include violations of MCL, MRDL, treatment technique, monitoring, and testing procedure requirements.
4. Failure to test for fecal coliform or E. coli is a Tier 1 violation if testing is not done after any repeat sample tests positive for coliform. All other total coliform monitoring and testing procedure violations are Tier 3 violations.
5. A supplier that violates the turbidity MCL of 5 NTU based on an average of measurements over two consecutive days must consult with the Agency within 24 hours after learning of the violation. Based on this consultation, the Agency may subsequently decide to issue a SEP pursuant to Section 611.110 that elevates the violation to a Tier 1 violation. If a supplier is unable to make contact with the Agency in the 24-hour period, the violation is automatically elevated to a Tier 1 violation.
6. A supplier with a treatment technique violation involving a single exceedence of a maximum turbidity limit under the Surface Water Treatment Rule (SWTR), the Interim Enhanced Surface Water Treatment Rule (IESWTR), or the Long Term 1 Enhanced Surface Water Treatment Rule are required to consult with the Agency within 24 hours after learning of the violation. Based on this consultation, the Agency may subsequently decide to issue a SEP pursuant to Section 611.110 that elevates the violation to a Tier 1 violation. If a supplier is unable to make contact with the Agency in the 24-hour period, the violation is automatically elevated to a Tier 1 violation.
7. The Surface Water Treatment Rule (SWTR) remains in effect for a supplier that serves at least 10,000 persons; the Interim Enhanced Surface Water Treatment Rule adds additional requirements and does not in many cases supercede the SWTR.
8. Failure to take a confirmation sample within 24 hours for nitrate or nitrite after an initial sample exceeds the MCL is a Tier 1 violation. Other monitoring violations for nitrate are Tier 3.
9. Failure to take a confirmation sample within 24 hours for nitrate or nitrite after an initial sample exceeds the MCL is a Tier 1 violation. Other monitoring violations for nitrate are Tier 3.

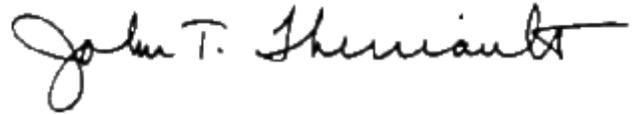
10. A Subpart B community or non-transient non-community system supplier must comply with new DBP MCLs, disinfectant MRDLs, and related monitoring requirements. A Subpart B transient non-community system supplier that serves 10,000 or more persons that uses chlorine dioxide as a disinfectant or oxidant or a Subpart B transient non-community system supplier that serves fewer than 10,000 persons, which uses only groundwater not under the direct influence of surface water, and which uses chlorine dioxide as a disinfectant or oxidant must comply with the chlorine dioxide MRDL.
11. Sections 611.312(b)(1) and 611.382(a) and (b) apply until Subpart Y of this Part takes effect under the schedule set forth in Section 611.970(c).
12. Failure to monitor for chlorine dioxide at the entrance to the distribution system the day after exceeding the MRDL at the entrance to the distribution system is a Tier 2 violation.
13. If any daily sample taken at the entrance to the distribution system exceeds the MRDL for chlorine dioxide and one or more samples taken in the distribution system the next day exceed the MRDL, Tier 1 notification is required. A failure to take the required samples in the distribution system after the MRDL is exceeded at the entry point also triggers Tier 1 notification.
14. Some water suppliers must monitor for certain unregulated contaminants ~~listed in 611.510a~~ required by USEPA pursuant to 40 CFR 141.40.
15. This citation refers to sections 1415 and 1416 of the federal Safe Drinking Water Act. sections 1415 and 1416 require that “a schedule prescribed . . . for a public water system granted relief equivalent to a SDWA section 1415 variance or a section 1416 exemption must require compliance by the system . . .”
16. In addition to sections 1415 and 1416 of the federal Safe Drinking Water Act, 40 CFR 142.307 specifies the items and schedule milestones that must be included in relief equivalent to a SDWA section 1415 small system variance. In granting any form of relief from an NPDWR, the Board will consider all applicable federal requirements for and limitations on the State’s ability to grant relief consistent with federal law.
17. Other waterborne emergencies require a Tier 1 public notice under Section 611.902(a) for situations that do not meet the definition of a waterborne disease outbreak given in Section 611.101, but which still have the potential to have serious adverse effects on health as a result of short-term exposure. These could include outbreaks not related to treatment deficiencies, as well as situations that have the potential to cause outbreaks, such as failures or significant interruption in water treatment processes, natural disasters that disrupt the water supply or distribution system, chemical spills, or unexpected loading of possible pathogens into the source water.
18. The Agency may place any other situation in any tier it deems appropriate in writing, based on the prospective threat which it determines that the situation poses to public health, and subject to Board review pursuant to Section 40 of the Act [415 ILCS 5/40].
19. A failure to collect three or more samples for Cryptosporidium analysis is a Tier 2 violation

requiring special notice, as specified in Section 611.911. All other monitoring and testing procedure violations are Tier 3.

BOARD NOTE: Derived from Appendix A to Subpart Q to 40 CFR 141-~~(2013)~~ (2014).

(Source: Amended at 39 Ill. Reg. _____, effective _____)

I, John T. Therriault, Clerk of the Illinois Pollution Control Board, certify that the Board adopted the above opinion on November 6, 2014, by a vote of 4-0.

A handwritten signature in black ink that reads "John T. Therriault". The signature is written in a cursive style with a long horizontal flourish at the end.

John T. Therriault, Clerk
Illinois Pollution Control Board