

POLLUTION CONTROL BOARD

NOTICE OF PROPOSED AMENDMENT

- 1) Heading of the Part: Primary Drinking Water Standards
- 2) Code Citation: 35 Ill. Adm. Code 611
- 3)

<u>Section Numbers</u> :	<u>Proposed Actions</u> :
611.102	Amendment
611.381	Amendment
611.531	Amendment
611.611	Amendment
611.720	Amendment
611.802	Amendment
611.1052	Amendment
- 4) Statutory Authority: 415 ILCS 5/7.2, 17, 17.5, and 27
- 5) A Complete description of the Subjects and Issues Involved: The following briefly describes the subjects and issues involved in the docket R18-9 rulemaking which amends Part 611. A comprehensive description is contained in the Board's opinion and order of February 8, 2018, proposing amendments in docket R18-9, which opinion and order is available from the address below.

This Board reserved this docket to update the Illinois Safe Drinking Water Act (SDWA) rules to correspond with amendments adopted by the United States Environmental Protection Agency (USEPA) that appeared in the Federal Register during the update period July 1, 2017 through December 31, 2017. During this period, USEPA approved several new equivalent analytical methods on July 27, 2017. Review of the text open based on USEPA actions indicates a limited number of corrections not based on present USEPA actions. The Board found that the corrections are needed, as is provided in section 7.2(b) of the Environmental Protection Act. (415 ILCS 5/7.2(b) (2016))

The corrections and clarifying amendments are not directly derived from the instant federal amendments. A comprehensive description of the subjects and issues involved in the docket R18-9 rulemaking is contained in the Board's opinion and order of February 8, 2018, proposing amendments in docket R18-9, which opinion and order is available from the address below.

The Board has assembled an identical-in-substance rulemaking addendum (proposed) IIS-RA(P) for this proceeding. Tables appear in the IIS-RA(P) in docket R18-9 that list the corrections and amendments. Table 1 lists the few USEPA amendments that are not needed in this proceeding. Table 2 lists the several deviations from the text of the

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USEPA amendments included in this proceeding. Table 3 lists the numerous corrections that the Board has proposed not deriving from current USEPA amendments. Interested persons can access the IIS-RA(P) for the February 8, 2018 opinion and order on the webpage for docket R18-9 in the Board's Clerk's Office On-Line (COOL) system at www.ipcb.state.il.us.

Section 17.5 of the Environmental Protection Act [415 ILCS 5/17.5] provides that Section 5-35 of the Administrative Procedure Act [5 ILCS 100/5-35] does not apply to this rulemaking. Because this rulemaking is not subject to Section 5-35 of the APA, it is not subject to First Notice or to Second Notice review by the Joint Committee on Administrative Rules (JCAR).

- 6) Published studies or reports, and sources of underlying data, used to compose this rulemaking: None
- 7) Will this rulemaking replace an emergency rule currently in effect? No
- 8) Does this rulemaking contain an automatic repeal date? No
- 9) Does this rulemaking contain incorporations by reference? Yes
- 10) Are there any other rulemakings pending on this Part? No
- 11) Statement of Statewide Policy Objective: These proposed amendments do not create or enlarge a State mandate, as defined in Section 3(b) of the State Mandates Act [30 ILCS 805/3(b) (2016)].
- 12) Time, Place and Manner in which interested persons may comment on this proposed rulemaking: The Board will accept written public comment on this proposal for a period of 45 days after the date of this publication. Comments should reference docket R18-9 and be addressed to:

Don A. Brown, Clerk
Illinois Pollution Control Board
State of Illinois Center, Suite 11-500
100 W. Randolph St.
Chicago IL 60601

Please direct inquiries to the following person and reference docket R18-9:

POLLUTION CONTROL BOARD

NOTICE OF PROPOSED AMENDMENT

Michael J. McCambridge
Staff Attorney
Illinois Pollution Control Board
100 W. Randolph 11-500
Chicago IL 60601

312/814-6924
email: michael.mccambridge@illinois.gov

Request copies of the Board's opinion and order at 312/814-3620, or download a copy from the Board's Website at <http://www.ipcb.state.il.us>.

13) Initial Regulatory Flexibility Analysis:

- A) Types of small businesses, small municipalities, and not-for-profit corporations affected: This rulemaking may affect those small businesses, small municipalities, and not-for-profit corporations that own or operate a public water supply. These proposed amendments do not create or enlarge a State mandate, as defined in Section 3(b) of the State Mandates Act [30 ILCS 805/3(b)].
- B) Reporting, bookkeeping or other procedures required for compliance: The existing rules and proposed amendments require extensive reporting, bookkeeping and other procedures, including the preparation of reports, water analyses, and maintenance of operating records. These proposed amendments do not create or enlarge a State mandate, as defined in Section 3(b) of the State Mandates Act [30 ILCS 805/3(b)].
- C) Types of professional skills necessary for compliance: Compliance with the existing rules and proposed amendments may require the services of an attorney, certified public accountant, chemist, and registered professional engineer. These proposed amendments do not create or enlarge a State mandate, as defined in Section 3(b) of the State Mandates Act [30 ILCS 805/3(b)].

14) Regulatory Agenda on which this rulemaking was summarized: January 2018

The full text of the Proposed Amendments begins on the next page:

1ST NOTICE VERSION

JCAR350611-1803524r01

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1 TITLE 35: ENVIRONMENTAL PROTECTION
2 SUBTITLE F: PUBLIC WATER SUPPLIES
3 CHAPTER I: POLLUTION CONTROL BOARD
4

5 PART 611
6 PRIMARY DRINKING WATER STANDARDS
7

8 SUBPART A: GENERAL
9

10	Section	
11	611.100	Purpose, Scope, and Applicability
12	611.101	Definitions
13	611.102	Incorporations by Reference
14	611.103	Severability
15	611.105	Electronic Reporting
16	611.107	Agency Inspection of PWS Facilities
17	611.108	Delegation to Local Government
18	611.109	Enforcement
19	611.110	Special Exception Permits
20	611.111	Relief Equivalent to SDWA Section 1415(a) Variances
21	611.112	Relief Equivalent to SDWA Section 1416 Exemptions
22	611.113	Alternative Treatment Techniques
23	611.114	Siting Requirements
24	611.115	Source Water Quantity
25	611.120	Effective Dates
26	611.121	Maximum Contaminant Levels and Finished Water Quality
27	611.125	Fluoridation Requirement
28	611.126	Prohibition on Use of Lead
29	611.130	Special Requirements for Certain Variances and Adjusted Standards
30	611.131	Relief Equivalent to SDWA Section 1415(e) Small System Variance
31	611.160	Composite Correction Program
32	611.161	Case-by-Case Reduced Subpart Y Monitoring for Wholesale and Consecutive 33 Systems

34
35 SUBPART B: FILTRATION AND DISINFECTION
36

37	Section	
38	611.201	Requiring a Demonstration
39	611.202	Procedures for Agency Determinations
40	611.211	Filtration Required
41	611.212	Groundwater under Direct Influence of Surface Water
42	611.213	No Method of HPC Analysis
43	611.220	General Requirements

- 44 611.230 Filtration Effective Dates
- 45 611.231 Source Water Quality Conditions
- 46 611.232 Site-Specific Conditions
- 47 611.233 Treatment Technique Violations
- 48 611.240 Disinfection
- 49 611.241 Unfiltered PWSs
- 50 611.242 Filtered PWSs
- 51 611.250 Filtration
- 52 611.261 Unfiltered PWSs: Reporting and Recordkeeping
- 53 611.262 Filtered PWSs: Reporting and Recordkeeping
- 54 611.271 Protection during Repair Work
- 55 611.272 Disinfection Following Repair
- 56 611.276 Recycle Provisions

57

58 SUBPART C: USE OF NON-CENTRALIZED TREATMENT DEVICES

59

60 Section

- 61 611.280 Point-of-Entry Devices
- 62 611.290 Use of Point-of-Use Devices or Bottled Water

63

64 SUBPART D: TREATMENT TECHNIQUES

65

66 Section

- 67 611.295 General Requirements
- 68 611.296 Acrylamide and Epichlorohydrin
- 69 611.297 Corrosion Control

70

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

73

74 Section

- 75 611.300 Old MCLs for Inorganic Chemical Contaminants
- 76 611.301 Revised MCLs for Inorganic Chemical Contaminants
- 77 611.310 State-Only Maximum Contaminant Levels (MCLs) for Organic Chemical
78 Contaminants
- 79 611.311 Revised MCLs for Organic Chemical Contaminants
- 80 611.312 Maximum Contaminant Levels (MCLs) for Disinfection Byproducts (DBPs)
- 81 611.313 Maximum Residual Disinfectant Levels (MRDLs)
- 82 611.320 Turbidity (Repealed)
- 83 611.325 Microbiological Contaminants
- 84 611.330 Maximum Contaminant Levels for Radionuclides
- 85 611.331 Beta Particle and Photon Radioactivity (Repealed)

86

87 SUBPART G: LEAD AND COPPER

88

89 Section

- 90 611.350 General Requirements
- 91 611.351 Applicability of Corrosion Control
- 92 611.352 Corrosion Control Treatment
- 93 611.353 Source Water Treatment
- 94 611.354 Lead Service Line Replacement
- 95 611.355 Public Education and Supplemental Monitoring
- 96 611.356 Tap Water Monitoring for Lead and Copper
- 97 611.357 Monitoring for Water Quality Parameters
- 98 611.358 Monitoring for Lead and Copper in Source Water
- 99 611.359 Analytical Methods
- 100 611.360 Reporting
- 101 611.361 Recordkeeping

102

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

105

106 Section

- 107 611.380 General Requirements
- 108 611.381 Analytical Requirements
- 109 611.382 Monitoring Requirements
- 110 611.383 Compliance Requirements
- 111 611.384 Reporting and Recordkeeping Requirements
- 112 611.385 Treatment Technique for Control of Disinfection Byproduct (DBP) Precursors

113

114 SUBPART K: GENERAL MONITORING AND ANALYTICAL REQUIREMENTS

115

116 Section

- 117 611.480 Alternative Analytical Techniques
- 118 611.490 Certified Laboratories
- 119 611.491 Laboratory Testing Equipment
- 120 611.500 Consecutive PWSs
- 121 611.510 Special Monitoring for Unregulated Contaminants (Repealed)

122

123 SUBPART L: MICROBIOLOGICAL MONITORING
124 AND ANALYTICAL REQUIREMENTS

125

126 Section

- 127 611.521 Routine Coliform Monitoring (Repealed)
- 128 611.522 Repeat Coliform Monitoring (Repealed)
- 129 611.523 Invalidation of Total Coliform Samples (Repealed)

- 130 611.524 Sanitary Surveys (Repealed)
- 131 611.525 Fecal Coliform and E. Coli Testing (Repealed)
- 132 611.526 Analytical Methodology (Repealed)
- 133 611.527 Response to Violation (Repealed)
- 134 611.528 Transition from Subpart L to Subpart AA Requirements (Repealed)
- 135 611.531 Analytical Requirements
- 136 611.532 Unfiltered PWSs
- 137 611.533 Filtered PWSs

138
139 SUBPART M: TURBIDITY MONITORING AND ANALYTICAL REQUIREMENTS

- 140
- 141 Section
- 142 611.560 Turbidity
- 143

144 SUBPART N: INORGANIC MONITORING AND ANALYTICAL REQUIREMENTS

- 145
- 146 Section
- 147 611.591 Violation of a State MCL
- 148 611.592 Frequency of State Monitoring
- 149 611.600 Applicability
- 150 611.601 Monitoring Frequency
- 151 611.602 Asbestos Monitoring Frequency
- 152 611.603 Inorganic Monitoring Frequency
- 153 611.604 Nitrate Monitoring
- 154 611.605 Nitrite Monitoring
- 155 611.606 Confirmation Samples
- 156 611.607 More Frequent Monitoring and Confirmation Sampling
- 157 611.608 Additional Optional Monitoring
- 158 611.609 Determining Compliance
- 159 611.610 Inorganic Monitoring Times
- 160 611.611 Inorganic Analysis
- 161 611.612 Monitoring Requirements for Old Inorganic MCLs
- 162 611.630 Special Monitoring for Sodium
- 163 611.631 Special Monitoring for Inorganic Chemicals (Repealed)

164
165 SUBPART O: ORGANIC MONITORING AND ANALYTICAL REQUIREMENTS

- 166
- 167 Section
- 168 611.640 Definitions
- 169 611.641 Old MCLs
- 170 611.645 Analytical Methods for Organic Chemical Contaminants
- 171 611.646 Phase I, Phase II, and Phase V Volatile Organic Contaminants
- 172 611.647 Sampling for Phase I Volatile Organic Contaminants (Repealed)

- 173 611.648 Phase II, Phase IIB, and Phase V Synthetic Organic Contaminants
- 174 611.650 Monitoring for 36 Contaminants (Repealed)
- 175 611.657 Analytical Methods for 36 Contaminants (Repealed)
- 176 611.658 Special Monitoring for Organic Chemicals (Repealed)

177

178 SUBPART P: THM MONITORING AND ANALYTICAL REQUIREMENTS

179

180 Section

- 181 611.680 Sampling, Analytical, and other Requirements (Repealed)
- 182 611.683 Reduced Monitoring Frequency (Repealed)
- 183 611.684 Averaging (Repealed)
- 184 611.685 Analytical Methods (Repealed)
- 185 611.686 Modification to System (Repealed)
- 186 611.687 Sampling for THM Potential (Repealed)
- 187 611.688 Applicability Dates (Repealed)

188

189 SUBPART Q: RADIOLOGICAL MONITORING AND ANALYTICAL REQUIREMENTS

190

191 Section

- 192 611.720 Analytical Methods
- 193 611.731 Gross Alpha
- 194 611.732 Beta Particle and Photon Radioactivity
- 195 611.733 General Monitoring and Compliance Requirements

196

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

199

200 Section

- 201 611.740 General Requirements
- 202 611.741 Standards for Avoiding Filtration
- 203 611.742 Disinfection Profiling and Benchmarking
- 204 611.743 Filtration
- 205 611.744 Filtration Sampling Requirements
- 206 611.745 Reporting and Recordkeeping Requirements

207

208 SUBPART S: GROUNDWATER RULE

209

210 Section

- 211 611.800 General Requirements and Applicability
- 212 611.801 Sanitary Surveys for GWS Suppliers
- 213 611.802 Groundwater Source Microbial Monitoring and Analytical Methods
- 214 611.803 Treatment Technique Requirements for GWS Suppliers
- 215 611.804 Treatment Technique Violations for GWS Suppliers

216 611.805 Reporting and Recordkeeping for GWS Suppliers

217

218 SUBPART T: REPORTING AND RECORDKEEPING

219

220 Section

221 611.830 Applicability

222 611.831 Monthly Operating Report

223 611.832 Notice by Agency (Repealed)

224 611.833 Cross Connection Reporting

225 611.840 Reporting

226 611.851 Reporting MCL, MRDL, and other Violations (Repealed)

227 611.852 Reporting other Violations (Repealed)

228 611.853 Notice to New Billing Units (Repealed)

229 611.854 General Content of Public Notice (Repealed)

230 611.855 Mandatory Health Effects Language (Repealed)

231 611.856 Fluoride Notice (Repealed)

232 611.858 Fluoride Secondary Standard (Repealed)

233 611.860 Record Maintenance

234 611.870 List of 36 Contaminants (Repealed)

235

236 SUBPART U: CONSUMER CONFIDENCE REPORTS

237

238 Section

239 611.881 Purpose and Applicability

240 611.882 Compliance Dates

241 611.883 Content of the Reports

242 611.884 Required Additional Health Information

243 611.885 Report Delivery and Recordkeeping

244

245 SUBPART V: PUBLIC NOTIFICATION OF DRINKING WATER VIOLATIONS

246

247 Section

248 611.901 General Public Notification Requirements

249 611.902 Tier 1 Public Notice: Form, Manner, and Frequency of Notice

250 611.903 Tier 2 Public Notice: Form, Manner, and Frequency of Notice

251 611.904 Tier 3 Public Notice: Form, Manner, and Frequency of Notice

252 611.905 Content of the Public Notice

253 611.906 Notice to New Billing Units or New Customers

254 611.907 Special Notice of the Availability of Unregulated Contaminant Monitoring
255 Results

256 611.908 Special Notice for Exceedance of the Fluoride Secondary Standard

257 611.909 Special Notice for Nitrate Exceedances above the MCL by a Non-Community
258 Water System

259	611.910	Notice by the Agency on Behalf of a PWS
260	611.911	Special Notice for Cryptosporidium
261		
262		SUBPART W: INITIAL DISTRIBUTION SYSTEM EVALUATIONS
263		
264	Section	
265	611.920	General Requirements
266	611.921	Standard Monitoring
267	611.922	System-Specific Studies
268	611.923	40/30 Certification
269	611.924	Very Small System Waivers
270	611.925	Subpart Y Compliance Monitoring Location Recommendations
271		
272		SUBPART X: ENHANCED FILTRATION AND DISINFECTION –
273		SYSTEMS SERVING FEWER THAN 10,000 PEOPLE
274		
275	Section	
276	611.950	General Requirements
277	611.951	Finished Water Reservoirs
278	611.952	Additional Watershed Control Requirements for Unfiltered Systems
279	611.953	Disinfection Profile
280	611.954	Disinfection Benchmark
281	611.955	Combined Filter Effluent Turbidity Limits
282	611.956	Individual Filter Turbidity Requirements
283	611.957	Reporting and Recordkeeping Requirements
284		
285		SUBPART Y: STAGE 2 DISINFECTION BYPRODUCTS REQUIREMENTS
286		
287	Section	
288	611.970	General Requirements
289	611.971	Routine Monitoring
290	611.972	Subpart Y Monitoring Plan
291	611.973	Reduced Monitoring
292	611.974	Additional Requirements for Consecutive Systems
293	611.975	Conditions Requiring Increased Monitoring
294	611.976	Operational Evaluation Levels
295	611.977	Requirements for Remaining on Reduced TTHM and HAA5 Monitoring Based
296		on Subpart I Results
297	611.978	Requirements for Remaining on Increased TTHM and HAA5 Monitoring Based
298		on Subpart I Results
299	611.979	Reporting and Recordkeeping Requirements
300		
301		SUBPART Z: ENHANCED TREATMENT FOR CRYPTOSPORIDIUM

302
303 Section
304 611.1000 General Requirements
305 611.1001 Source Water Monitoring Requirements: Source Water Monitoring
306 611.1002 Source Water Monitoring Requirements: Sampling Schedules
307 611.1003 Source Water Monitoring Requirements: Sampling Locations
308 611.1004 Source Water Monitoring Requirements: Analytical Methods
309 611.1005 Source Water Monitoring Requirements: Approved Laboratories
310 611.1006 Source Water Monitoring Requirements: Reporting Source Water Monitoring
311 Results
312 611.1007 Source Water Monitoring Requirements: Grandfathering Previously Collected
313 Data
314 611.1008 Disinfection Profiling and Benchmarking Requirements: Requirements When
315 Making a Significant Change in Disinfection Practice
316 611.1009 Disinfection Profiling and Benchmarking Requirements: Developing the
317 Disinfection Profile and Benchmark
318 611.1010 Treatment Technique Requirements: Bin Classification for Filtered Systems
319 611.1011 Treatment Technique Requirements: Filtered System Additional
320 Cryptosporidium Treatment Requirements
321 611.1012 Treatment Technique Requirements: Unfiltered System Cryptosporidium
322 Treatment Requirements
323 611.1013 Treatment Technique Requirements: Schedule for Compliance with
324 Cryptosporidium Treatment Requirements
325 611.1014 Treatment Technique Requirements: Requirements for Uncovered Finished
326 Water Storage Facilities
327 611.1015 Requirements for Microbial Toolbox Components: Microbial Toolbox Options
328 for Meeting Cryptosporidium Treatment Requirements
329 611.1016 Requirements for Microbial Toolbox Components: Source Toolbox Components
330 611.1017 Requirements for Microbial Toolbox Components: Pre-Filtration Treatment
331 Toolbox Components
332 611.1018 Requirements for Microbial Toolbox Components: Treatment Performance
333 Toolbox Components
334 611.1019 Requirements for Microbial Toolbox Components: Additional Filtration Toolbox
335 Components
336 611.1020 Requirements for Microbial Toolbox Components: Inactivation Toolbox
337 Components
338 611.1021 Reporting and Recordkeeping Requirements: Reporting Requirements
339 611.1022 Reporting and Recordkeeping Requirements: Recordkeeping Requirements
340 611.1023 Requirements to Respond to Significant Deficiencies Identified in Sanitary
341 Surveys Performed by USEPA or the Agency
342

SUBPART AA: REVISED TOTAL COLIFORM RULE

343
344

345	Section	
346	611.1051	General
347	611.1052	Analytical Methods and Laboratory Certification
348	611.1053	General Monitoring Requirements for all PWSs
349	611.1054	Routine Monitoring Requirements for Non-CWSs That Serve 1,000 or Fewer
350		People Using Only Groundwater
351	611.1055	Routine Monitoring Requirements for CWSs That Serve 1,000 or Fewer People
352		Using Only Groundwater
353	611.1056	Routine Monitoring Requirements for Subpart B Systems That Serve 1,000 or
354		Fewer People
355	611.1057	Routine Monitoring Requirements for PWSs That Serve More Than 1,000 People
356	611.1058	Repeat Monitoring and E. coli Requirements
357	611.1059	Coliform Treatment Technique Triggers and Assessment Requirements for
358		Protection Against Potential Fecal Contamination
359	611.1060	Violations
360	611.1061	Reporting and Recordkeeping
361		
362	611.APPENDIX A	Regulated Contaminants
363	611.APPENDIX B	Percent Inactivation of G. Lamblia Cysts
364	611.APPENDIX C	Common Names of Organic Chemicals
365	611.APPENDIX D	Defined Substrate Method for the Simultaneous Detection of Total
366		Coliforms and Escherichia Coli from Drinking Water (Repealed)
367	611.APPENDIX E	Mandatory Lead Public Education Information for Community Water
368		Systems
369	611.APPENDIX F	Mandatory Lead Public Education Information for Non-Transient Non-
370		Community Water Systems
371	611.APPENDIX G	NPDWR Violations and Situations Requiring Public Notice
372	611.APPENDIX H	Standard Health Effects Language for Public Notification
373	611.APPENDIX I	Acronyms Used in Public Notification Regulation
374	611.TABLE A	Total Coliform Monitoring Frequency
375	611.TABLE B	Fecal or Total Coliform Density Measurements
376	611.TABLE C	Frequency of RDC Measurement
377	611.TABLE D	Number of Lead and Copper Monitoring Sites
378	611.TABLE E	Lead and Copper Monitoring Start Dates (Repealed)
379	611.TABLE F	Number of Water Quality Parameter Sampling Sites
380	611.TABLE G	Summary of Section 611.357 Monitoring Requirements for Water Quality
381		Parameters
382	611.TABLE H	CT Values (mg·min/ℓ) for Cryptosporidium Inactivation by Chlorine
383		Dioxide
384	611.TABLE I	CT Values (mg·min/ℓ) for Cryptosporidium Inactivation by Ozone
385	611.TABLE J	UV Dose Table for Cryptosporidium, Giardia lamblia, and Virus
386		Inactivation Credit
387	611.TABLE Z	Federal Effective Dates

388
 389 AUTHORITY: Implementing Sections 7.2, 17, and 17.5 and authorized by Section 27 of the
 390 Environmental Protection Act [415 ILCS 5/7.2, 17, 17.5, and 27].
 391

392 SOURCE: Adopted in R88-26 at 14 Ill. Reg. 16517, effective September 20, 1990; amended in
 393 R90-21 at 14 Ill. Reg. 20448, effective December 11, 1990; amended in R90-13 at 15 Ill. Reg.
 394 1562, effective January 22, 1991; amended in R91-3 at 16 Ill. Reg. 19010, effective December 1,
 395 1992; amended in R92-3 at 17 Ill. Reg. 7796, effective May 18, 1993; amended in R93-1 at 17
 396 Ill. Reg. 12650, effective July 23, 1993; amended in R94-4 at 18 Ill. Reg. 12291, effective July
 397 28, 1994; amended in R94-23 at 19 Ill. Reg. 8613, effective June 20, 1995; amended in R95-17
 398 at 20 Ill. Reg. 14493, effective October 22, 1996; amended in R98-2 at 22 Ill. Reg. 5020,
 399 effective March 5, 1998; amended in R99-6 at 23 Ill. Reg. 2756, effective February 17, 1999;
 400 amended in R99-12 at 23 Ill. Reg. 10348, effective August 11, 1999; amended in R00-8 at 23 Ill.
 401 Reg. 14715, effective December 8, 1999; amended in R00-10 at 24 Ill. Reg. 14226, effective
 402 September 11, 2000; amended in R01-7 at 25 Ill. Reg. 1329, effective January 11, 2001;
 403 amended in R01-20 at 25 Ill. Reg. 13611, effective October 9, 2001; amended in R02-5 at 26 Ill.
 404 Reg. 3522, effective February 22, 2002; amended in R03-4 at 27 Ill. Reg. 1183, effective January
 405 10, 2003; amended in R03-15 at 27 Ill. Reg. 16447, effective October 10, 2003; amended in
 406 R04-3 at 28 Ill. Reg. 5269, effective March 10, 2004; amended in R04-13 at 28 Ill. Reg. 12666,
 407 effective August 26, 2004; amended in R05-6 at 29 Ill. Reg. 2287, effective January 28, 2005;
 408 amended in R06-15 at 30 Ill. Reg. 17004, effective October 13, 2006; amended in R07-2/R07-11
 409 at 31 Ill. Reg. 11757, effective July 27, 2007; amended in R08-7/R08-13 at 33 Ill. Reg. 633,
 410 effective December 30, 2008; amended in R10-1/R10-17/R11-6 at 34 Ill. Reg. 19848, effective
 411 December 7, 2010; amended in R12-4 at 36 Ill. Reg. 7110, effective April 25, 2012; amended in
 412 R13-2 at 37 Ill. Reg. 1978, effective February 4, 2013; amended in R14-8 at 38 Ill. Reg. 3608,
 413 effective January 27, 2014; amended in R14-9 at 38 Ill. Reg. 9792, effective April 21, 2014;
 414 amended in R15-6 at 39 Ill. Reg. 3713, effective February 24, 2015; amended in R15-23 at 39 Ill.
 415 Reg. 15144, effective November 9, 2015; amended in R16-4 at 39 Ill. Reg. 15352, effective
 416 November 13, 2015; amended in R17-12 at 42 Ill. Reg. 1140, effective January 4, 2018;
 417 amended R18-9 at 42 Ill. Reg. _____, effective _____.

418
 419 SUBPART A: GENERAL

420
 421 **Section 611.102 Incorporations by Reference**

- 422
 423 a) Abbreviations and short-name listing of references. The following names and
 424 abbreviated names, presented in alphabetical order, are used in this Part to refer to
 425 materials incorporated by reference:

426
 427 "AMI Turbiwell Method" means "Continuous Measurement of Turbidity
 428 Using a SWAN AMI Turbiwell Turbidimeter", available from NEMI or
 429 from SWAN Analytische Instrumente AG.
 430

431 "Aqueous Radiochemical Procedures" means "Procedures for
432 Radiochemical Analysis of Nuclear Reactor Aqueous Solutions", available
433 from NTIS; USEPA, EMSL; and USEPA, NSCEP.
434
435 "ASTM Method" means a method published by and available from the
436
437 American Society for Testing and Materials (ASTM).
438
439 "Charm Fast Phage" means "Fast Phage Test Procedure.
440 Presence/Absence for Coliphage in Ground Water with Same Day Positive
441 Prediction", ~~ver. version~~ 009 (Nov. 2012), available from Charm Sciences
442 Inc.
443
444 "ChlordioX Plus Test" means "Chlorine Dioxide and Chlorite in Drinking
445 Water by Amperometry using Disposable Sensors", available from
446 Palintest Ltd.
447
448 "Chromocult® Method" means "Chromocult® Coliform Agar
449 Presence/Absence Membrane Filter Test Method for Detection and
450 Identification of Coliform Bacteria and Escherichia coli in Finished
451 Waters", available from EMD Millipore.
452
453 "Dioxin and Furan Method 1613" means "Tetra- through Octa-Chlorinated
454 Dioxins and Furans by Isotope-Dilution HRGC/HRMS", available from
455 NTIS.
456
457 "E*Colite Test" means "Charm E*Colite Presence/Absence Test for
458 Detection and Identification of Coliform Bacteria and Escherichia coli in
459 Drinking Water", available from Charm Sciences, Inc. and USEPA, Water
460 Resource Center.
461
462 "EML Procedures Manual" means "EML Procedures Manual, HASL
463 300", available from USDOE, EML.
464
465 "Enterolert" means "Evaluation of Enterolert for Enumeration of
466 Enterococci in Recreational Waters", available from American Society for
467 Microbiology.
468
469 "Georgia Radium Method" means "The Determination of Radium-226 and
470 Radium-228 in Drinking Water by Gamma-ray Spectrometry Using HPGE
471 or Ge(Li) Detectors", ~~rev. Revision~~ 1.2, December 2004, available from
472 the Georgia Tech Research Institute.
473

474 "GLI Method 2" means GLI Method 2, "Turbidity", Nov. 2, 1992,
475 available from Great Lakes Instruments, Inc.
476
477 "Guidance Manual for Filtration and Disinfection" means "Guidance
478 Manual for Compliance with the Filtration and Disinfection Requirements
479 for Public Water Systems using Surface Water Sources", March 1991,
480 available from USEPA, NSCEP.
481
482 "Hach FilterTrak Method 10133" means "Determination of Turbidity by
483 Laser Nephelometry", available from Hach Co.
484
485 "Hach Method 8026" means "Spectrophotometric Measurement of Copper
486 in Finished Drinking Water", December 2015, rev.Revision 1.2, available
487 from the Hach Company.
488
489 "Hach Method 10241" means "Spectrophotometric Measurement of Free
490 Chlorine (Cl₂) in Finished Drinking Water", November 2015, rev.Revision
491 1.2, available from the Hach Company.
492
493 "Hach Method 10258" means "Determination of Turbidity by 360°
494 Nephelometry", January 2016, available from the Hach Company.
495
496 "Hach Method 10260" means "Hach Method 10260 – Determination of
497 Chlorinated Oxidants (Free and Total) in Water Using Disposable Planar
498 Reagent-filled Cuvettes and Mesofluic Channel Colorimetry", available
499 from the Hach Company.
500
501 "Hach Method 10261" means "Total Organic Carbon in Finished Drinking
502 Water by Catalyzed Ozone Hydroxyl Radical Oxidation Infrared
503 Analysis", December 2015, rev.Revision 1.2, available from the Hach
504 Company.
505
506 "Hach Method 10267" means "Spectrophotometric Measurement of Total
507 Organic Carbon (TOC) in Finished Drinking Water", December 2015,
508 rev.Revision 1.2, available from the Hach Company.
509
510 "Hach Method 10272" means "Spectrophotometric Measurement of
511 Copper in Finished Drinking Water", December 2015, rev.Revision 1.2,
512 available from the Hach Company.
513
514 "Hach SPDANS 2 Method 10225" means "Hach Company SPADNS 2
515 (Arsenic-free) Fluoride Method 10225 – Spectrophotometric

516 Measurement of Fluoride in Water and Wastewater", available from the
517 Hach Co.
518
519 "Hach TNTplus 835/836 Method 10206" means "Hach Company TNTplus
520 835/836 Nitrate Method 10206 – Spectrophotometric Measurement of
521 Nitrate in Water and Wastewater", available from the Hach Co.
522
523 "ITS Method D99-003" means Method D99-003, ~~rev.~~Revision 3.0, "Free
524 Chlorine Species (HOCl⁻ and OCl⁻) by Test Strip", available from
525 Industrial Test Systems, Inc.
526
527 "Kelada 01" means "Kelada Automated Test Methods for Total Cyanide,
528 Acid Dissociable Cyanide, and Thiocyanate", ~~rev.~~Revision 1.2, available
529 from NTIS.
530
531 "Lovibond PTV 1000" means "Continuous Measurement of Drinking
532 Water Turbidity Using a Lovibond PTV 1000 White Light LED
533 Turbidimeter," December 2016. Revision 1.0, available from Tintometer,
534 Inc.
535
536 "Lovibond PTV 2000" means "Continuous Measurement of Drinking
537 Water Turbidity Using a Lovibond PTV 2000 660-nm LED
538 Turbidimeter," December 2016. Revision 1.0, available from Tintometer,
539 Inc.
540
541 "Lovibond PTV 6000" means "Continuous Measurement of Drinking
542 Water Turbidity Using a Lovibond PTV 6000 Laser Turbidimeter,"
543 December 2016. Revision 1.0, available from Tintometer, Inc.
544
545 "m-ColiBlue24 Test" means "Total Coliforms and E. coli Membrane
546 Filtration Method with m-ColiBlue24[®] Broth", available from USEPA,
547 Water Resource Center and Hach Company.
548
549 "Method ME355.01" means "Determination of Cyanide in Drinking Water
550 by GC/MS Headspace Analysis", available from NEMI or from H&E
551 Testing Laboratory.
552
553 "Mitchell Method M5271, rev. 1.1" means "Determination of Turbidity by
554 Laser Nephelometry", available from NEMI and Leck Mitchell, PhD.
555
556 "Mitchell Method M5331, rev.1.1" means "Determination of Turbidity by
557 LED Nephelometry", available from NEMI and Leck Mitchell, PhD.
558

559 "Mitchell Method M5331, rev. 1.2" means "Determination of Turbidity by
560 LED or Laser Nephelometry", available from NEMI and Leck Mitchell,
561 PhD.
562

563 "Modified Colitag™ Test" means "Modified Colitag™ Test Method for
564 Simultaneous Detection of E. coli and other Total Coliforms in Water",
565 available from NEMI and CPI International.
566

567 "NBS Handbook 69" means "Maximum Permissible Body Burdens and
568 Maximum Permissible Concentrations of Radionuclides in Air and in
569 Water for Occupational Exposure", available from IAEA and ORAU.
570

571 "NECi Nitrate-Reductase Method" means Nitrate Elimination Company,
572 Inc. (NECi), "Method for Nitrate Reductase Nitrate-Nitrogen Analysis of
573 Drinking Water", ver. 1.0, rev. 2.0, February 2016, available from
574 Superior Enzymes, Inc.
575

576 "New Jersey Radium Method" means "Determination of Radium 228 in
577 Drinking Water", available from the New Jersey Department of
578 Environmental Protection.
579

580 "New York Radium Method" means "Determination of Ra-226 and Ra-
581 228 (Ra-02)", available from the New York Department of Public Health.
582

583 "OI Analytical Method OIA-1677" means "Method OIA-1677, DW
584 Available Cyanide by Flow Injection, Ligand Exchange, and
585 Amperometry", available from ALPKEM, Division of OI Analytical.
586

587 "Orion Method AQ4500" means "Determination of Turbidity by LED
588 Nephelometry", available from Thermo Scientific.
589

590 "Palintest ChloroSense" means "Measurement of Free and Total Chlorine
591 in Drinking Water by Palintest ChloroSense", available from NEMI or
592 Palintest Ltd.
593

594 "Palintest Method 1001" means "'Lead in Drinking Water by Differential
595 Pulse Anodic Stripping Voltammetry,' Method Number 1001", available
596 from Palintest, Ltd. or the Hach Company.
597

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

602
603 "Readycult® 2007" means "Readycult® Coliforms 100 Presence/Absence
604 Test for Detection and Identification of Coliform Bacteria and Escherichia
605 coli in Finished Waters", v. 1.1, available from EMD Millipore.
606
607 "SimPlate Method" means "IDEXX SimPlate TM HPC Test Method for
608 Heterotrophs in Water", available from IDEXX Laboratories, Inc.
609
610 "Standard Methods" means "Standard Methods for the Examination of
611 Water and Wastewater", available from the American Public Health
612 Association or the American Waterworks Association.
613
614 "Standard Methods Online" means the website maintained by the Standard
615 Methods Organization (at www.standardmethods.org) for purchase of the
616 latest versions of methods in an electronic format.
617
618 "Syngenta AG-625" means "Atrazine in Drinking Water by
619 Immunoassay", February 2001 is available from Syngenta Crop
620 Protection, Inc.
621
622 "Systea Easy (1-Reagent)" means "Systea Easy (1-Reagent) Nitrate
623 Method", available from NEMI or Systea Scientific LLC.
624
625 "Technical Bulletin 601" means "Technical Bulletin 601, Standard
626 Method of Testing for Nitrate in Drinking Water", July 1994, available
627 from Thermo Scientific.
628
629 "Technicon Methods" means "Fluoride in Water and Wastewater",
630 available from Bran + Luebbe.
631
632 "Tecta EC/TC P-A Test" means "TECTA™ EC/TC medium and the
633 TECTA™ Instrument: a Presence/Absence Method for Simultaneous
634 Detection of Total Coliforms and Escherichia coli (E. coli) in Drinking
635 Water", ver. 1.0 or 2.0, available from Pathogen Detection Systems,
636 Inc. Veolia Water Solutions and Technologies.
637
638 "Thermo-Fisher Discrete Analyzer" means "Drinking Water
639 Orthophosphate for Thermo Scientific Gallery discrete analyzer",
640 available from Thermo-Fisher Scientific.
641
642 "Thermo-Fisher Method 557.1" means "Thermo Fisher Method 557.1:
643 Determination of Haloacetic Acids in Drinking Water using Two-
644 Dimensional Ion Chromatography with Suppressed Conductivity

645 Detection," January 2017. ver. 1.0, available from Thermo-Fisher
646 Scientific.
647
648 "USEPA Asbestos Method 100.1" means Method 100.1, "Analytical
649 Method for Determination of Asbestos Fibers in Water", September 1983,
650 available from NTIS.
651
652 "USEPA Asbestos Method 100.2" means Method 100.2, "Determination
653 of Asbestos Structures over 10-mm in Length in Drinking Water", June
654 1994, available from NTIS.
655
656 "USEPA Environmental Inorganic Methods" means "Methods for the
657 Determination of Inorganic Substances in Environmental Samples",
658 August 1993, available from NTIS.
659
660 "USEPA Environmental Metals Methods" means "Methods for the
661 Determination of Metals in Environmental Samples", available from
662 NTIS.
663
664 "USEPA Inorganic Methods" means "Methods for Chemical Analysis of
665 Water and Wastes", March 1983, available from NTIS.
666
667 "USEPA Interim Radiochemical Methods" means "Interim Radiochemical
668 Methodology for Drinking Water", EPA 600/4-75/008 (revised), March
669 1976 (pages 1-3, 4-5, 6-8, 9-12, 13-15, 16-23, 24-28, 29-33, and 34-37
670 only). Available from NTIS; USEPA, EMSL; and USEPA, NSCEP.
671
672 "USEPA Method 150.3" means "Determination of pH in Drinking Water",
673 February 2017, ver. 1.0, EPA 815/B-17/001, available from USEPA,
674 NSCEP.
675
676 "USEPA Method 1600" means "Method 1600: Enterococci in Water by
677 Membrane Filtration Using Membrane-Enterococcus Indoxyl-b-D-
678 Glucoside Agar (mEI)", available from NEMI; USEPA, NSCEP; and
679 USEPA, Water Resource Center.
680
681 "USEPA Method 1601" means "Method 1601: Male-specific (F⁺) and
682 Somatic Coliphage in Water by Two-step Enrichment Procedure",
683 available from NEMI; USEPA, NSCEP; and USEPA, Water Resource
684 Center.
685
686 "USEPA Method 1602" means "Method 1602: Male-specific (F⁺) and
687 Somatic Coliphage in Water by Single Agar Layer (SAL) Procedure",

688 available from NEMI; USEPA, NSCEP; and USEPA, Water Resource
689 Center.

690
691 "USEPA Method 1604" means "Method 1604: Total Coliforms and
692 Escherichia coli in Water by Membrane Filtration Using a Simultaneous
693 Detection Technique (MI Medium)", available from NEMI; USEPA,
694 NSCEP; and USEPA, Water Resource Center.

695
696 "USEPA NERL Method 200.5 (rev. 4.2)" means Method 200.5,
697 ~~rev.Revision~~ 4.2, "Determination of Trace Elements in Drinking Water by
698 Axially Viewed Inductively Coupled Plasma – Atomic Emission
699 Spectrometry", October 2003, EPA 600/R-06/115. Available from
700 USEPA, ORD.

701
702 "USEPA NERL Method 415.3 (rev. 1.1)" means Method 415.3,
703 ~~rev.Revision~~ 1.1, "Determination of Total Organic Carbon and Specific
704 UV Absorbance at 254 nm in Source Water and Drinking Water",
705 USEPA, February 2005, EPA 600/R-05/055. Available from USEPA,
706 NSCEP and USEPA, ORD.

707
708 "USEPA NERL Method 415.3 (rev. 1.2)" means Method 415.3,
709 ~~rev.Revision~~ 1.2, "Determination of Total Organic Carbon and Specific
710 UV Absorbance at 254 nm in Source Water and Drinking Water",
711 USEPA, September 2009, EPA 600/R-09/122. Available from NEMI;
712 USEPA, NSCEP; and USEPA, ORD.

713
714 "USEPA NERL Method 525.3 (ver. 1.0)" means Method 525.3, Version
715 1.0, "Determination of Total Semivolatile Organic Chemicals in Drinking
716 Water by Solid Phase Extraction and Capillary Column Gas
717 Chromatography/Mass Spectrometry (GC/MS)", USEPA, February 2012,
718 EPA 600/R-12/010. Available from USEPA, NSCEP and USEPA, ORD.

719
720 "USEPA NERL Method 549.2" means Method 549.2, ~~rev.Revision~~ 1.0,
721 "Determination of Diquat and Paraquat in Drinking Water by Liquid-Solid
722 Extraction and High Performance Liquid Chromatography with
723 Ultraviolet Detection", June 1997. Available from NEMI and USEPA,
724 ORD.

725
726 "USEPA OGWDW Methods" means the methods listed as available from
727 the USEPA, Office of Ground Water and Drinking Water (Methods 302.0,
728 317.0 (rev. 2.0), 326.0 (rev. 1.0), 327.0 (rev. 1.1), 334.0, 515.4 (rev. 1.0),
729 523 (rev. 1.0), 524.3 (rev. 1.0), 524.4, 531.2 (rev. 1.0), 536 (rev. 1.0),
730 552.3 (rev. 1.0), 557, 1622 (99), 1622 (01), 1622 (05), 1623 (99), 1623

731 (01), 1623 (05), and 1623.1). Available from NEMI (Methods 302.0,
 732 317.0, 326.0, 327.0, 334.0, 515.4, 524.3, 531.2, 552.3, 557, 1622 (01), and
 733 1623 (01) only); USEPA, NSCEP; and USEPA, OGWDW.

734
 735 "USEPA Organic Methods" means "Methods for the Determination of
 736 Organic Compounds in Drinking Water", December 1988 (revised July
 737 1991) (Methods 508A (rev. 1.0) and 515.1 (rev. 4.0)); "Methods for the
 738 Determination of Organic Compounds in Drinking Water – Supplement
 739 I", July 1990 (Methods 547, 550, and 550.1); "Methods for the
 740 Determination of Organic Compounds in Drinking Water – Supplement
 741 II", August 1992 (Methods 548.1 (rev. 1.0), 552.1 (rev. 1.0), and 555 (rev.
 742 1.0)); and "Methods for the Determination of Organic Compounds in
 743 Drinking Water – Supplement III", August 1995 (Methods 502.2 (rev.
 744 2.1), 504.1 (rev. 1.1), 505 (rev. 2.1), 506 (rev. 1.1), 507 (rev. 2.1), 508
 745 (rev. 3.1), 508.1 (rev. 2.0), 515.2 (rev. 1.1), 524.2 (rev. 4.1), 525.2 (rev.
 746 2.0), 531.1 (rev. 3.1), 551.1 (rev. 1.0), and 552.2 (rev. 1.0)). Available
 747 from NEMI; NTIS; USEPA, NSCEP; and USEPA, EMSL.

748
 749 "USEPA Organic and Inorganic Methods" means "Methods for the
 750 Determination of Organic and Inorganic Compounds in Drinking Water,
 751 Volume 1", EPA 815/R-00/014, PB2000-106981, August 2000 (Methods
 752 300.1 (rev. 1.0), 321.8 (rev. 1.0), and 515.3 (rev. 1.0) only). Available
 753 from NEMI; NTIS; and USEPA, NSCEP.

754
 755 "USEPA Radioactivity Methods" means "Prescribed Procedures for
 756 Measurement of Radioactivity in Drinking Water", EPA 600/4-80/032,
 757 August 1980 (Methods 900.0, 901.0, 901.1, 902.0, 903.0, 903.1, 904.0,
 758 905.0, 906.0, 908.0, and 908.1). Available from NEMI (Methods 900.0,
 759 901.1, 903.0, 903.1, and 908.0 only); NTIS; and USEPA, NSCEP.

760
 761 "USEPA Radiochemical Analyses" means "Radiochemical Analytical
 762 Procedures for Analysis of Environmental Samples", March 1979 (pages
 763 1-5, 19-32, 33-48, 65-73, 87-91, and 92-95 only). Available from NTIS
 764 and USEPA, NSCEP.

765
 766 "USEPA Radiochemistry Procedures" means "Radiochemistry Procedures
 767 Manual", EPA 520/5-84/006, December 1987 (Methods 00-01, 00-02, 00-
 768 07, H-02, Ra-03, Ra-04, Ra-05, Sr-04). Available from NEMI; NTIS; and
 769 USEPA, NSCEP.

770
 771 "USEPA Technical Notes" means "Technical Notes on Drinking Water
 772 Methods", available from NTIS and USEPA, NSCEP.

773

774 "USGS Method" means the designated method in "Methods of Analysis
775 by the U.S. Geological Survey National Water Quality Laboratory –
776 Determination of Inorganic and Organic Constituents in Water and Fluvial
777 Sediments", available from NTIS and USGS.

778 BOARD NOTE: The USGS Methods are available in three volumes
779 published in 1977, 1989, and 1993, as outlined in subsection (b).

780
781 "Waters Method B-1011" means "Waters Test Method for the
782 Determination of Nitrite/Nitrate in Water Using Single Column Ion
783 Chromatography", available from Waters Corporation, Technical Services
784 Division.

785

786 b) The Board incorporates the following publications by reference:

787

788 ALPKEM, Division of OI Analytical, P.O. Box 9010, College Station, TX
789 77842-9010, telephone: 979-690-1711, Internet: www.oico.com.

790

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

795 BOARD NOTE: Also available online for download from
796 [www.epa.gov/waterscience/methods/method/cyanide/1677-](http://www.epa.gov/waterscience/methods/method/cyanide/1677-2004.pdf)
797 [2004.pdf](http://www.epa.gov/waterscience/methods/method/cyanide/1677-2004.pdf).

798

799 APHA. American Public Health Association, 800 I-4015 Fifteenth Street
800 NW, Washington, DC 20005 202-777-2742.

801

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

806

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

811

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

817 Waterworks Association.
818
819 Standard Methods, 19th ed., "Standard Methods for the
820 Examination of Water and Wastewater", 19th Edition, 1995,
821 including "Supplement to the 19th Edition of Standard Methods for
822 the Examination of Water and Wastewater", 1996. See the
823 methods listed separately for the same references under American
824 Waterworks Association.
825
826 Standard Methods, 20th ed., "Standard Methods for the
827 Examination of Water and Wastewater", 20th Edition, 1998. See
828 the methods listed separately for the same references under
829 American Waterworks Association.
830
831 Standard Methods, 21st ed., "Standard Methods for the
832 Examination of Water and Wastewater", 21st Edition, 2005. See
833 the methods listed separately for the same references under
834 American Waterworks Association.
835
836 Standard Methods, 22nd ed., "Standard Methods for the
837 Examination of Water and Wastewater", 22nd Edition, 2012. See
838 the methods listed separately for the same references under
839 American Waterworks Association.
840
841 American Society for Microbiology, 1752 N Street N.W., Washington,
842 DC 20036, 202-737-3600:
843
844 Enterolert, "Evaluation of Enterolert for Enumeration of
845 Enterococci in Recreational Waters", Applied and Environmental
846 Microbiology, Oct. 1996, vol. 62, no. 10, p. 3881, referenced in
847 Section 611.802.
848
849 BOARD NOTE: At the table to 40 CFR 141.402(c)(2), USEPA
850 approved the method as described in the above literature review.
851 The method itself is embodied in the printed instructions to the
852 proprietary kit available from IDEXX Laboratories, Inc.
853 (accessible on-line and available by download from www.asm.org,
854 as "Enterolert™ Procedure"). ASTM approved the method as
855 "Standard Test Method for Enterococci in Water Using
856 Enterolert™", which is available in two versions from ASTM:
857 ASTM Method D6503-99 (superseded) and ASTM Method
858 D6503-99. While it is more conventional to incorporate the
859 method as presented in the kit instructions or as approved by

860 ASTM by reference, the Board is constrained to incorporate the
861 version that appears in the technical literature by reference, which
862 is the version that USEPA has explicitly approved.
863

864 AWWA. American Water Works Association et al., 6666 West Quincy
865 Ave., Denver, CO 80235 (303-794-7711).
866

867 Standard Methods, 13th ed., "Standard Methods for the
868 Examination of Water and Wastewater", 13th Edition, 1971.
869

870 Method 302, Gross Alpha and Gross Beta Radioactivity in
871 Water (Total, Suspended, and Dissolved), referenced in
872 Section 611.720.
873

874 Method 303, Total Radioactive Strontium and Strontium 90
875 in Water, referenced in Section 611.720.
876

877 Method 304, Radium in Water by Precipitation, referenced
878 in Section 611.720.
879

880 Method 305, Radium 226 by Radon in Water (Soluble,
881 Suspended, and Total), referenced in Section 611.720.
882

883 Method 306, Tritium in Water, referenced in Section
884 611.720.
885

886 Standard Methods, 17th ed., "Standard Methods for the
887 Examination of Water and Wastewater", 17th Edition, 1989.
888

889 Method 7110 B, Gross Alpha and Gross Beta Radioactivity
890 in Water (Total, Suspended, and Dissolved), referenced in
891 Section 611.720.
892

893 Method 7500-Cs B, Radioactive Cesium, Precipitation
894 Method, referenced in Section 611.720.
895

896 Method 7500-³H B, Tritium in Water, referenced in Section
897 611.720.
898

899 Method 7500-I B, Radioactive Iodine, Precipitation
900 Method, referenced in Section 611.720.
901

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

903	Method, referenced in Section 611.720.
904	
905	Method 7500-I D, Radioactive Iodine, Distillation Method,
906	referenced in Section 611.720.
907	
908	Method 7500-Ra B, Radium in Water by Precipitation,
909	referenced in Section 611.720.
910	
911	Method 7500-Ra C, Radium 226 by Radon in Water
912	(Soluble, Suspended, and Total), referenced in Section
913	611.720.
914	
915	Method 7500-Ra D, Radium, Sequential Precipitation
916	Method (Proposed), referenced in Section 611.720.
917	
918	Method 7500-Sr B, Total Radioactive Strontium and
919	Strontium 90 in Water, referenced in Section 611.720.
920	
921	Method 7500-U B, Uranium, Radiochemical Method
922	(Proposed), referenced in Section 611.720.
923	
924	Method 7500-U C, Uranium, Isotopic Method (Proposed),
925	referenced in Section 611.720.
926	
927	Standard Methods, 18 th ed., "Standard Methods for the
928	Examination of Water and Wastewater", 18 th Edition, 1992.
929	
930	Method 2130 B, Turbidity, Nephelometric Method,
931	referenced in Section 611.531.
932	
933	Method 2320 B, Alkalinity, Titration Method, referenced in
934	Section 611.611.
935	
936	Method 2510 B, Conductivity, Laboratory Method,
937	referenced in Section 611.611.
938	
939	Method 2550, Temperature, Laboratory and Field Methods,
940	referenced in Section 611.611.
941	
942	Method 3111 B, Metals by Flame Atomic Absorption
943	Spectrometry, Direct Air-Acetylene Flame Method,
944	referenced in Sections 611.611 and 611.612.
945	

946	Method 3111 D, Metals by Flame Atomic Absorption Spectrometry, Direct Nitrous Oxide-Acetylene Flame Method, referenced in Section 611.611.
947	
948	
949	
950	Method 3112 B, Metals by Cold-Vapor Atomic Absorption Spectrometry, Cold-Vapor Atomic Absorption Spectrometric Method, referenced in Section 611.611.
951	
952	
953	
954	Method 3113 B, Metals by Electrothermal Atomic Absorption Spectrometry, Electrothermal Atomic Absorption Spectrometric Method, referenced in Sections 611.611 and 611.612.
955	
956	
957	
958	
959	Method 3114 B, Metals by Hydride Generation/Atomic Absorption Spectrometry, Manual Hydride Generation/Atomic Absorption Spectrometric Method, referenced in Section 611.611.
960	
961	
962	
963	
964	Method 3120 B, Metals by Plasma Emission Spectroscopy, Inductively Coupled Plasma (ICP) Method, referenced in Sections 611.611 and 611.612.
965	
966	
967	
968	Method 3500-Ca D, Calcium, EDTA Titrimetric Method, referenced in Section 611.611.
969	
970	
971	Method 3500-Mg E, Magnesium, Calculation Method, referenced in Section 611.611.
972	
973	
974	Method 4110 B, Determination of Anions by Ion Chromatography, Ion Chromatography with Chemical Suppression of Eluent Conductivity, referenced in Section 611.611.
975	
976	
977	
978	
979	Method 4500-Cl D, Chlorine, Amperometric Titration Method, referenced in Section 611.531.
980	
981	
982	Method 4500-Cl E, Chlorine, Low-Level Amperometric Titration Method, referenced in Section 611.531.
983	
984	
985	Method 4500-Cl F, Chlorine, DPD Ferrous Titrimetric Method, referenced in Section 611.531.
986	
987	
988	Method 4500-Cl G, Chlorine, DPD Colorimetric Method,

989	referenced in Section 611.531.
990	
991	Method 4500-Cl H, Chlorine, Syringaldazine (FACTS)
992	Method, referenced in Section 611.531.
993	
994	Method 4500-Cl I, Chlorine, Iodometric Electrode Method,
995	referenced in Section 611.531.
996	
997	Method 4500-ClO ₂ C, Chlorine Dioxide, Amperometric
998	Method I, referenced in Section 611.531.
999	
1000	Method 4500-ClO ₂ D, Chlorine Dioxide, DPD Method,
1001	referenced in Section 611.531.
1002	
1003	Method 4500-ClO ₂ E, Chlorine Dioxide, Amperometric
1004	Method II (Proposed), referenced in Section 611.531.
1005	
1006	Method 4500-CN ⁻ C, Cyanide, Total Cyanide after
1007	Distillation, referenced in Section 611.611.
1008	
1009	Method 4500-CN ⁻ E, Cyanide, Colorimetric Method,
1010	referenced in Section 611.611.
1011	
1012	Method 4500-CN ⁻ F, Cyanide, Cyanide-Selective Electrode
1013	Method, referenced in Section 611.611.
1014	
1015	Method 4500-CN ⁻ G, Cyanide, Cyanides Amenable to
1016	Chlorination after Distillation, referenced in Section
1017	611.611.
1018	
1019	Method 4500-F ⁻ B, Fluoride, Preliminary Distillation Step,
1020	referenced in Section 611.611.
1021	
1022	Method 4500-F ⁻ C, Fluoride, Ion-Selective Electrode
1023	Method, referenced in Section 611.611.
1024	
1025	Method 4500-F ⁻ D, Fluoride, SPADNS Method, referenced
1026	in Section 611.611.
1027	
1028	Method 4500-F ⁻ E, Fluoride, Complexone Method,
1029	referenced in Section 611.611.
1030	
1031	Method 4500-H ⁺ B, pH Value, Electrometric Method,

1032	referenced in Section 611.611.
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1034	Method 4500-NO ₂ ⁻ B, Nitrogen (Nitrite), Colorimetric
1035	Method, referenced in Section 611.611.
1036	
1037	Method 4500-NO ₃ ⁻ D, Nitrogen (Nitrate), Nitrate Electrode
1038	Method, referenced in Section 611.611.
1039	
1040	Method 4500-NO ₃ ⁻ E, Nitrogen (Nitrate), Cadmium
1041	Reduction Method, referenced in Section 611.611.
1042	
1043	Method 4500-NO ₃ ⁻ F, Nitrogen (Nitrate), Automated
1044	Cadmium Reduction Method, referenced in Section
1045	611.611.
1046	
1047	Method 4500-O ₃ B, Ozone (Residual) (Proposed), Indigo
1048	Colorimetric Method, referenced in Section 611.531.
1049	
1050	Method 4500-P E, Phosphorus, Ascorbic Acid Method,
1051	referenced in Section 611.611.
1052	
1053	Method 4500-P F, Phosphorus, Automated Ascorbic Acid
1054	Reduction Method, referenced in Section 611.611.
1055	
1056	Method 4500-Si D, Silica, Molybdosilicate Method,
1057	referenced in Section 611.611.
1058	
1059	Method 4500-Si E, Silica, Heteropoly Blue Method,
1060	referenced in Section 611.611.
1061	
1062	Method 4500-Si F, Silica, Automated Method for
1063	Molybdate-Reactive Silica, referenced in Section 611.611.
1064	
1065	Method 6651 B, Glyphosate Herbicide (Proposed),
1066	referenced in Section 611.645.
1067	
1068	Method 7110 B, Gross Alpha and Beta Radioactivity
1069	(Total, Suspended, and Dissolved), Evaporation Method for
1070	Gross Alpha-Beta, referenced in Section 611.720.
1071	
1072	Method 7110 C, Gross Alpha and Beta Radioactivity
1073	(Total, Suspended, and Dissolved), Coprecipitation Method
1074	for Gross Alpha Radioactivity in Drinking Water

1075	(Proposed), referenced in Section 611.720.
1076	
1077	Method 7500-Cs B, Radioactive Cesium, Precipitation
1078	Method, referenced in Section 611.720.
1079	
1080	Method 7500- ³ H B, Tritium, Liquid Scintillation
1081	Spectrometric Method, referenced in Section 611.720.
1082	
1083	Method 7500-I B, Radioactive Iodine, Precipitation
1084	Method, referenced in Section 611.720.
1085	
1086	Method 7500-I C, Radioactive Iodine, Ion-Exchange
1087	Method, referenced in Section 611.720.
1088	
1089	Method 7500-I D, Radioactive Iodine, Distillation Method,
1090	referenced in Section 611.720.
1091	
1092	Method 7500-Ra B, Radium, Precipitation Method,
1093	referenced in Section 611.720.
1094	
1095	Method 7500-Ra C, Radium, Emanation Method,
1096	referenced in Section 611.720.
1097	
1098	Method 7500-Ra D, Radium, Sequential Precipitation
1099	Method (Proposed), referenced in Section 611.720.
1100	
1101	Method 7500-Sr B, Total Radioactive Strontium and
1102	Strontium 90, Precipitation Method, referenced in Section
1103	611.720.
1104	
1105	Method 7500-U B, Uranium, Radiochemical Method
1106	(Proposed), referenced in Section 611.720.
1107	
1108	Method 7500-U C, Uranium, Isotopic Method (Proposed),
1109	referenced in Section 611.720.
1110	
1111	Method 9215 B, Heterotrophic Plate Count, Pour Plate
1112	Method, referenced in Section 611.531.
1113	
1114	Method 9221 A, Multiple-Tube Fermentation Technique
1115	for Members of the Coliform Group, Introduction,
1116	referenced in Section 611.531.
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1118	Method 9221 B, Multiple-Tube Fermentation Technique for Members of the Coliform Group, Standard Total Coliform Fermentation Technique, referenced in section 611.531.
1119	
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1122	Method 9221 C, Multiple-Tube Fermentation Technique for Members of the Coliform Group, Estimation of Bacterial Density, referenced in Section 611.531.
1123	
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1126	Method 9221 E, Multiple-Tube Fermentation Technique for Members of the Coliform Group, Fecal Coliform Procedure, referenced in Section 611.531.
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1130	Method 9222 A, Membrane Filter Technique for Members of the Coliform Group, Introduction, referenced in Section 611.531.
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1134	Method 9222 B, Membrane Filter Technique for Members of the Coliform Group, Standard Total Coliform Membrane Filter Procedure, referenced in Section 611.531.
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1138	Method 9222 C, Membrane Filter Technique for Members of the Coliform Group, Delayed-Incubation Total Coliform Procedure, referenced in Section 611.531.
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1142	Method 9222 D, Membrane Filter Technique for Members of the Coliform Group, Fecal Coliform Membrane Filter Procedure, referenced in Section 611.531.
1143	
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1146	Method 9223, Chromogenic Substrate Coliform Test (Proposed) (also referred to as the variations "Colilert [®] Test" and "Colisure [™] Test"), referenced in Section 611.531.
1147	
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1150	Method 9223 B, Chromogenic Substrate Coliform Test (Proposed), referenced in Section 611.1004.
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1154	"Supplement to the 18 th Edition of Standard Methods for the Examination of Water and Wastewater", American Public Health Association, 1994.
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1158	Method 6610, Carbamate Pesticide Method, referenced in Section 611.645.
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1162	Standard Methods, 19 th ed., "Standard Methods for the
1163	Examination of Water and Wastewater", 19 th Edition, 1995.
1164	
1165	Method 2130 B, Turbidity, Nephelometric Method,
1166	referenced in Section 611.531.
1167	
1168	Method 2320 B, Alkalinity, Titration Method, referenced in
1169	Section 611.611.
1170	
1171	Method 2510 B, Conductivity, Laboratory Method,
1172	referenced in Section 611.611.
1173	
1174	Method 2550, Temperature, Laboratory, and Field
1175	Methods, referenced in Section 611.611.
1176	
1177	Method 3111 B, Metals by Flame Atomic Absorption
1178	Spectrometry, Direct Air-Acetylene Flame Method,
1179	referenced in Sections 611.611 and 611.612.
1180	
1181	Method 3111 D, Metals by Flame Atomic Absorption
1182	Spectrometry, Direct Nitrous Oxide-Acetylene Flame
1183	Method, referenced in Section 611.611.
1184	
1185	Method 3112 B, Metals by Cold-Vapor Atomic Absorption
1186	Spectrometry, Cold-Vapor Atomic Absorption
1187	Spectrometric Method, referenced in Section 611.611.
1188	
1189	Method 3113 B, Metals by Electrothermal Atomic
1190	Absorption Spectrometry, Electrothermal Atomic
1191	Absorption Spectrometric Method, referenced in Sections
1192	611.611 and 611.612.
1193	
1194	Method 3114 B, Metals by Hydride Generation/Atomic
1195	Absorption Spectrometry, Manual Hydride
1196	Generation/Atomic Absorption Spectrometric Method,
1197	referenced in Section 611.611.
1198	
1199	Method 3120 B, Metals by Plasma Emission Spectroscopy,
1200	Inductively Coupled Plasma (ICP) Method, referenced in
1201	Sections 611.611 and 611.612.
1202	
1203	Method 3500-Ca D, Calcium, EDTA Titrimetric Method,

1204	referenced in Section 611.611.
1205	
1206	Method 3500-Mg E, Magnesium, Calculation Method,
1207	referenced in Section 611.611.
1208	
1209	Method 4110 B, Determination of Anions by Ion
1210	Chromatography, Ion Chromatography with Chemical
1211	Suppression of Eluent Conductivity, referenced in Section
1212	611.611.
1213	
1214	Method 4500-Cl D, Chlorine, Amperometric Titration
1215	Method, referenced in Sections 611.381 and 611.531.
1216	
1217	Method 4500-Cl E, Chlorine, Low-Level Amperometric
1218	Titration Method, referenced in Sections 611.381 and
1219	611.531.
1220	
1221	Method 4500-Cl F, Chlorine, DPD Ferrous Titrimetric
1222	Method, referenced in Sections 611.381 and 611.531.
1223	
1224	Method 4500-Cl G, Chlorine, DPD Colorimetric Method,
1225	referenced in Sections 611.381 and 611.531.
1226	
1227	Method 4500-Cl H, Chlorine, Syringaldazine (FACTS)
1228	Method, referenced in Sections 611.381 and 611.531.
1229	
1230	Method 4500-Cl I, Chlorine, Iodometric Electrode Method,
1231	referenced in Sections 611.381 and 611.531.
1232	
1233	Method 4500-ClO ₂ C, Chlorine Dioxide, Amperometric
1234	Method I, referenced in Section 611.531.
1235	
1236	Method 4500-ClO ₂ D, Chlorine Dioxide, DPD Method,
1237	referenced in Sections 611.381 and 611.531.
1238	
1239	Method 4500-ClO ₂ E, Chlorine Dioxide, Amperometric
1240	Method II, referenced in Sections 611.381 and 611.531.
1241	
1242	Method 4500-CN ⁻ C, Cyanide, Total Cyanide after
1243	Distillation, referenced in Section 611.611.
1244	
1245	Method 4500-CN ⁻ E, Cyanide, Colorimetric Method,
1246	referenced in Section 611.611.

1247	
1248	Method 4500-CN ⁻ F, Cyanide, Cyanide-Selective Electrode
1249	Method, referenced in Section 611.611.
1250	
1251	Method 4500-CN ⁻ G, Cyanide, Cyanides Amenable to
1252	Chlorination after Distillation, referenced in Section
1253	611.611.
1254	
1255	Method 4500-F ⁻ B, Fluoride, Preliminary Distillation Step,
1256	referenced in Section 611.611.
1257	
1258	Method 4500-F ⁻ C, Fluoride, Ion-Selective Electrode
1259	Method, referenced in Section 611.611.
1260	
1261	Method 4500-F ⁻ D, Fluoride, SPADNS Method, referenced
1262	in Section 611.611.
1263	
1264	Method 4500-F ⁻ E, Fluoride, Complexone Method,
1265	referenced in Section 611.611.
1266	
1267	Method 4500-H ⁺ B, pH Value, Electrometric Method,
1268	referenced in Section 611.611.
1269	
1270	Method 4500-NO ₂ ⁻ B, Nitrogen (Nitrite), Colorimetric
1271	Method, referenced in Section 611.611.
1272	
1273	Method 4500-NO ₃ ⁻ D, Nitrogen (Nitrate), Nitrate Electrode
1274	Method, referenced in Section 611.611.
1275	
1276	Method 4500-NO ₃ ⁻ E, Nitrogen (Nitrate), Cadmium
1277	Reduction Method, referenced in Section 611.611.
1278	
1279	Method 4500-NO ₃ ⁻ F, Nitrogen (Nitrate), Automated
1280	Cadmium Reduction Method, referenced in Section
1281	611.611.
1282	
1283	Method 4500-O ₃ B, Ozone (Residual) (Proposed), Indigo
1284	Colorimetric Method, referenced in Section 611.531.
1285	
1286	Method 4500-P E, Phosphorus, Ascorbic Acid Method,
1287	referenced in Section 611.611.
1288	
1289	Method 4500-P F, Phosphorus, Automated Ascorbic Acid

1290	Reduction Method, referenced in Section 611.611.
1291	
1292	Method 4500-Si D, Silica, Molybdosilicate Method,
1293	referenced in Section 611.611.
1294	
1295	Method 4500-Si E, Silica, Heteropoly Blue Method,
1296	referenced in Section 611.611.
1297	
1298	Method 4500-Si F, Silica, Automated Method for
1299	Molybdate-Reactive Silica, referenced in Section 611.611.
1300	
1301	Method 5910 B, UV Absorbing Organic Constituents,
1302	Ultraviolet Absorption Method, referenced in Section
1303	611.381.
1304	
1305	Method 6251 B, Disinfection Byproducts: Haloacetic
1306	Acids and Trichlorophenol, Micro Liquid-Liquid
1307	Extraction Gas Chromatographic Method, referenced in
1308	Section 611.381.
1309	
1310	Method 6610, Carbamate Pesticide Method, referenced in
1311	Section 611.645.
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1313	Method 6651 B, Glyphosate Herbicide, referenced in
1314	Section 611.645.
1315	
1316	Method 7110 B, Gross Alpha and Gross Beta
1317	Radioactivity, Evaporation Method for Gross Alpha-Beta,
1318	referenced in Section 611.720.
1319	
1320	Method 7110 C, Gross Alpha and Beta Radioactivity
1321	(Total, Suspended, and Dissolved), Coprecipitation Method
1322	for Gross Alpha Radioactivity in Drinking Water
1323	(Proposed), referenced in Section 611.720.
1324	
1325	Method 7120, Gamma-Emitting Radionuclides, referenced
1326	in Section 611.720.
1327	
1328	Method 7500-Cs B, Radioactive Cesium, Precipitation
1329	Method, referenced in Section 611.720.
1330	
1331	Method 7500- ³ H B, Tritium, Liquid Scintillation
1332	Spectrometric Method, referenced in Section 611.720.

1333	
1334	Method 7500-I B, Radioactive Iodine, Precipitation
1335	Method, referenced in Section 611.720.
1336	
1337	Method 7500-I C, Radioactive Iodine, Ion-Exchange
1338	Method, referenced in Section 611.720.
1339	
1340	Method 7500-I D, Radioactive Iodine, Distillation Method,
1341	referenced in Section 611.720.
1342	
1343	Method 7500-Ra B, Radium, Precipitation Method,
1344	referenced in Section 611.720.
1345	
1346	Method 7500-Ra C, Radium, Emanation Method,
1347	referenced in Section 611.720.
1348	
1349	Method 7500-Ra D, Radium, Sequential Precipitation
1350	Method, referenced in Section 611.720.
1351	
1352	Method 7500-Sr B, Total Radiactive Strontium and
1353	Strontium 90, Precipitation Method, referenced in Section
1354	611.720.
1355	
1356	Method 7500-U B, Uranium, Radiochemical Method,
1357	referenced in Section 611.720.
1358	
1359	Method 7500-U C, Uranium, Isotopic Method, referenced
1360	in Section 611.720.
1361	
1362	Method 9215 B, Heterotrophic Plate Count, Pour Plate
1363	Method, referenced in Section 611.531.
1364	
1365	Method 9221 A, Multiple-Tube Fermentation Technique
1366	for Members of the Coliform Group, Introduction,
1367	referenced in Section 611.531.
1368	
1369	Method 9221 B, Multiple-Tube Fermentation Technique
1370	for Members of the Coliform Group, Standard Total
1371	Coliform Fermentation Technique, referenced in Section
1372	611.531.
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1374	Method 9221 C, Multiple-Tube Fermentation Technique for Members of the Coliform Group, Estimation of Bacterial Density, referenced in Section 611.531.
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1378	Method 9221 E, Multiple-Tube Fermentation Technique for Members of the Coliform Group, Fecal Coliform Procedure, referenced in Section 611.531.
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1382	Method 9222 A, Membrane Filter Technique for Members of the Coliform Group, Introduction, referenced in Section 611.531.
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1386	Method 9222 B, Membrane Filter Technique for Members of the Coliform Group, Standard Total Coliform Membrane Filter Procedure, referenced in Section 611.531.
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1390	Method 9222 C, Membrane Filter Technique for Members of the Coliform Group, Delayed-Incubation Total Coliform Procedure, referenced in Section 611.531.
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1394	Method 9222 D, Membrane Filter Technique for Members of the Coliform Group, Fecal Coliform Membrane Filter Procedure, referenced in Section 611.531.
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1398	Method 9223, Chromogenic Substrate Coliform Test (also referred to as the variations "Colilert [®] Test", and "Colisure [™] Test", and <u>Colilert-18[®] Test</u>), referenced in Section 611.531.
1399	
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1402	Method 9223 B, Chromogenic Substrate Coliform Test (Proposed), referenced in Section 611.1004.
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1406	"Supplement to the 19 th Edition of Standard Methods for the Examination of Water and Wastewater", American Public Health Association, 1996.
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1410	Method 5310 B, TOC, Combustion-Infrared Method, referenced in Section 611.381.
1411	
1412	Method 5310 C, TOC, Persulfate-Ultraviolet Oxidation Method, referenced in Section 611.381.
1413	
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1416	Method 5310 D, TOC, Wet-Oxidation Method, referenced

1417	in Section 611.381.
1418	
1419	Standard Methods, 20 th ed., "Standard Methods for the
1420	Examination of Water and Wastewater", 20 th Edition, 1998.
1421	
1422	Method 2130 B, Turbidity, Nephelometric Method,
1423	referenced in Section 611.531.
1424	
1425	Method 2320 B, Alkalinity, Titration Method, referenced in
1426	Section 611.611.
1427	
1428	Method 2510 B, Conductivity, Laboratory Method,
1429	referenced in Section 611.611.
1430	
1431	Method 2550, Temperature, Laboratory, and Field
1432	Methods, referenced in Section 611.611.
1433	
1434	Method 3120 B, Metals by Plasma Emission Spectroscopy,
1435	Inductively Coupled Plasma (ICP) Method, referenced in
1436	Sections 611.611 and 611.612.
1437	
1438	Method 3125, Metals by Inductively Coupled Plasma/Mass
1439	Spectrometry, referenced in Section 611.720.
1440	
1441	Method 3500-Ca B, Calcium, EDTA Titrimetric Method,
1442	referenced in Section 611.611.
1443	
1444	Method 3500-Mg B, Magnesium, EDTA Titrimetric
1445	Method, referenced in Section 611.611.
1446	
1447	Method 4110 B, Determination of Anions by Ion
1448	Chromatography, Ion Chromatography with Chemical
1449	Suppression of Eluent Conductivity, referenced in Section
1450	611.611.
1451	
1452	Method 4500-Cl D, Chlorine, Amperometric Titration
1453	Method, referenced in Sections 611.381 and 611.531.
1454	
1455	Method 4500-Cl E, Chlorine, Low-Level Amperometric
1456	Titration Method, referenced in Sections 611.381 and
1457	611.531.
1458	

1459	Method 4500-Cl F, Chlorine, DPD Ferrous Titrimetric
1460	Method, referenced in Sections 611.381 and 611.531.
1461	
1462	Method 4500-Cl G, Chlorine, DPD Colorimetric Method,
1463	referenced in Sections 611.381 and 611.531.
1464	
1465	Method 4500-Cl H, Chlorine, Syringaldazine (FACTS)
1466	Method, referenced in Sections 611.381 and 611.531.
1467	
1468	Method 4500-Cl I, Chlorine, Iodometric Electrode Method,
1469	referenced in Sections 611.381 and 611.531.
1470	
1471	Method 4500-ClO ₂ C, Chlorine Dioxide, Amperometric
1472	Method I, referenced in Section 611.531.
1473	
1474	Method 4500-ClO ₂ D, Chlorine Dioxide, DPD Method,
1475	referenced in Sections 611.381 and 611.531.
1476	
1477	Method 4500-ClO ₂ E, Chlorine Dioxide, Amperometric
1478	Method II (Proposed), referenced in Sections 611.381 and
1479	611.531.
1480	
1481	Method 4500-CN ⁻ C, Cyanide, Total Cyanide after
1482	Distillation, referenced in Section 611.611.
1483	
1484	Method 4500-CN ⁻ E, Cyanide, Colorimetric Method,
1485	referenced in Section 611.611.
1486	
1487	Method 4500-CN ⁻ F, Cyanide, Cyanide-Selective Electrode
1488	Method, referenced in Section 611.611.
1489	
1490	Method 4500-CN ⁻ G, Cyanide, Cyanides Amenable to
1491	Chlorination after Distillation, referenced in Section
1492	611.611.
1493	
1494	Method 4500-F ⁻ B, Fluoride, Preliminary Distillation Step,
1495	referenced in Section 611.611.
1496	
1497	Method 4500-F ⁻ C, Fluoride, Ion-Selective Electrode
1498	Method, referenced in Section 611.611.
1499	
1500	Method 4500-F ⁻ D, Fluoride, SPADNS Method, referenced
1501	in Section 611.611.

1502	
1503	Method 4500-F ⁻ E, Fluoride, Complexone Method,
1504	referenced in Section 611.611.
1505	
1506	Method 4500-H ⁺ B, pH Value, Electrometric Method,
1507	referenced in Section 611.611.
1508	
1509	Method 4500-NO ₂ ⁻ B, Nitrogen (Nitrite), Colorimetric
1510	Method, referenced in Section 611.611.
1511	
1512	Method 4500-NO ₃ ⁻ D, Nitrogen (Nitrate), Nitrate Electrode
1513	Method, referenced in Section 611.611.
1514	
1515	Method 4500-NO ₃ ⁻ E, Nitrogen (Nitrate), Cadmium
1516	Reduction Method, referenced in Section 611.611.
1517	
1518	Method 4500-NO ₃ ⁻ F, Nitrogen (Nitrate), Automated
1519	Cadmium Reduction Method, referenced in Section
1520	611.611.
1521	
1522	Method 4500-O ₃ B, Ozone (Residual) (Proposed), Indigo
1523	Colorimetric Method, referenced in Section 611.531.
1524	
1525	Method 4500-P E, Phosphorus, Ascorbic Acid Method,
1526	referenced in Section 611.611.
1527	
1528	Method 4500-P F, Phosphorus, Automated Ascorbic Acid
1529	Reduction Method, referenced in Section 611.611.
1530	
1531	Method 4500-SiO ₂ C, Silica, Molybdosilicate Method,
1532	referenced in Section 611.611.
1533	
1534	Method 4500-SiO ₂ D, Silica, Heteropoly Blue Method,
1535	referenced in Section 611.611.
1536	
1537	Method 4500-SiO ₂ E, Silica, Automated Method for
1538	Molybdate-Reactive Silica, referenced in Section 611.611.
1539	
1540	Method 5310 B, TOC, Combustion-Infrared Method,
1541	referenced in Section 611.381.
1542	
1543	Method 5310 C, TOC, Persulfate-Ultraviolet Oxidation
1544	Method, referenced in Section 611.381.

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1547	Method 5310 D, TOC, Wet-Oxidation Method, referenced
1548	in Section 611.381.
1549	
1550	Method 5910 B, UV-Absorbing Organic Constituents,
1551	Ultraviolet Absorption Method, referenced in Section
1552	611.381.
1553	
1554	Method 6251 B, Disinfection By-Products: Haloacetic
1555	Acids and Trichlorophenol, Micro Liquid-Liquid
1556	Extraction Gas Chromatographic Method, referenced in
1557	Section 611.381.
1558	
1559	Method 6610, Carbamate Pesticide Method, referenced in
1560	Section 611.645.
1561	
1562	Method 6651 B, Glyphosate Herbicide, Liquid
1563	Chromatographic Post-Column Fluorescence Method,
1564	referenced in Section 611.645.
1565	
1566	Method 7110 B, Gross Alpha and Gross Beta
1567	Radioactivity, Evaporation Method for Gross Alpha-Beta,
1568	referenced in Section 611.720.
1569	
1570	Method 7110 C, Gross Alpha and Beta Radioactivity
1571	(Total, Suspended, and Dissolved), Coprecipitation Method
1572	for Gross Alpha Radioactivity in Drinking Water
1573	(Proposed), referenced in Section 611.720.
1574	
1575	Method 7120, Gamma-Emitting Radionuclides, referenced
1576	in Section 611.720.
1577	
1578	Method 7500-Cs B, Radioactive Cesium, Precipitation
1579	Method, referenced in Section 611.720.
1580	
1581	Method 7500- ³ H B, Tritium, Liquid Scintillation
1582	Spectrometric Method, referenced in Section 611.720.
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1584	Method 7500-I B, Radioactive Iodine, Precipitation
1585	Method, referenced in Section 611.720.
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1587	Method 7500-I C, Radioactive Iodine, Ion-Exchange
	Method, referenced in Section 611.720.

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1590	Method 7500-I D, Radioactive Iodine, Distillation Method,
1591	referenced in Section 611.720.
1592	
1593	Method 7500-Ra B, Radium, Precipitation Method,
1594	referenced in Section 611.720.
1595	
1596	Method 7500-Ra C, Radium, Emanation Method,
1597	referenced in Section 611.720.
1598	
1599	Method 7500-Ra D, Radium, Sequential Precipitation
1600	Method, referenced in Section 611.720.
1601	
1602	Method 7500-Sr B, Total Radioactive Strontium and
1603	Strontium 90, Precipitation Method, referenced in Section
1604	611.720.
1605	
1606	Method 7500-U B, Uranium, Radiochemical Method,
1607	referenced in Section 611.720.
1608	
1609	Method 7500-U C, Uranium, Isotopic Method, referenced
1610	in Section 611.720.
1611	
1612	Method 9060 A, Samples, Collection, referenced in Section
1613	611.1052.
1614	
1615	Method 9215 B, Heterotrophic Plate Count, Pour Plate
1616	Method, referenced in Section 611.531.
1617	
1618	Method 9221 A, Multiple-Tube Fermentation Technique
1619	for Members of the Coliform Group, Introduction,
1620	referenced in Section 611.531.
1621	
1622	Method 9221 B, Multiple-Tube Fermentation Technique
1623	for Members of the Coliform Group, Standard Total
1624	Coliform Fermentation Technique, referenced in Sections
1625	611.531, 611.802, and 611.1052.
1626	
1627	Method 9221 C, Multiple-Tube Fermentation Technique
1628	for Members of the Coliform Group, Estimation of
1629	Bacterial Density, referenced in Sections 611.531 and
1630	611.1052.

1631	Method 9221 D, Multiple-Tube Fermentation Technique
1632	for Members of the Coliform Group, Presence-Absence (P-
1633	A) Coliform Test, referenced in Sections 611.802 and
1634	611.1052.
1635	
1636	Method 9221 E, Multiple-Tube Fermentation Technique
1637	for Members of the Coliform Group, Fecal Coliform
1638	Procedure, referenced in Section 611.531.
1639	
1640	Method 9221 F, Multiple-Tube Fermentation Technique for
1641	Members of the Coliform Group, Escherichia Coli
1642	Procedure (Proposed), referenced in Sections 611.802 and
1643	611.1052.
1644	
1645	Method 9222 A, Membrane Filter Technique for Members
1646	of the Coliform Group, Introduction, referenced in Section
1647	611.531.
1648	
1649	Method 9222 B, Membrane Filter Technique for Members
1650	of the Coliform Group, Standard Total Coliform Membrane
1651	Filter Procedure, referenced in Sections 611.531, 611.802,
1652	and 611.1052.
1653	
1654	Method 9222 C, Membrane Filter Technique for Members
1655	of the Coliform Group, Delayed-Incubation Total Coliform
1656	Procedure, referenced in Sections 611.531, 611.802, and
1657	611.1052.
1658	
1659	Method 9222 D, Membrane Filter Technique for Members
1660	of the Coliform Group, Fecal Coliform Membrane Filter
1661	Procedure, referenced in Sections 611.531 and 611.1004.
1662	
1663	Method 9222 G, Membrane Filter Technique for Members
1664	of the Coliform Group, MF Partition Procedures,
1665	referenced in Sections 611.802, 611.1004, and 611.1052.
1666	
1667	Method 9223, Chromogenic Substrate Coliform Test (also
1668	referred to as the variations "Colilert [®] Test" and
1669	"Colisure [™] Test" and "Colilert-18 [®] Test), referenced in
1670	Section 611.531.
1671	
1672	Method 9223 B, Chromogenic Substrate Coliform Test
1673	(also referred to as the variations "Colilert [®] Test" and

1674	"Colisure™ Test"), referenced in Sections 611.802,
1675	611.1004, and 611.1052.
1676	
1677	Method 9230 B, Fecal Streptococcus and Enterococcus
1678	Groups, Multiple Tube Techniques, referenced in Section
1679	611.802.
1680	
1681	Method 9230 C, Fecal Streptococcus and Enterococcus
1682	Groups, Membrane Filter Techniques, referenced in
1683	Section 611.802.
1684	
1685	Standard Methods, 21 st ed., "Standard Methods for the
1686	Examination of Water and Wastewater", 21 st Edition, 2005.
1687	
1688	Method 2130 B, Turbidity, Nephelometric Method,
1689	referenced in Section 611.531.
1690	
1691	Method 2320 B, Alkalinity, Titration Method, referenced in
1692	Section 611.611.
1693	
1694	Method 2510 B, Conductivity, Laboratory Method,
1695	referenced in Section 611.611.
1696	
1697	Method 2550, Temperature, Laboratory, and Field
1698	Methods, referenced in Section 611.611.
1699	
1700	Method 3111 B, Metals by Flame Atomic Absorption
1701	Spectrometry, Direct Air-Acetylene Flame Method,
1702	referenced in Sections 611.611 and 611.612.
1703	
1704	Method 3111 D, Metals by Flame Atomic Absorption
1705	Spectrometry, Direct Nitrous Oxide-Acetylene Flame
1706	Method, referenced in Section 611.611.
1707	
1708	Method 3112 B, Metals by Cold-Vapor Atomic Absorption
1709	Spectrometry, Cold-Vapor Atomic Absorption
1710	Spectrometric Method, referenced in Section 611.611.
1711	
1712	Method 3113 B, Metals by Electrothermal Atomic
1713	Absorption Spectrometry, Electrothermal Atomic
1714	Absorption Spectrometric Method, referenced in Sections
1715	611.611 and 611.612.
1716	

1717	Method 3114 B, Metals by Hydride Generation/Atomic Absorption Spectrometry, Manual Hydride Generation/Atomic Absorption Spectrometric Method, referenced in Section 611.611.
1718	
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1721	Method 3120 B, Metals by Plasma Emission Spectroscopy, Inductively Coupled Plasma (ICP) Method, referenced in Sections 611.611 and 611.612.
1722	
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1725	Method 3125, Metals by Inductively Coupled Plasma/Mass Spectrometry, referenced in Section 611.720.
1726	
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1729	Method 3500-Ca B, Calcium, EDTA Titrimetric Method, referenced in Section 611.611.
1730	
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1733	Method 3500-Mg B, Magnesium, Calculation Method, referenced in Section 611.611.
1734	
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1737	Method 4110 B, Determination of Anions by Ion Chromatography, Ion Chromatography with Chemical Suppression of Eluent Conductivity, referenced in Section 611.611.
1738	
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1741	Method 4500-Cl D, Chlorine, Amperometric Titration Method, referenced in Sections 611.381 and 611.531.
1742	
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1745	Method 4500-Cl E, Chlorine, Low-Level Amperometric Titration Method, referenced in Sections 611.381 and 611.531.
1746	
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1749	Method 4500-Cl F, Chlorine, DPD Ferrous Titrimetric Method, referenced in Sections 611.381 and 611.531.
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1753	Method 4500-Cl G, Chlorine, DPD Colorimetric Method, referenced in Sections 611.381 and 611.531.
1754	
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1757	Method 4500-Cl H, Chlorine, Syringaldazine (FACTS) Method, referenced in Sections 611.381 and 611.531.
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1759	Method 4500-ClO ₂ C, Chlorine Dioxide, Amperometric
1760	Method I, referenced in Section 611.531.
1761	
1762	Method 4500-ClO ₂ D, Chlorine Dioxide, Amperometric
1763	Method I, referenced in Section 611.381.
1764	
1765	Method 4500-ClO ₂ E, Chlorine Dioxide, Amperometric
1766	Method II (Proposed), referenced in Sections 611.381 and
1767	611.531.
1768	
1769	Method 4500-CN ⁻ E, Cyanide, Colorimetric Method,
1770	referenced in Section 611.611.
1771	
1772	Method 4500-CN ⁻ F, Cyanide, Cyanide-Selective Electrode
1773	Method, referenced in Section 611.611.
1774	
1775	Method 4500-CN ⁻ G, Cyanide, Cyanides Amenable to
1776	Chlorination after Distillation, referenced in Section
1777	611.611.
1778	
1779	Method 4500-F ⁻ B, Fluoride, Preliminary Distillation Step,
1780	referenced in Section 611.611.
1781	
1782	Method 4500-F ⁻ C, Fluoride, Ion-Selective Electrode
1783	Method, referenced in Section 611.611.
1784	
1785	Method 4500-F ⁻ D, Fluoride, SPADNS Method, referenced
1786	in Section 611.611.
1787	
1788	Method 4500-F ⁻ E, Fluoride, Complexone Method,
1789	referenced in Section 611.611.
1790	
1791	Method 4500-H ⁺ B, pH Value, Electrometric Method,
1792	referenced in Section 611.611.
1793	
1794	Method 4500-NO ₂ ⁻ B, Nitrogen (Nitrite), Colorimetric
1795	Method, referenced in Section 611.611.
1796	
1797	Method 4500-NO ₃ ⁻ D, Nitrogen (Nitrate), Nitrate Electrode
1798	Method, referenced in Section 611.611.
1799	
1800	Method 4500-NO ₃ ⁻ E, Nitrogen (Nitrate), Cadmium
1801	Reduction Method, referenced in Section 611.611.

1802	
1803	Method 4500-NO ₃ ⁻ F, Nitrogen (Nitrate), Automated
1804	Cadmium Reduction Method, referenced in Section
1805	611.611.
1806	
1807	Method 4500-O ₃ B, Ozone (Residual) (Proposed), Indigo
1808	Colorimetric Method, referenced in Section 611.531.
1809	
1810	Method 4500-P E, Phosphorus, Ascorbic Acid Method,
1811	referenced in Section 611.611.
1812	
1813	Method 4500-P F, Phosphorus, Automated Ascorbic Acid
1814	Reduction Method, referenced in Section 611.611.
1815	
1816	Method 4500-SiO ₂ C, Silica, Molybdosilicate Method,
1817	referenced in Section 611.611.
1818	
1819	Method 4500-SiO ₂ D, Silica, Heteropoly Blue Method,
1820	referenced in Section 611.611.
1821	
1822	Method 4500-SiO ₂ E, Silica, Automated Method for
1823	Molybdate-Reactive Silica, referenced in Section 611.611.
1824	
1825	Method 5310 B, TOC, Combustion-Infrared Method,
1826	referenced in Section 611.381.
1827	
1828	Method 5310 C, TOC, Persulfate-Ultraviolet Oxidation
1829	Method, referenced in Section 611.381.
1830	
1831	Method 5310 D, TOC, Wet-Oxidation Method, referenced
1832	in Section 611.381.
1833	
1834	Method 5910 B, UV-Absorbing Organic Constituents,
1835	Ultraviolet Absorption Method, referenced in Section
1836	611.381.
1837	
1838	Method 6251 B, Disinfection By-Products: Haloacetic
1839	Acids and Trichlorophenol, Micro Liquid-Liquid
1840	Extraction Gas Chromatography Method, referenced in
1841	Section 611.381.
1842	

1843	Method 6610 B, Carbamate Pesticide Method, High-Performance Liquid Chromatographic Method, referenced in Section 611.645.
1844	
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1846	Method 6640 B, Acidic Herbicide Compounds, Micro Liquid-Liquid Extraction Gas Chromatographic Method, referenced in Section 611.645.
1847	
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1850	Method 6651 B, Glyphosate Herbicide, Liquid Chromatographic Post-Column Fluorescence Method, referenced in Section 611.645.
1851	
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1854	Method 7110 B, Gross Alpha and Gross Beta Radioactivity, Evaporation Method for Gross Alpha-Beta, referenced in Section 611.720.
1855	
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1858	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.
1859	
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1863	Method 7120, Gamma-Emitting Radionuclides, referenced in Section 611.720.
1864	
1865	
1866	Method 7500-Cs B, Radioactive Cesium, Precipitation Method, referenced in Section 611.720.
1867	
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1869	Method 7500- ³ H B, Tritium, Liquid Scintillation Spectrometric Method, referenced in Section 611.720.
1870	
1871	
1872	Method 7500-I B, Radioactive Iodine, Precipitation Method, referenced in Section 611.720.
1873	
1874	Method 7500-I C, Radioactive Iodine, Ion-Exchange Method, referenced in Section 611.720.
1875	
1876	
1877	Method 7500-I D, Radioactive Iodine, Distillation Method, referenced in Section 611.720.
1878	
1879	
1880	Method 7500-Ra B, Radium, Precipitation Method, referenced in Section 611.720.
1881	
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1885	Method 7500-Ra C, Radium, Emanation Method,
1886	referenced in Section 611.720.
1887	
1888	Method 7500-Ra D, Radium, Sequential Precipitation
1889	Method, referenced in Section 611.720.
1890	
1891	Method 7500-Sr B, Total Radioactive Strontium and
1892	Strontium 90, Precipitation Method, referenced in Section
1893	611.720.
1894	
1895	Method 7500-U B, Uranium, Radiochemical Method,
1896	referenced in Section 611.720.
1897	
1898	Method 7500-U C, Uranium, Isotopic Method, referenced
1899	in Section 611.720.
1900	
1901	Method 9060 A, Samples, Collection, referenced in Section
1902	611.1052.
1903	
1904	Method 9215 B, Heterotrophic Plate Count, Pour Plate
1905	Method, referenced in Section 611.531.
1906	
1907	Method 9221 A, Multiple-Tube Fermentation Technique
1908	for Members of the Coliform Group, Introduction,
1909	referenced in Section 611.531.
1910	
1911	Method 9221 B, Multiple-Tube Fermentation Technique
1912	for Members of the Coliform Group, Standard Total
1913	Coliform Fermentation Technique, referenced in Sections
1914	611.531 and 611.1052.
1915	
1916	Method 9221 C, Multiple-Tube Fermentation Technique
1917	for Members of the Coliform Group, Estimation of
1918	Bacterial Density, referenced in Section 611.531.
1919	
1920	Method 9221 D, Multiple-Tube Fermentation Technique
1921	for Members of the Coliform Group, Presence-Absence (P-
1922	A) Coliform Test, referenced in Sections 611.802 and
1923	611.1052.
1924	
1925	Method 9221 E, Multiple-Tube Fermentation Technique
1926	for Members of the Coliform Group, Fecal Coliform
1927	Procedure, referenced in Section 611.531.

1928	
1929	Method 9222 A, Membrane Filter Technique for Members
1930	of the Coliform Group, Introduction, referenced in Section
1931	611.531.
1932	
1933	Method 9222 B, Membrane Filter Technique for Members
1934	of the Coliform Group, Standard Total Coliform Membrane
1935	Filter Procedure, referenced in Sections 611.531 and
1936	611.1052.
1937	
1938	Method 9222 C, Membrane Filter Technique for Members
1939	of the Coliform Group, Delayed-Incubation Total Coliform
1940	Procedure, referenced in Sections 611.531, 611.802, and
1941	611.1052.
1942	
1943	Method 9222 D, Membrane Filter Technique for Members
1944	of the Coliform Group, Fecal Coliform Membrane Filter
1945	Procedure, referenced in Sections 611.531 and 611.1052.
1946	
1947	Method 9222 G, Membrane Filter Technique for Members
1948	of the Coliform Group, MF Partition Procedures,
1949	referenced in Section 611.1052.
1950	
1951	Method 9223, Chromogenic Substrate Coliform Test (also
1952	referred to as the variations "Colilert [®] Test" and
1953	"Colisure [™] Test"), referenced in Section 611.531.
1954	
1955	Method 9223 B, Chromogenic Substrate Coliform Test
1956	(also referred to as the variations "Colilert [®] Test",
1957	"Colisure [™] Test", and "Colilert-18 [®] Test", based on the
1958	particular medium used, available from IDEXX
1959	Laboratories, Inc.), referenced in Sections 611.531,
1960	611.802, and 611.1052.
1961	
1962	BOARD NOTE: See the Board note appended to Standard
1963	Methods Online in this Section about methods that appear in
1964	Standard Methods, 21 st ed. which USEPA has cited as available
1965	from Standard Methods Online.
1966	
1967	Standard Methods, 22 nd ed., "Standard Methods for the
1968	Examination of Water and Wastewater", 22 nd Edition, 2012, for the
1969	specified methods, as modified by "22 nd Edition of Standard
1970	Methods for the Examination of Water and Wastewater ERRATA"

dated December 16, 2013 and available online for free download at www.standardmethods.org/PDF/22nd_Ed_Errata_12_16_13.pdf.

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1972	
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1974	Method 2130 B, Turbidity, Nephelometric Method,
1975	referenced in Section 611.531.
1976	
1977	Method 2320 B, Alkalinity, Titration Method, referenced in
1978	Section 611.611.
1979	
1980	Method 2510 B, Conductivity, Laboratory Method,
1981	referenced in Section 611.611.
1982	
1983	Method 2550, Temperature, Laboratory, and Field
1984	Methods, referenced in Section 611.611.
1985	
1986	Method 3111 B, Metals by Flame Atomic Absorption
1987	Spectrometry, Direct Air-Acetylene Flame Method,
1988	referenced in Sections 611.611 and 611.612.
1989	
1990	Method 3111 D, Metals by Flame Atomic Absorption
1991	Spectrometry, Direct Nitrous Oxide-Acetylene Flame
1992	Method, referenced in Section 611.611.
1993	
1994	Method 3112 B, Metals by Cold-Vapor Atomic Absorption
1995	Spectrometry, Cold-Vapor Atomic Absorption
1996	Spectrometric Method, referenced in Section 611.611.
1997	
1998	Method 3113 B, Metals by Electrothermal Atomic
1999	Absorption Spectrometry, Electrothermal Atomic
2000	Absorption Spectrometric Method, referenced in Sections
2001	611.611 and 611.612.
2002	
2003	Method 3114 B, Metals by Hydride Generation/Atomic
2004	Absorption Spectrometry, Manual Hydride
2005	Generation/Atomic Absorption Spectrometric Method,
2006	referenced in Section 611.611.
2007	
2008	Method 3120 B, Metals by Plasma Emission Spectroscopy,
2009	Inductively Coupled Plasma (ICP) Method, referenced in
2010	Sections 611.611 and 611.612.
2011	
2012	Method 3500-Ca B, Calcium, EDTA Titrimetric Method,
2013	referenced in Section 611.611.

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

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

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

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

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

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

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

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

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

Method 4500-ClO₂ E, Chlorine Dioxide, Amperometric Method II (Proposed), referenced in Sections 611.381 and 611.531.

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

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

2055	Method 4500-CN ⁻ G, Cyanide, Cyanides Amenable to Chlorination after Distillation, referenced in Section 611.611.
2056	
2057	
2058	Method 4500-F ⁻ B, Fluoride, Preliminary Distillation Step, referenced in Section 611.611.
2059	
2060	
2061	Method 4500-F ⁻ C, Fluoride, Ion-Selective Electrode Method, referenced in Section 611.611.
2062	
2063	
2064	Method 4500-F ⁻ D, Fluoride, SPADNS Method, referenced in Section 611.611.
2065	
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2067	Method 4500-F ⁻ E, Fluoride, Complexone Method, referenced in Section 611.611.
2068	
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2070	Method 4500-H ⁺ B, pH Value, Electrometric Method, referenced in Section 611.611.
2071	
2072	
2073	Method 4500-NO ₂ ⁻ B, Nitrogen (Nitrite), Colorimetric Method, referenced in Section 611.611.
2074	
2075	
2076	Method 4500-NO ₃ ⁻ D, Nitrogen (Nitrate), Nitrate Electrode Method, referenced in Section 611.611.
2077	
2078	
2079	Method 4500-NO ₃ ⁻ E, Nitrogen (Nitrate), Cadmium Reduction Method, referenced in Section 611.611.
2080	
2081	
2082	Method 4500-NO ₃ ⁻ F, Nitrogen (Nitrate), Automated Cadmium Reduction Method, referenced in Section 611.611.
2083	
2084	
2085	Method 4500-O ₃ B, Ozone (Residual) (Proposed), Indigo Colorimetric Method, referenced in Section 611.531.
2086	
2087	
2088	Method 4500-P E, Phosphorus, Ascorbic Acid Method, referenced in Section 611.611. Modified by the above-cited errata sheet.
2089	
2090	
2091	Method 4500-P F, Phosphorus, Automated Ascorbic Acid Reduction Method, referenced in Section 611.611.
2092	
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2097	Method 4500-SiO ₂ C, Silica, Molybdosilicate Method, referenced in Section 611.611.
2098	
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2100	Method 4500-SiO ₂ D, Silica, Heteropoly Blue Method, referenced in Section 611.611.
2101	
2102	
2103	Method 4500-SiO ₂ E, Silica, Automated Method for Molybdate-Reactive Silica, referenced in Section 611.611.
2104	
2105	
2106	Method 5310 B, TOC, Combustion-Infrared Method, referenced in Section 611.381.
2107	
2108	
2109	Method 5310 C, TOC, Persulfate-Ultraviolet Oxidation Method, referenced in Section 611.381.
2110	
2111	
2112	Method 5310 D, TOC, Wet-Oxidation Method, referenced in Section 611.381.
2113	
2114	
2115	Method 5910 B, UV-Absorbing Organic Constituents, Ultraviolet Absorption Method, referenced in Section 611.381.
2116	
2117	
2118	Method 6251 B, Disinfection By-Products: Haloacetic Acids and Trichlorophenol, referenced in Section 611.381.
2119	
2120	
2121	Method 6610 B, Carbamate Pesticide Method, High-Performance Liquid Chromatographic Method, referenced in Section 611.645.
2122	
2123	
2124	Method 6640 B, Acidic Herbicide Compounds, Micro Liquid-Liquid Extraction Gas Chromatographic Method, referenced in Section 611.645.
2125	
2126	
2127	Method 6651 B, Glyphosate Herbicide, Liquid Chromatographic Post-Column Fluorescence Method, referenced in Section 611.645.
2128	
2129	
2130	Method 7110 B, Gross Alpha and Gross Beta Radioactivity, Evaporation Method for Gross Alpha-Beta, referenced in Section 611.720.
2131	
2132	
2133	Method 7110 C, Gross Alpha and Beta Radioactivity (Total, Suspended, and Dissolved), Coprecipitation Method
2134	
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2140	for Gross Alpha Radioactivity in Drinking Water
2141	(Proposed), referenced in Section 611.720. Modified by the
2142	above-cited errata sheet.
2143	
2144	Method 7120, Gamma-Emitting Radionuclides, referenced
2145	in Section 611.720.
2146	
2147	Method 7500-Cs B, Radioactive Cesium, Precipitation
2148	Method, referenced in Section 611.720.
2149	
2150	Method 7500- ³ H B, Tritium, Liquid Scintillation
2151	Spectrometric Method, referenced in Section 611.720.
2152	
2153	Method 7500-I B, Radioactive Iodine, Precipitation
2154	Method, referenced in Section 611.720.
2155	
2156	Method 7500-I C, Radioactive Iodine, Ion-Exchange
2157	Method, referenced in Section 611.720.
2158	
2159	Method 7500-I D, Radioactive Iodine, Distillation Method,
2160	referenced in Section 611.720.
2161	
2162	Method 7500-Ra B, Radium, Precipitation Method,
2163	referenced in Section 611.720.
2164	
2165	Method 7500-Ra C, Radium, Emanation Method,
2166	referenced in Section 611.720.
2167	
2168	Method 7500-Ra D, Radium, Sequential Precipitation
2169	Method, referenced in Section 611.720.
2170	
2171	<u>Method 7500-Ra E, Radium, Gamma Spectrometry</u>
2172	<u>Method, referenced in Section 611.720.</u>
2173	
2174	Method 7500-Sr B, Total Radioactive Strontium and
2175	Strontium 90, Precipitation Method, referenced in Section
2176	611.720. Modified by the above-cited errata sheet.
2177	
2178	Method 7500-U B, Uranium, Radiochemical Method,
2179	referenced in Section 611.720.
2180	
2181	Method 7500-U C, Uranium, Isotopic Method, referenced
2182	in Section 611.720.

2183	
2184	Method 9215 B, Heterotrophic Plate Count, Pour Plate
2185	Method, referenced in Section 611.531.
2186	
2187	Method 9221 A, Multiple-Tube Fermentation Technique
2188	for Members of the Coliform Group, Introduction,
2189	referenced in Section 611.531.
2190	
2191	Method 9221 B, Multiple-Tube Fermentation Technique
2192	for Members of the Coliform Group, Standard Total
2193	Coliform Fermentation Technique, referenced in Sections
2194	611.531 and 611.1052.
2195	
2196	Method 9221 C, Multiple-Tube Fermentation Technique
2197	for Members of the Coliform Group, Estimation of
2198	Bacterial Density, referenced in Section 611.531. Modified
2199	by the above-cited errata sheet.
2200	
2201	Method 9221 E, Multiple-Tube Fermentation Technique
2202	for Members of the Coliform Group, Fecal Coliform
2203	Procedure, referenced in Section 611.531.
2204	
2205	Method 9221 F, Multiple-Tube Fermentation Technique for
2206	Members of the Coliform Group, Escherichia Coli
2207	Procedure (Proposed), referenced in Section 611.802 and
2208	611.1052.
2209	
2210	Method 9222 A, Membrane Filter Technique for Members
2211	of the Coliform Group, Introduction, referenced in Section
2212	611.531.
2213	
2214	Method 9222 B, Membrane Filter Technique for Members
2215	of the Coliform Group, Standard Total Coliform Membrane
2216	Filter Procedure, referenced in Section 611.531. Modified
2217	by the above-cited errata sheet.
2218	
2219	Method 9222 C, Membrane Filter Technique for Members
2220	of the Coliform Group, Delayed-Incubation Total Coliform
2221	Procedure, referenced in Section 611.531.
2222	
2223	Method 9222 D, Membrane Filter Technique for Members
2224	of the Coliform Group, Fecal Coliform Membrane Filter
2225	Procedure, referenced in Section 611.531.

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2229	Method 9223, Chromogenic Substrate Coliform Test (also
2230	referred to as the variations "Colilert® Test" and
2231	"Colisure™ Test"), referenced in Section 611.531.
2232	
2233	Method 9223 B, Chromogenic Substrate Coliform Test
2234	(also referred to as the variations "Colilert® Test",
2235	"Colisure™ Test", and "Colilert-18® Test", based on the
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2237	Laboratories, Inc.), referenced in Sections 611.802,
2238	611.1004, and 611.1052.
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2241	Methods Online in this Section about methods that appear in
2242	Standard Methods, 22 nd ed., which USEPA has cited as available
2243	from Standard Methods Online.
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2245	BOARD NOTE: Individual Methods from Standard Methods are
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2249	Drive, West Conshohocken, PA 19428-2959 (610-832-9585).
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2254	Absorption Spectrophotometric", approved 1993, referenced in
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2258	Calcium and Magnesium in Water", "Test Method A –
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2260	Absorption Spectrophotometric", approved 2003, referenced in
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2264	Calcium and Magnesium in Water", "Test Method A –
2265	Complexometric Titration" and "Test Method B – Atomic
2266	Absorption Spectrophotometric", approved 2009, referenced in
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2289	ASTM Method D859-10, "Standard Test Method for Silica in Water", approved 2010, referenced in Section 611.611.
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2297	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.
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2361	Copper in Water", "Test Method A – Atomic Absorption, Direct"
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2363	approved 1995, referenced in Section 611.611.
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2366	Copper in Water", "Test Method A – Atomic Absorption, Direct"
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2452	Water", "Test Method D – Atomic Absorption, Graphite Furnace",
2453	approved 2008, referenced in Section 611.611.
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2455	<u>ASTM Method D3559-15 D, "Standard Test Methods for Lead in</u>
2456	<u>Water", "Test Method D—Atomic Absorption, Graphite Furnace",</u>
2457	<u>approved 2015, referenced in Section 611.611.</u>
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2588	by Gas Chromatography with an Electron Capture Detector",
2589	approved 1998 (reapproved 2003), referenced in Section 611.645.
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2593	approved 2003, referenced in Section 611.720.
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2597	approved 2005, referenced in Section 611.720.
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2604	Drinking Water by High-Resolution Alpha-Liquid-Scintillation
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2608	Determination of Dissolved Inorganic Anions in Aqueous Matrices
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2625 Suppressed Ion Chromatography" and "Test Method B –
2626 Electrolytically Suppressed Ion Chromatography", approved 2008,
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2639 ASTM Method D6919-09, "Standard Test Method for
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2641 Ammonium in Water and Wastewater by Ion Chromatography",
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2644 ASTM Method D7283-17, "Standard Test Method for Alpha and
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2646 2017, referenced in Section 611.720.

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2648 BOARD NOTE: The most recent version of ASTM methods are available
2649 for paid download from the ASTM at www.astm.org. Note that the most
2650 recent version of an ASTM method may not be the version approved for
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2655 Technicon Methods, Method #129-71W, "Fluoride in Water and
2656 Wastewater", Industrial Method #129-71W, December 1972. See
2657 40 CFR 141.23(k)(1), footnote 11-(2014), referenced in Section
2658 611.611.

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2661 Wastewater", #380-75WE, February 1976. See 40 CFR
2662 141.23(k)(1), footnote 11-(2014), referenced in Section 611.611.

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2666 E*Colite Test, "Charm E*Colite Presence/Absence Test for
2667 Detection and Identification of Coliform Bacteria and Escherichia
2668 coli in Drinking Water", January 9, 1998 (referred to as "E*Colite
2669 Test"), referenced in Sections 611.802 and 611.1052 (also
2670 available from USEPA, Water Resource Center).

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2672 "Charm Fast Phage Test. Presence/Absence for Coliphage in
2673 Ground Water with Same Day Positive Prediction", version 009
2674 (Nov. 2012), referenced in Section 611.802.

2675
2676 CPI International, Inc., 5580 Skylane Blvd., Santa Rosa, CA 95403 (800-
2677 878-7654 /fax: 707-545-7901/Internet address:
2678 www.cpiinternational.com).

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2680 Modified Colitag™ Test, "Modified Colitag™ Test Method for
2681 Simultaneous Detection of E. coli and other Total Coliforms in
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2686 Concord Road, Billerica, MA 01821 (800-645-5476 or 781-533-6000).

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2689 Presence/Absence Membrane Filter Test Method for Detection and
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2691 Finished Waters", November 2000, Version 1.0, referenced in
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Georgia Tech Research Institute, Robert Rosson, 925 Dalney Road,
Atlanta, GA 30332 (404-407-6339).

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

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

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

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

Method ME355.01, ~~rev.Revision~~ 1, "Determination of Cyanide in
Drinking Water by GC/MS Headspace Analysis", May 2009,
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The Hach Company, P.O. Box 389, Loveland, CO 80539-0389 (800-227-
4224/Internet address: www.hach.com).

Hach FilterTrak Method 10133, "Determination of Turbidity by
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in Section 611.531.

Hach Method 8026, "Spectrophotometric Measurement of Copper
in Finished Drinking Water", December 2015, ~~rev.Revision~~ 1.2,
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Hach Method 10241, "Spectrophotometric Measurement of Free
Chlorine (Cl₂) in Finished Drinking Water", November 2015,
~~rev.Revision~~ 1.2 (referred to as "Hach Method 10241"), referenced
in Sections 611.381 and 611.531.

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

2740 Hach Method 10260", Determination of Chlorinated Oxidants
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2742 Cuvettes and Mesofluic Channel Colorimetry", April 2013,
2743 referenced in Sections 611.381 and 611.531.
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2745 Hach Method 10261, "Total Organic Carbon in Finished Drinking
2746 Water by Catalyzed Ozone Hydroxyl Radical Oxidation Infrared
2747 Analysis", December 2015, rev.Revision 1.2, referenced in Section
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2755 in Finished Drinking Water", December 2015, rev.Revision 1.2,
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2758 Hach SPADNS 2 Method 10225, "Fluoride, USEPA SPADNS 2
2759 Method 10225", rev.revision 2.0, January 2011, referenced in
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 3206 See also USEPA, NSCEP.
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3208 BOARD NOTE: USEPA made the following assertion with
3209 regard to this reference at 40 CFR 141.23(k)(1) and 141.24(e) and
3210 (n)(11)-(2014): "This document contains other analytical test
3211 procedures and approved analytical methods that remain available
3212 for compliance monitoring until July 1, 1996." Also available
3213 online at <http://nepis.epa.gov/EPA/html/Pubs/pubtitleORD.htm>
3214 under the document designation "600R94173".
3215

3216 New Jersey Department of Environment, Division of Environmental
3217 Quality, Bureau of Radiation and Inorganic Analytical Services, 9 Ewing
3218 Street, Trenton, NJ 08625.
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3220 New Jersey Radium Method, "Determination of Radium 228 in
3221 Drinking Water", August 1990, referenced in Section 611.720.
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3223 New York Department of Health, Radiological Sciences Institute, Center
3224 for Laboratories and Research, Empire State Plaza, Albany, NY 12201.
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3226 New York Radium Method, "Determination of Ra-226 and Ra-228
3227 (Ra-02)", January 1980, Revised June 1982, referenced in Section
3228 611.720.
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3230 ORAU. Oak Ridge Associated Universities, MC100-44, PO Box 117,
3231 Oak Ridge, TN 37831-0117, telephone: 865-576-3146.
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3233 NBS Handbook 69, "Maximum Permissible Body Burdens and
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3235 in Water for Occupational Exposure", August 1963, referenced in
3236 Sections 611.101 and 611.330. Internet link for document:
3237 www.orau.org/ptp/Library/NBS/NBS%2069.pdf. Also available
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3240 BOARD NOTE: The 1963 version of National Bureau of
3241 Standards Handbook 69 modifies the 1959 publication of the
3242 National Committee on Radiation Protection, NCRP Report No.
3243 22, of the same title. The version available on the NCRP website
3244 is the 1959 document.
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3246 Palintest, Ltd., 1455 Jamike Avenue, Suite 100, Erlanger, KY (800-835-
3247 9629).
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3250 Water by Amperometry using Disposable Sensors", November
3251 2013, referenced in Sections 611.381 and 611.531.
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3253 Palintest Method 1001, "Method 1001: Lead in Drinking Water by
3254 Differential Pulse Anodic Stripping Voltammetry", August 1999,
3255 referenced in Section 611.611.
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3257 Palintest ChloroSense, "Measurement of Free and Total Chlorine
3258 in Drinking Water by Palintest ChloroSense", September 2009,
3259 referenced in Sections 611.381 and 611.531. See also NEMI.
3260
3261 Pathogen Detection Systems, Inc., 382 King Street, Kingston, Ontario,
3262 Canada K7K 2Y2 (844-215-7122 or www.tecta-pds.ca).
3263
3264 Tecta EC/TC P-A Test, ver. 1.0, "TECTA™ EC/TC medium and
3265 the TECTA™ Instrument: a Presence/Absence Method for
3266 Simultaneous Detection of Total Coliforms and Escherichia coli
3267 (E.coli) in Drinking Water", ver. 1.0, May 2014, referenced in
3268 Sections 611.802 and 611.1052.
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3271 the TECTA™ Instrument: a Presence/Absence Method for
3272 Simultaneous Detection of Total Coliforms and Escherichia coli
3273 (E.coli) in Drinking Water", ver. 2.0, February 2017, referenced in
3274 Sections 611.802 and 611.1052.
3275
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3277 Organization at www.standardmethods.org.
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3279 Method 3113 B-04, Metals by Electrothermal Atomic Absorption
3280 Spectrometry, Electrothermal Atomic Absorption Spectrometric
3281 Method, referenced in Sections 611.611 and 611.612.
3282
3283 Method 7110 D-17, Liquid Scintillation Spectroscopic Method for
3284 Gross Alpha-Beta, referenced in Section 611.802.
3285
3286 Method 9230 B-04, Fecal Streptococcus and Enterococcus Groups,
3287 Multiple Tube Techniques, referenced in Section 611.802.
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3289 BOARD NOTE: Where, in appendix A to subpart C of 40 CFR 141,
3290 USEPA has authorized use of an approved alternative method from
3291 Standard Methods Online, and that version of the method appears also in

3292 Standard Methods, 21st or 22nd ed., the Board cites only to Standard
 3293 Methods, 21st or 22nd ed. for that method. The methods that USEPA
 3294 listed as available from Standard Methods Online, and which are listed
 3295 above as in Standard Methods, 21st or 22nd edition, are the following:
 3296 2320 B-97 (for alkalinity), 3112 B-09 (for mercury), 3114 B-09 (for
 3297 arsenic and selenium), 4500-P E-99 and 4500-P F-99; (for
 3298 orthophosphate); 4500-SO4-2 C-97, 4500-SO4-2 D-97, 4500-SO4-2 E-97,
 3299 and 4500-SO4-2 F-97 (for sulfate); 6640 B-01 (for 2,4-D, 2,4,5-TP
 3300 (silvex), dalapon, dinoseb, pentachlorophenol, and picloram); 5561 B-00
 3301 (for glyphosate); 7500-Ra E-07 (for radium-226 and -228); and 9223 B-97
 3302 (for E. coli). Since each method is the same version from both sources,
 3303 the Board views a copy from Standard Methods Online as equivalent to a
 3304 copy from Standard Methods Online, even though the Board does not also
 3305 cite to Standard Methods Online. The Board intends that use of the
 3306 version of the method that is incorporated by reference is acceptable from
 3307 either source.

3308
 3309 BOARD NOTE: Where, in appendix A to subpart C of 40 CFR
 3310 141 (2014), USEPA has authorized use of an approved alternative
 3311 method from Standard Methods Online, and that version of the
 3312 method appears also in Standard Methods, 21st or 22nd ed., the
 3313 Board cites only to Standard Methods, 21st or 22nd ed. for that
 3314 method. The methods that USEPA listed as available from
 3315 Standard Methods Online, and which are listed above as in
 3316 Standard Methods, 21st or 22nd edition, are the following: 2320 B-
 3317 97 (for alkalinity), 3112 B-09 (for mercury), 3114 B-09 (for
 3318 arsenic and selenium), 4500 P E-99 and 4500 P F-99; (for
 3319 orthophosphate); 4500-SO₄⁻²-C-97, 4500-SO₄⁻²-D-97, 4500-SO₄⁻²-
 3320 E-97, and 4500-SO₄⁻²-F-97 (for sulfate); 6640 B-01 (for 2,4-D,
 3321 2,4,5-TP (silvex), dalapon, dinoseb, pentachlorophenol, and
 3322 picloram); 5561 B-00 (for glyphosate); and 9223 B-97 (for E. coli).
 3323 Since each method is the same version from both sources, the
 3324 Board views a copy from Standard Methods Online as equivalent
 3325 to a copy from Standard Methods Online, even though the Board
 3326 does not also cite to Standard Methods Online. The Board intends
 3327 that use of the version of the method that is incorporated by
 3328 reference is acceptable from either source.

3329
 3330 SWAN Analytische Instrumente AG, Studbachstrasse 13, CH-8340,
 3331 Hinwil, Switzerland.
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3333 AMI Turbiwell Method, "Continuous Measurement of Turbidity
3334 Using a SWAN AMI Turbiwell Turbidimeter", August 2009,
3335 referenced in Section 611.531. See also NEMI.
3336

3337 Superior Enzymes, Inc., 334 Hecla Street, Lake Linden, Michigan 49945
3338 (906-296-1115).
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3340 NECi Nitrate Reductase Method, "Method for Nitrate Reductase
3341 Nitrate-Nitrogen Analysis of Drinking Water", ver. 1.0, rev. 2.0,
3342 February 2016, referenced in Section 611.611.
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3344 Syngenta Crop Protection, Inc., 410 Swing Road, Post Office Box 18300,
3345 Greensboro, NC 27419 (336-632-6000).
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3347 Syngenta AG-625, "Atrazine in Drinking Water by Immunoassay",
3348 February 2001, referenced in Section 611.645.
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3350 Systea Scientific LLC, 900 Jorie Blvd., Suite 35, Oak Brook, IL 60523
3351 (630-645-0600).
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3353 Systea Easy (1-Reagent), "Systea Easy (1-Reagent) Nitrate
3354 Method", February 2009, referenced in Section 611.611. See also
3355 NEMI.
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3357 Thermo-Fisher Scientific, 490 Lakewside Dr, Sunnyvale, CA 94085 (800-
3358 556-2323 or www.thermofisher.com).
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3360 Thermo-Fisher Method 557.1, "Determination of Haloacetic Acids
3361 in Drinking Water using Two-Dimensional Ion Chromatography
3362 with Suppressed Conductivity Detection," January 2017, ver. 1.0,
3363 referenced in Section 611.611.
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3365 Thermo-Fisher Scientific, 168 Third Ave, Waltham, MA 02451 (800-556-
3366 2323 or www.thermofisher.com).
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3368 Orion Method AQ4500, "Determination of Turbidity by LED
3369 Nephelometry", May 2009, referenced in Section 611.531. See
3370 also NEMI.
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3372 Technical Bulletin 601, "Standard Method of Testing for Nitrate in
3373 Drinking Water", July, 1994, PN 221890-001, referenced in
3374 Section 611.611.
3375

- 3376 Thermo-Fisher Scientific, Ratastie 2, 01620 Vantaa, Finland.
3377
3378 Thermo-Fisher Discrete Analyzer, "Thermo Fisher Scientific
3379 Drinking Water Orthophosphate Method for Thermo Scientific
3380 Gallery Discrete Analyzer", February 2016, rev. 5, referenced in
3381 Section 611.611.
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3383 Tintometer, Inc., 6456 Parkland Drive, Sarasota, FL 34243 (800-922-
3384 5242, 941-758-6410, or www.lovibond.us).
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3386 Lovibond PTV 1000, "Continuous Measurement of Drinking
3387 Water Turbidity Using a Lovibond PTV 1000 White Light LED
3388 Turbidimeter," December 2016. rev. 1.0, referenced in Section
3389 611.531.
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3391 Lovibond PTV 2000, "Continuous Measurement of Drinking
3392 Water Turbidity Using a Lovibond PTV 2000 660-nm LED
3393 Turbidimeter," December 2016. rev. 1.0, referenced in Section
3394 611.531.
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3396 Lovibond PTV 6000, "Continuous Measurement of Drinking
3397 Water Turbidity Using a Lovibond PTV 6000 Laser Turbidimeter,"
3398 December 2016. rev. 1.0, referenced in Section 611.531.
3399
3400 USDHS, STD. United States Department of Homeland Security, Science
3401 and Technology Directorate (formerly United States Department of
3402 Energy, Environmental Measurements Laboratory), currently available on-
3403 line in the 28th edition only, at www.hsdl.org/?abstract&doc=100185
3404 &coll=limited. See also USDOE, EML.
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3406 EML Procedures Manual (28th ed.), "EML Procedures Manual",
3407 HASL 300, 28th ed., 1997 (Methods Ga-01-R, Ra-04, Sr-01, Sr-02,
3408 U-02, and U-04 only), referenced in Section 611.720.
3409
3410 USDOE, EML. United States Department of Energy, Environmental
3411 Measurements Laboratory (United States Department of Homeland
3412 Security, Science and Technology Directorate, since 2003), currently
3413 available on-line in the 28th edition only, at [www.wipp.energy.gov/](http://www.wipp.energy.gov/namp/emllegacy/procman.htm)
3414 [namp/emllegacy/procman.htm](http://www.wipp.energy.gov/namp/emllegacy/procman.htm). See also USDHS, STD.
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3416 EML Procedures Manual (27th ed.), "EML Procedures Manual",
3417 HASL 300, 27th Edition, Volume 1, 1990 (Methods Ga-01-R, Ra-

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3422 HASL 300, 28th ed., 1997 (Methods Ga-01-R, Ra-04, Sr-01, Sr-02,
3423 U-02, and U-04 only), referenced in Section 611.720.

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3425 BOARD NOTE: Although only the 28th edition is currently available,
3426 USEPA has approved use of the methods from the 27th edition also. The
3427 Board has retained the reference to the 27th edition for the benefit of any
3428 laboratory that may be using that edition.

3429
3430 USEPA, EMSL. United States Environmental Protection Agency,
3431 Environmental Monitoring and Support Laboratory, Cincinnati, OH 45268
3432 (513-569-7586).

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3434 Aqueous Radiochemical Procedures, "Procedures for
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3436 EPA-R4-73-014, May 1973, referenced in Section 611.720. See
3437 also NTIS and USEPA, NSCEP.

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3439 USEPA Interim Radiochemical Methods, "Interim Radiochemical
3440 Methodology for Drinking Water", EPA 600/4-75/008 (revised),
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3442 12, 13-15, 16-23, 24-28, 29-33, and 34-37 only). See also NTIS
3443 and USEPA, NSCEP.

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3445 USEPA Organic Methods, "Methods for the Determination of
3446 Organic Compounds in Drinking Water", December 1988 (revised
3447 July 1991), EPA 600/4-88/039, referenced in Sections 611.645 and
3448 611.648 (Methods 508A (rev. 1.0) and 515.1 (rev. 4.0) only);
3449 "Methods for the Determination of Organic Compounds in
3450 Drinking Water – Supplement I", July 1990, EPA 600/4-90/020,
3451 referenced in Section 611.645 (Methods 547, 550, and 550.1 only);
3452 "Methods for the Determination of Organic Compounds in
3453 Drinking Water – Supplement II", August 1992, EPA 600/R-
3454 92/129, referenced in Sections 611.381 and 611.645 (Methods
3455 548.1 (rev. 1.0), 552.1 (rev. 1.0), and 555 (rev. 1.0) only);
3456 "Methods for the Determination of Organic Compounds in Drinking
3457 Water – Supplement III", August 1995, EPA 600/R-95/131,
3458 referenced in Sections 611.381 and 611.645 (Methods 502.2 (rev.
3459 2.1), 504.1 (rev. 1.1), 505 (rev. 2.1), 506 (rev. 1.1), 507 (rev. 2.1),
3460 508 (rev. 3.1), 508.1 (rev. 2.0), 515.2 (rev. 1.1), 524.2 (rev. 4.1),

3461 525.2 (rev. 2.0), 531.1 (rev. 3.1), 551.1 (rev. 1.0), and 552.2 (rev.
3462 1.0) only). See also NEMI; NTIS; and USEPA, NSCEP.

3463
3464 USEPA, NSCEP. United States Environmental Protection Agency,
3465 National Service Center for Environmental Publications, P.O. Box 42419,
3466 Cincinnati, OH 45242-0419 (except for OGWDW Method 1622 (99),
3467 accessible on-line and available by download from [http://www.epa.](http://www.epa.gov/nscep/)
3468 [gov/nscep/](http://www.epa.gov/nscep/) using the search term indicated for the individual method).

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3470 Aqueous Radiochemical Procedures, "Procedures for
3471 Radiochemical Analysis of Nuclear Reactor Aqueous Solutions",
3472 EPA-R4-73-014, May 1973, referenced in Section 611.720.
3473 (Search for "R473014".) See also NTIS and USEPA, EMSL.

3474
3475 Dioxin and Furan Method 1613, rev. B, "Tetra- through Octa-
3476 Chlorinated Dioxins and Furans by Isotope Dilution
3477 HRGC/HRMS", October 1994, EPA 821/B-94/005, referenced in
3478 Section 611.645. (Search for "821B94005".) See also NEMI and
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3483 Requirements for Public Water Systems Using Surface Water
3484 Sources", March 1991, EPA 570/3-91-001, referenced in Sections
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3487 USEPA Asbestos Method 100.1, "Analytical Method for
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3489 600/4-83-043, referenced in Section 611.611. (Search for
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3492 USEPA Asbestos Method 100.2, "Determination of Asbestos
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3494 EPA 600/R-94-134, referenced in Section 611.611. (Search for
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3497 USEPA Environmental Inorganic Methods, "Methods for the
3498 Determination of Inorganic Substances in Environmental
3499 Samples", August 1993, EPA 600/R-93-100, referenced in Sections
3500 611.381, 611.531, and 611.611. (Methods 180.1 (rev. 2.0), 300.0
3501 (rev. 2.1), 335.4 (rev. 1.0), 353.2 (rev. 2.0), and 365.1 (rev. 2.0)
3502 only.) (Search for "600R93100".) See also NEMI and NTIS.

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3504 USEPA Environmental Metals Methods, "Methods for the
 3505 Determination of Metals in Environmental Samples – Supplement
 3506 I", May 1994, EPA 600/R-94-111, referenced in Sections 611.600,
 3507 611.611, 611.612, and 611.720. (Methods 200.7 (rev. 4.4), 200.8
 3508 (rev. 5.3), 200.9 (rev. 2.2), and 245.1 (rev. 3.0) only.) (Search for
 3509 "600R94111".) See also NEMI and NTIS.

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 3511 USEPA Inorganic Methods, "Methods for Chemical Analysis of
 3512 Water and Wastes", March 1983, EPA 600/4-79-020, referenced in
 3513 Section 611.611. (Methods 150.1, 150.2, and 245.2 only.) (Search
 3514 for "600479020".) See also NEMI and NTIS.

3515
 3516 USEPA Interim Radiochemical Methods, "Interim Radiochemical
 3517 Methodology for Drinking Water", EPA 600/4-75/008 (revised),
 3518 March 1976, referenced in Section 611.720 (pages 1-3, 4-5, 6-8, 9-
 3519 12, 13-15, 16-23, 24-28, 29-33, and 34-37 only). (Search for
 3520 "600475008".) See also NTIS and USEPA, EMSL.

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 3522 USEPA Method 1600, "Method 1600: Enterococci in Water by
 3523 Membrane Filtration Using Membrane-Enterococcus Indoxyl-b-D-
 3524 Glucoside Agar (mEI)", September 2002, EPA 821/R-02/022 is an
 3525 approved variation of Standard Methods, Method 9230 C, "Fecal
 3526 Streptococcus and Enterococcus Groups, Membrane Filter
 3527 Techniques" (which has not itself been approved for use by
 3528 USEPA) (accessible on-line and available by download from
 3529 <http://www.epa.gov/nerlcwww/1600sp02.pdf>), referenced in
 3530 Section 611.802. (Search for "821R02022".) See also NEMI and
 3531 USEPA, Water Resource Center.

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 3533 USEPA Method 1601, "Method 1601: Male-specific (F+) and
 3534 Somatic Coliphage in Water by Two-step Enrichment Procedure",
 3535 April 2001, EPA 821/R-01/030 (accessible on-line and available
 3536 by download from <http://www.epa.gov/nerlcwww/1601ap01.pdf>),
 3537 referenced in Section 611.802. (Search for "821R01030".) See
 3538 also NEMI and USEPA, Water Resource Center.

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 3540 USEPA Method 1602, "Method 1602: Male-specific (F+) and
 3541 Somatic Coliphage in Water by Single Agar Layer (SAL)
 3542 Procedure", April 2001, EPA 821/R-01/029 (accessible on-line and
 3543 available by download from [http://www.epa.gov/nerlcwww/](http://www.epa.gov/nerlcwww/1602ap01.pdf)
 3544 [1602ap01.pdf](http://www.epa.gov/nerlcwww/1602ap01.pdf)), referenced in Section 611.802. (Search for
 3545 "821R01029".) See also NEMI and USEPA, Water Resource
 3546 Center.

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 3551 2002, EPA 821/R-02/024 (accessible on-line and available by
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 3553 referenced in Sections 611.802 and 611.1052. (Search for
 3554 "821R02024".) See also NEMI and USEPA, Water Resource
 3555 Center.
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 3557 USEPA NERL Method 200.5, rev. 4.2, "Determination of Trace
 3558 Elements in Drinking Water by Axially Viewed Inductively
 3559 Coupled Plasma-Atomic Emission Spectrometry", October 2003,
 3560 EPA 600/R-06/115, referenced in Sections 611.611 and 611.612.
 3561 (Search for "600R06115".) See also NEMI and USEPA, ORD.
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 3563 USEPA NERL Method 415.3, rev. 1.1, "Determination of Total
 3564 Organic Carbon and Specific UV Absorbance at 254 nm in Source
 3565 Water and Drinking Water", February 2005, EPA 600/R-05/055,
 3566 referenced in Section 611.381. (Search for "600R05055".) See
 3567 also USEPA, ORD.
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 3569 USEPA NERL Method 415.3, rev. 1.2, "Determination of Total
 3570 Organic Carbon and Specific UV Absorbance at 254 nm in Source
 3571 Water and Drinking Water", September 2009, EPA 600/R-09/122,
 3572 referenced in Section 611.381. (Search for "600R09122".) See
 3573 also NEMI and USEPA, ORD.
 3574
 3575 USEPA NERL Method 525.3, ver. 1.0, "Determination of Total
 3576 Semivolatile Organic Chemicals in Drinking Water by Solid Phase
 3577 Extraction and Capillary Column Gas Chromatography/Mass
 3578 Spectrometry (GC/MS)", February 2012, EPA 600/R-12/010,
 3579 referenced in Section 611.645. (Search for "600R12010".) See
 3580 also USEPA, ORD.
 3581
 3582 USEPA OGWDW Methods, Method 302.0, "Determination of
 3583 Bromate in Drinking Water Using Two-Dimensional Ion
 3584 Chromatography with Suppressed Conductivity Detection",
 3585 September 2009, EPA 815/B-09/014, referenced in Sections
 3586 611.381 and 611.382. (Search for "815B09014".) See also NEMI
 3587 and USEPA, OGWDW.
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3589 USEPA Method 150.3, "Determination of pH in Drinking Water",
3590 February 2017, ver. 1.0, EPA 815/B-17/001, referenced in Sections
3591 611.611. (Search for "815B17001".)
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3593 USEPA OGWDW Methods, Method 317.0, rev. 2.0,
3594 "Determination of Inorganic Oxyhalide Disinfection By-Products
3595 in Drinking Water Using Ion Chromatography with the Addition of
3596 a Postcolumn Reagent for Trace Bromate Analysis", July 2001,
3597 EPA 815/B-01/001, referenced in Sections 611.381 and 611.382.
3598 (Search for "815B01001".) See also NEMI and USEPA,
3599 OGWDW.
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3601 USEPA OGWDW Methods, Method 326.0, rev. 1.0,
3602 "Determination of Inorganic Oxyhalide Disinfection By-Products
3603 in Drinking Water Using Ion Chromatography Incorporating the
3604 Addition of a Suppressor Acidified Postcolumn Reagent for Trace
3605 Bromate Analysis", June 2002, EPA 815/R-03/007, referenced in
3606 Sections 611.381 and 611.382. (Search for "815R03007".) See
3607 also NEMI, NTIS, and USEPA, OGWDW.
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3609 USEPA OGWDW Methods, Method 327.0, rev. 1.1,
3610 "Determination of Chlorine Dioxide and Chlorite Ion in Drinking
3611 Water Using Lissamine Green B and Horseradish Peroxidase with
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3613 05/008, referenced in Sections 611.381 and 611.531. (Search for
3614 "815R05008".) See also NEMI and USEPA, OGWDW.
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3616 USEPA OGWDW Methods, Method 334.0, "Determination of
3617 Residual in Drinking Water Using an On-line Chlorine Analyzer",
3618 September 2009, EPA 815/B-09/013, referenced in Sections
3619 611.381 and 611.531. (Search for "815B09013".) See also NEMI
3620 and USEPA, OGWDW.
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3622 USEPA OGWDW Methods, Method 515.4, rev. 1.0,
3623 "Determination of Chlorinated Acids in Drinking Water by Liquid-
3624 Liquid Microextraction, Derivatization and Fast Gas
3625 Chromatography with Electron Capture Detection", April 2000,
3626 EPA 815/B-00/001 (document file name "met515_4.pdf"),
3627 referenced in Section 611.645. (Search for "815B00001".) See
3628 also NEMI and USEPA, OGWDW.
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3630 USEPA OGWDW Methods, Method 523, ver. 1.0, "Determination
3631 of Triazine Pesticides and Other Degradates in Drinking Water by

3632 Gas Chromatography/Mass Spectrometry (GC/MS)", February
3633 2011, EPA 815/R-11/002, referenced in Section 611.645. (Search
3634 for "815R11002".) See also USEPA, OGWDW.
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3636 USEPA OGWDW Methods, Method 524.3, rev. 1.0,
3637 "Measurement of Purgeable Organic Compounds in Water by
3638 Capillary Column Gas Chromatography/Mass Spectrometry", June
3639 2009, EPA 815/B-09/009, referenced in Sections 611.381 and
3640 611.645. (Search for "815B09009".) See also NEMI and USEPA,
3641 OGWDW.
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3643 USEPA OGWDW Methods, Method 524.4, "Measurement of
3644 Purgeable Organic Compounds in Water by Gas
3645 Chromatography/Mass Spectrometry Using Nitrogen Purge Gas",
3646 May 2013, EPA 815/R-13/002, referenced in Sections 611.381 and
3647 611.645. (Search for "815R13002".) See also USEPA, OGWDW.
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3649 USEPA OGWDW Methods, Method 531.2, rev. 1.0,
3650 "Measurement of N-methylcarbamoyloximes and N-
3651 methylcarbamates in Water by Direct Aqueous Injection HPLC
3652 with Postcolumn Derivatization", September 2001, EPA 815/B-
3653 01/002 (document file name "met531_2.pdf"), referenced in
3654 Section 611.645. (Search for "815B01002".) See also NEMI and
3655 USEPA, OGWDW.
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3657 USEPA OGWDW Methods, Method 536, ver. 1.0, "Determination
3658 of Triazine Pesticides and Other Degradates in Drinking Water by
3659 Liquid Chromatography Electrospray Ionization Tandem Mass
3660 Spectrometry (LC/ESI-MS/MS)", October 2007, EPA 815/B-
3661 07/002, referenced in Section 611.645. (Search for "815R07002".)
3662 See also USEPA, OGWDW.
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3664 USEPA OGWDW Methods, Method 552.3, rev. 1.0,
3665 "Determination of Haloacetic Acids and Dalapon in Drinking
3666 Water by Liquid-Liquid Microextraction, Derivatization, and Gas
3667 Chromatography with Electron Capture Detection", July 2003,
3668 EPA 815/B-03/002, referenced in Sections 611.381 and 611.645.
3669 (Search for "815B03002".) See also NEMI and USEPA,
3670 OGWDW.
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3672 USEPA OGWDW Methods, Method 557, "Determination of
3673 Haloacetic Acids, Bromate, and Dalapon in Drinking Water by Ion
3674 Chromatography Electrospray Ionization Tandem Mass

3675 Spectrometry", September 2009, EPA 815/B-09/012, referenced in
3676 Sections 611.381, 611.382, and 611.645. (Search for
3677 "815B09012".) See also NEMI and USEPA, OGWDW.
3678
3679 USEPA OGWDW Methods, Method 1622 (01), "Cryptosporidium
3680 in Water by Filtration/IMS/FA", April 2001, EPA 821/R-01/026,
3681 referenced in Section 611.1007. (Search for "821R01026".) See
3682 also NEMI and USEPA, OGWDW.
3683
3684 USEPA OGWDW Methods, Method 1622 (05), "Method 1622:
3685 Cryptosporidium in Water by Filtration/IMS/FA", December 2005,
3686 EPA 815/R-05/001, referenced in Sections 611.1004 and
3687 611.1007. (Search for "815R05001".)
3688
3689 USEPA OGWDW Methods, Method 1623 (99), "Method 1623:
3690 Cryptosporidium and Giardia in Water by Filtration/IMS/FA",
3691 January 1999, EPA 821/R-99/006, referenced in Section 611.1007.
3692 (Search for "821R99006".) See also USEPA, OGWDW.
3693
3694 USEPA OGWDW Methods, Method 1623 (01), "Method 1623:
3695 Cryptosporidium and Giardia in Water by Filtration/IMS/FA",
3696 April 2001, EPA 821/R-01/025, referenced in Section 611.1007.
3697 (Search for "821R01025".) See also NEMI and USEPA,
3698 OGWDW.
3699
3700 USEPA OGWDW Methods, Method 1623 (05), "Method 1623:
3701 Cryptosporidium and Giardia in Water by Filtration/IMS/FA",
3702 December 2005, EPA 815/R-05/002, referenced in Sections
3703 611.1004 and 611.1007. (Search for "815R05002".) See also
3704 USEPA, OGWDW.
3705
3706 USEPA OGWDW Methods, Method 1623.1, "Method 1623.1:
3707 Cryptosporidium and Giardia in Water by Filtration/IMS/FA",
3708 January 2012, EPA 816/R-12/001, referenced in Section 611.1004.
3709 (Search for "816R12001".) See also USEPA, OGWDW.
3710
3711 USEPA Organic and Inorganic Methods, "Methods for the
3712 Determination of Organic and Inorganic Compounds in Drinking
3713 Water, Volume 1", August 2000, EPA 815/R-00/014, referenced in
3714 Sections 611.362, 611.381, 611.611, and 611.645. (Methods 300.1
3715 (rev. 1.0), 321.8 (rev. 1.0), and 515.3 (rev. 1.0) only.) (Search for
3716 "815R00014".) See also NEMI and NTIS.
3717

- 3718 USEPA Organic Methods, "Methods for the Determination of
 3719 Organic Compounds in Drinking Water", December 1988, revised
 3720 July 1991, EPA 600/4-88/039, referenced in Sections 611.645 and
 3721 611.648 (Methods 508A (rev. 1.0) and 515.1 (rev. 4.0) only)
 3722 (Search for "600488039"); "Methods for the Determination of
 3723 Organic Compounds in Drinking Water – Supplement I", July
 3724 1990, EPA 600/4-90/020, referenced in Section 611.645 (Methods
 3725 547, 550, and 550.1 only) (Search for "600490020"); "Methods for
 3726 the Determination of Organic Compounds in Drinking Water –
 3727 Supplement II", August 1992, EPA 600/R-92/129, referenced in
 3728 Sections 611.381 and 611.645 (Methods 548.1 (rev. 1.0), 552.1
 3729 (rev. 1.0), and 555 (rev. 1.0) only) (Search for "600R92129");
 3730 "Methods for the Determination of Organic Compounds in Drinking
 3731 Water – Supplement III", August 1995, EPA 600/R-95/131,
 3732 referenced in Sections 611.381 and 611.645 (Methods 502.2 (rev.
 3733 2.1), 504.1 (rev. 1.1), 505 (rev. 2.1), 506 (rev. 1.1), 507 (rev. 2.1),
 3734 508 (rev. 3.1), 508.1 (rev. 2.0), 515.2 (rev. 1.1), 524.2 (rev. 4.1),
 3735 525.2 (rev. 2.0), 531.1 (rev. 3.1), 551.1 (rev. 1.0), and 552.2 (rev.
 3736 1.0) only) (Search for "600R95131"). See also NEMI; NTIS; and
 3737 USEPA, EMSL.
 3738
 3739 USEPA Radioactivity Methods, "Prescribed Procedures for
 3740 Measurement of Radioactivity in Drinking Water", August 1980,
 3741 EPA 600/4-80/032, referenced in Section 611.720. (Methods
 3742 900.0, 901.0, 901.1, 902.0, 903.0, 903.1, 904.0, 905.0, 906.0,
 3743 908.0, 908.1 only.) (Search for "821R01026".) See also NEMI and
 3744 NTIS.
 3745
 3746 USEPA Radiochemical Analyses, "Radiochemical Analytical
 3747 Procedures for Analysis of Environmental Samples", March 1979,
 3748 Doc. No. EMSL LV 053917, referenced in Section 611.720.
 3749 (Pages 1-5, 19-32, 33-48, 65-73, 87-91, and 92-95 only.) (Search
 3750 for "EMSLLV053917".) Also available from NTIS.
 3751
 3752 USEPA Radiochemistry Procedures, "Radiochemistry Procedures
 3753 Manual", EPA 520/5-84-006, August 1984, Doc. No. PB84-
 3754 215581, referenced in Section 611.720. (Methods 00-01, 00-02,
 3755 00-07, H-02, Ra-03, Ra-04, Ra-05, Sr-04 only.) (Search for
 3756 "520584006".) See also NEMI and NTIS.
 3757
 3758 USEPA Technical Notes, "Technical Notes on Drinking Water
 3759 Methods", October 1994, EPA 600/R-94/173, referenced in

3760 Sections 611.531, 611.611, and 611.645. (Search for
3761 "821R94173".) See also NTIS.

3762
3763 BOARD NOTE: USEPA made the following assertion with
3764 regard to this reference at 40 CFR 141.23(k)(1) and 141.24(e) and
3765 (n)(11) (2014): "This document contains other analytical test
3766 procedures and approved analytical methods that remain available
3767 for compliance monitoring until July 1, 1996."
3768

3769 USEPA, OGWDW. United States Environmental Protection Agency,
3770 Office of Ground Water and Drinking Water (accessible on-line and
3771 available by download from www.epa.gov/dwanalyticalmethods/
3772 approved-drinking-water-analytical-methods).
3773

3774 USEPA OGWDW Methods, Method 302.0, "Determination of
3775 Bromate in Drinking Water Using Two-Dimensional Ion
3776 Chromatography with Suppressed Conductivity Detection",
3777 September 2009, EPA 815/B-09/014, referenced in Sections
3778 611.381 and 611.382. See also USEPA, NSCEP.
3779

3780 USEPA OGWDW Methods, Method 317.0, rev. 2.0,
3781 "Determination of Inorganic Oxyhalide Disinfection By-Products
3782 in Drinking Water Using Ion Chromatography with the Addition of
3783 a Postcolumn Reagent for Trace Bromate Analysis", USEPA, July
3784 2001, EPA 815/B-01/001, referenced in Sections 611.381 and
3785 611.382. See also USEPA, NSCEP.
3786

3787 USEPA OGWDW Methods, Method 326.0, rev. 1.0,
3788 "Determination of Inorganic Oxyhalide Disinfection By-Products
3789 in Drinking Water Using Ion Chromatography Incorporating the
3790 Addition of a Suppressor Acidified Postcolumn Reagent for Trace
3791 Bromate Analysis", USEPA, June 2002, EPA 815/R-03/007,
3792 referenced in Sections 611.381 and 611.382. See also NTIS and
3793 USEPA, NSCEP.
3794

3795 USEPA OGWDW Methods, Method 327.0, rev. 1.1,
3796 "Determination of Chlorine Dioxide and Chlorite Ion in Drinking
3797 Water Using Lissamine Green B and Horseradish Peroxidase with
3798 Detection by Visible Spectrophotometry", USEPA, May 2005,
3799 EPA 815/R-05/008, referenced in Sections 611.381 and 611.531.
3800 See also USEPA, NSCEP.
3801

3802 USEPA OGWDW Methods, Method 334.0, "Determination of
3803 Residual in Drinking Water Using an On-line Chlorine Analyzer",
3804 USEPA, August 2009, EPA 815/B-09/013, referenced in Sections
3805 611.381 and 611.531. See also USEPA, NSCEP.
3806
3807 USEPA OGWDW Methods, Method 515.4, rev. 1.0,
3808 "Determination of Chlorinated Acids in Drinking Water by Liquid-
3809 Liquid Microextraction, Derivatization and Fast Gas
3810 Chromatography with Electron Capture Detection", April 2000,
3811 EPA 815/B-00/001 (document file name "met515_4.pdf"),
3812 referenced in Section 611.645. See also NEMI and USEPA,
3813 NSCEP.
3814
3815 USEPA OGWDW Methods, Method 523, ver. 1.0, "Determination
3816 of Triazine Pesticides and Other Degradates in Drinking Water by
3817 Gas Chromatography/Mass Spectrometry (GC/MS)", June 2009,
3818 EPA 815/B-09/009, referenced in Section 611.645. See also NEMI
3819 and USEPA, NSCEP.
3820
3821 USEPA OGWDW Methods, Method 524.3, rev. 1.0,
3822 "Measurement of Purgeable Organic Compounds in Water by
3823 Capillary Column Gas Chromatography/Mass Spectrometry", June
3824 2009, EPA 815/B-09/009, referenced in Sections 611.381 and
3825 611.645. See also NEMI and USEPA, NSCEP.
3826
3827 USEPA OGWDW Methods, Method 524.4, "Measurement of
3828 Purgeable Organic Compounds in Water by Gas
3829 Chromatography/Mass Spectrometry Using Nitrogen Purge Gas",
3830 May 2013, EPA 815/R-13/002, referenced in Sections 611.381 and
3831 611.645. See also USEPA, NSCEP.
3832
3833 USEPA OGWDW Methods, Method 531.2, rev. 1.0,
3834 "Measurement of N-methylcarbamoyloximes and N-
3835 methylcarbamates in Water by Direct Aqueous Injection HPLC
3836 with Postcolumn Derivatization", September 2001, EPA 815/B-
3837 01/002 (document file name "met531_2.pdf"), referenced in
3838 Section 611.645. See also NEMI and USEPA, NSCEP.
3839
3840 USEPA OGWDW Methods, Method 536, ver. 1.0, "Determination
3841 of Triazine Pesticides and Other Degradates in Drinking Water by
3842 Liquid Chromatography Electrospray Ionization Tandem Mass
3843 Spectrometry (LC/ESI-MS/MS)", October 2007, EPA 815/B-
3844 07/002, referenced in Section 611.645. See also USEPA, NSCEP.

3845
3846 USEPA OGWDW Methods, Method 552.3, rev. 1.0,
3847 "Determination of Haloacetic Acids and Dalapon in Drinking
3848 Water by Liquid-liquid Microextraction, Derivatization, and Gas
3849 Chromatography with Electron Capture Detection", USEPA, July
3850 2003, EPA 815/B-03/002, referenced in Sections 611.381 and
3851 611.645.
3852
3853 USEPA OGWDW Methods, Method 557, "Determination of
3854 Haloacetic Acids, Bromate, and Dalapon in Drinking Water by Ion
3855 Chromatography Electrospray Ionization Tandem Mass
3856 Spectrometry", September 2009, EPA 815-B-09-012, referenced in
3857 Sections 611.381, 611.382, and 611.645. See also USEPA,
3858 NSCEP.
3859
3860 USEPA OGWDW Methods, Method 1622 (05), "Method 1622:
3861 Cryptosporidium in Water by Filtration/IMS/FA", December 2005,
3862 EPA 815/R-05/001, referenced in Sections 611.1004 and
3863 611.1007. See also USEPA, NSCEP.
3864
3865 USEPA OGWDW Methods, Method 1622 (01), "Method 1622:
3866 Cryptosporidium in Water by Filtration/IMS/FA", April 2001,
3867 EPA 821/R-01/026, referenced in Section 611.1007. See also
3868 USEPA, NSCEP.
3869
3870 USEPA OGWDW Methods, Method 1622 (99), "Method 1622:
3871 Cryptosporidium in Water by Filtration/IMS/FA", April 1999,
3872 EPA 821/R-99/001, referenced in Section 611.1007.
3873
3874 USEPA OGWDW Methods, Method 1623 (05), "Method 1623:
3875 Cryptosporidium and Giardia in Water by Filtration/IMS/FA",
3876 December 2005, EPA 815/R-05/002, referenced in Sections
3877 611.1004 and 611.1007. See also USEPA, NSCEP.
3878
3879 USEPA OGWDW Methods, Method 1623 (01), "Method 1623:
3880 Cryptosporidium and Giardia in Water by Filtration/IMS/FA",
3881 April 2001, EPA 821/R-01/025, referenced in Section 611.1007.
3882 See also USEPA, NSCEP.
3883
3884 USEPA OGWDW Methods, Method 1623 (99), "Method 1623:
3885 Cryptosporidium and Giardia in Water by Filtration/IMS/FA",
3886 January 1999, EPA 821/R-99/006, referenced in Section 611.1007.
3887 See also USEPA, NSCEP.

3888
3889 USEPA OGWDW Methods, Method 1623.1, "Method 1623.1:
3890 Cryptosporidium and Giardia in Water by Filtration/IMS/FA",
3891 January 2012, EPA 816/R-12/001, referenced in Section 611.1004.
3892 See also USEPA, NSCEP.
3893
3894 BOARD NOTE: Many of the above-listed documents available from the
3895 USEPA, Office of Ground Water and Drinking Water are also listed as
3896 available from USEPA, NSCEP and NTIS.
3897
3898 USEPA, ORD. USEPA, Office of Research and Development, National
3899 Exposure Research Laboratory, Microbiological & Chemical Exposure
3900 Assessment Research Division (accessible on-line and available by
3901 download from [www.epa.gov/water-research/epa-drinking-water-](http://www.epa.gov/water-research/epa-drinking-water-researchmethods)
3902 [researchmethods](http://www.epa.gov/water-research/epa-drinking-water-researchmethods), with the exception of USEPA NERL Method 549.2, rev.
3903 1.0).
3904
3905 USEPA NERL Method 200.5, rev. 4.2, "Determination of Trace
3906 Elements in Drinking Water by Axially Viewed Inductively
3907 Coupled Plasma – Atomic Emission Spectrometry", October 2003,
3908 EPA 600/R-06/115, referenced in Sections 611.611 and 611.612.
3909 See also USEPA, NSCEP.
3910
3911 USEPA NERL Method 415.3, rev. 1.1, "Determination of Total
3912 Organic Carbon and Specific UV Absorbance at 254 nm in Source
3913 Water and Drinking Water", February 2005, EPA 600/R-05/055,
3914 referenced in Section 611.381. See also USEPA, NSCEP.
3915
3916 USEPA NERL Method 415.3, rev. 1.2, "Determination of Total
3917 Organic Carbon and Specific UV Absorbance at 254 nm in Source
3918 Water and Drinking Water", September 2009, EPA 600/R-09/122,
3919 referenced in Section 611.381. See also NEMI and USEPA,
3920 NSCEP.
3921
3922 USEPA NERL Method 525.3, ver. 1.0, "Determination of Total
3923 Semivolatile Organic Chemicals in Drinking Water by Solid Phase
3924 Extraction and Capillary Column Gas Chromatography/Mass
3925 Spectrometry (GC/MS)", February 2012, EPA 600/R-12/010,
3926 referenced in Section 611.645. See also USEPA, NSCEP.
3927
3928 USEPA NERL Method 549.2, rev. 1.0, "Determination of Diquat
3929 and Paraquat in Drinking Water by Liquid-Solid Extraction and
3930 High Performance Liquid Chromatography with Ultraviolet

- 3931 Detection", June 1997, referenced in Section 611.645. See also
3932 NEMI.
3933
3934 USEPA, Water Resource Center (RC-4100T), 1200 Pennsylvania Avenue,
3935 NW, Washington, DC 20460:
3936
3937 E*Colite Test, "Charm E*Colite Presence/Absence Test for
3938 Detection and Identification of Coliform Bacteria and Escherichia
3939 coli in Drinking Water", January 9, 1998, referenced in Sections
3940 611.802 and 611.1052. See also Charm Sciences, Inc.
3941
3942 m-ColiBlue24 Test, "Total Coliforms and E. coli Membrane
3943 Filtration Method with m-ColiBlue24® Broth", Method No.
3944 10029, rev. 2, August 17, 1999, referenced in Sections 611.802 and
3945 611.1052. See also The Hach Company.
3946
3947 USEPA Method 1600, "Method 1600: Enterococci in Water by
3948 Membrane Filtration Using Membrane-Enterococcus Indoxyl-b-D-
3949 Glucoside Agar (mEI)", September 2002, EPA 821/R-02/022 is an
3950 approved variation of Standard Methods, Method 9230 C, "Fecal
3951 Streptococcus and Enterococcus Groups, Membrane Filter
3952 Techniques" (which has not itself been approved for use by
3953 USEPA) (accessible on-line and available by download from
3954 <http://www.epa.gov/nerlcwww/1600sp02.pdf>), referenced in
3955 Section 611.802. See also USEPA, NSCEP.
3956
3957 USEPA Method 1601, "Method 1601: Male-specific (F⁺) and
3958 Somatic Coliphage in Water by Two-step Enrichment Procedure",
3959 April 2001, EPA 821/R-01/030 (accessible on-line and available
3960 by download from <http://www.epa.gov/nerlcwww/1601ap01.pdf>),
3961 referenced in Section 611.802. See also USEPA, NSCEP.
3962
3963 USEPA Method 1602, "Method 1602: Male-specific (F⁺) and
3964 Somatic Coliphage in Water by Single Agar Layer (SAL)
3965 Procedure", April 2001, EPA 821/R-01/029 (accessible on-line and
3966 available by download from
3967 <http://www.epa.gov/nerlcwww/1602ap01.pdf>), referenced in
3968 Section 611.802. See also USEPA, NSCEP.
3969
3970 USEPA Method 1604, "Method 1604: Total Coliforms and
3971 Escherichia coli in Water by Membrane Filtration Using a
3972 Simultaneous Detection Technique (MI Medium)", September
3973 2002, EPA 821/R-02/024 (accessible on-line and available by

- 3974 download from <http://www.epa.gov/nerlcwww/1604sp02.pdf>),
3975 referenced in Sections 611.802 and 611.1052. See also USEPA,
3976 NSCEP.
3977
3978 USGS. United States Geological Survey, Federal Center, Box 25286,
3979 Denver, CO 80225-0425.
3980
3981 Open File Report 93-125, method available upon request by
3982 method number from "Methods for Analysis by the U.S.
3983 Geological Survey National Water Quality Laboratory –
3984 Determination of Inorganic and Organic Constituents in Water and
3985 Fluvial Sediments", 1993. Available on-line as a digital document
3986 at <https://pubs.usgs.gov/of/1993/0125/report.pdf>.
3987
3988 USGS Method I-2601-90, "Phosphorus, orthophosphate,
3989 colorimetry, phosphomolybdate, automated segment-flow,"
3990 referenced in Section 611.611.
3991
3992 USGS Techniques of Water-Resource Investigation: 05-A1,
3993 methods available upon request by method number from Book 5,
3994 Chapter A-1, "Methods for Determination of Inorganic Substances
3995 in Water and Fluvial Sediments", 3rd ed., 1989. Available on-line
3996 as a digital document at [https://pubs.usgs.gov/twri/twri5-](https://pubs.usgs.gov/twri/twri5-a1/pdf/TWRI_5-A1.pdf)
3997 [a1/pdf/TWRI_5-A1.pdf](https://pubs.usgs.gov/twri/twri5-a1/pdf/TWRI_5-A1.pdf).
3998
3999 USGS Method I-1030-85, "Alkalinity, electrometric
4000 titration", I-1030-85, referenced in Section 611.611.
4001
4002 USGS Method I-1601-85, "Phosphorus, orthophosphate,
4003 colorimetric, phosphomolybdate", I-1601-85, referenced in
4004 Section 611.611.
4005
4006 USGS Method I-1700-85, "Silica, colorimetric, molybdate
4007 blue", I-1700-85, referenced in Section 611.611.
4008
4009 USGS Method I-2598-85, "Phosphorus, orthophosphate,
4010 colorimetric, phosphomolybdate, automated-discrete", I-
4011 2598-85, referenced in Section 611.611.
4012
4013 USGS Method I-2700-85, "Silica, colorimetric, molybdate
4014 blue, automated-segmented flow", I-2700-85, referenced in
4015 Section 611.611.
4016

4017 USGS Method I-3300-85, "Cyanide, colorimetric, pyridine-
4018 pyrazolone", I-3300-85, referenced in Section 611.611.
4019
4020 USGS Techniques of Water-Resource Investigation: 05-A5,
4021 methods available upon request by method number from Book 5,
4022 Chapter A-5, "Methods for Determination of Radioactive
4023 Substances in Water and Fluvial Sediments", 1977. Available on-
4024 line as a digital document at
4025 https://pubs.usgs.gov/twri/twri5a5/pdf/TWRI_5-A5.pdf.
4026
4027 USGS Method R-1110-76, "Cesium-137 and cesium-134,
4028 dissolved. Inorganic ion-exchange method – gamma
4029 counting", R-1110-76, referenced in Section 611.720.
4030
4031 USGS Method R-1111-76, "Radiocesium, dissolved, as
4032 cesium-137. Inorganic ion-exchange method – beta
4033 counting". R-1111-76, referenced in Section 611.720.
4034
4035 USGS Method R-1120-76, "Gross alpha and beta
4036 radioactivity, dissolved and suspended", R-1120-76,
4037 referenced in Section 611.720.
4038
4039 USGS Method R-1140-76, "Radium, dissolved, as radium-
4040 226. Precipitation method", R-1140-76, referenced in
4041 Section 611.720.
4042
4043 USGS Method R-1141-76, "Radium-226, dissolved. Radon
4044 emanation method", R-1141-76, referenced in Section
4045 611.720.
4046
4047 USGS Method R-1142-76, "Radium-228, dissolved.
4048 Determination by separation and counting of actinium-
4049 228", R-1142-76, referenced in Section 611.720.
4050
4051 USGS Method R-1160-76, "Strontium-90, dissolved.
4052 Chemical separation and precipitation method", R-1160-76,
4053 referenced in Section 611.720.
4054
4055 USGS Method R-1171-76, "Tritium. Liquid scintillation,
4056 Denver lab method – gamma counting", R-1171-76,
4057 referenced in Section 611.720.
4058
4059 USGS Method R-1180-76, "Uranium, dissolved.

4060 Fluorometric method – direct", R-1180-76, referenced in
4061 Section 611.720.

4062
4063 USGS Method R-1181-76, "Uranium, dissolved.
4064 Fluorometric method – extraction procedure", R-1181-76,
4065 referenced in Section 611.720.

4066
4067 USGS Method R-1182-76, "Uranium, dissolved, isotopic
4068 ratios. Alpha spectrometry – chemical separation", R-1182-
4069 76, referenced in Section 611.720.

4070
4071 BOARD NOTE: USGS methods are freely available for download
4072 in an electronic format from the USGS Publications Warehouse, at
4073 pubs.er.usgs.gov/. Sections 611.611 and 611.720 do not
4074 distinguish the volume in which each USGS method appears. The
4075 distinction as to which volume where a particular method appears
4076 is made in this incorporation by reference.

4077
4078 ~~Veolia Water Solutions and Technologies, Suite 4697, Biosciences
4079 Complex, 116 Barrie Street, Kingston, Ontario, Canada K7L 3N6.~~

4080
4081 ~~"Tecta EC/TC P-A Test, "TECTA™ EC/TC medium and the
4082 TECTA™ Instrument: a Presence/Absence Method for
4083 Simultaneous Detection of Total Coliforms and Escherichia coli
4084 (E. coli) in Drinking Water", April 2014, referenced in Sections
4085 611.802 and 611.1052.~~

4086
4087 ~~Waters Corporation, Technical Services Division, 34 Maple St., Milford,
4088 MA 01757 (800-252-4752 or 508-478-2000, www.waters.com).~~

4089
4090 ~~Waters Method B-1011, "Waters Test Method for Determination
4091 of Nitrite/Nitrate in Water Using Single Column Ion
4092 Chromatography", Method B-1011, August 1987, referenced in
4093 Section 611.611.~~

4094
4095 c) The Board incorporates the following federal regulations by reference:

4096
4097 40 CFR 3.3 (2017)(2016) (What Definitions Are Applicable to This
4098 Part?), referenced in Section 611.105.

4099
4100 40 CFR 3.10 (2017)(2016) (What Are the Requirements for Electronic
4101 Reporting to EPA?), referenced in Section 611.105.

4102

4103 40 CFR 3.2000 (2017)(2016) (What Are the Requirements Authorized
4104 State, Tribe, and Local Programs' Reporting Systems Must Meet?),
4105 referenced in Section 611.105.
4106

4107 40 CFR 136.3(a) (2017)(2016), referenced in Section 611.1004.
4108

4109 Appendix B to 40 CFR 136 (2017)(2016), referenced in Sections 611.359,
4110 611.609, and 611.646.
4111

4112 40 CFR 142.20(b)(1) (2017)(2016), referenced in Section 611.112.
4113

4114 Subpart G of 40 CFR 142 (2017)(2016), referenced in Section 611.113.
4115

4116 d) This Part incorporates no later amendments or editions.
4117

4118 (Source: Amended at 42 Ill. Reg. _____, effective _____)
4119

4120 SUBPART I: DISINFECTANT RESIDUALS, DISINFECTION
4121 BYPRODUCTS, AND DISINFECTION BYPRODUCT PRECURSORS
4122

4123 **Section 611.381 Analytical Requirements**
4124

4125 a) A supplier must use only the analytical methods specified in this Section, each of
4126 which is incorporated by reference in Section 611.102, or alternative methods
4127 approved by the Agency pursuant to Section 611.480 to demonstrate compliance
4128 with the requirements of this Subpart I and with the requirements of Subparts W
4129 and Y.
4130

4131 b) Disinfection byproducts (DBPs).
4132

4133 1) A supplier must measure disinfection byproducts (DBPs) by the appropriate
4134 of the following methods:
4135

4136 A) TTHM:
4137

4138 i) By purge and trap, gas chromatography, electrolytic
4139 conductivity detector, and photoionization detector:
4140 USEPA Organic Methods, Method 502.2 (rev. 2.1). If
4141 TTHMs are the only analytes being measured in the
4142 sample, then a photoionization detector is not required.
4143

4144 ii) By purge and trap, gas chromatography-mass spectrometer:
4145 USEPA Organic Methods, Method 524.2 (rev. 4.1).

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- iii) By liquid-liquid extraction, gas chromatography, electron capture detector: USEPA Organic Methods, Method 551.1 (rev. 1.0).
- iv) By purge and trap, gas chromatography-mass spectrometry: USEPA OGWDW Methods, Method 524.3 (rev. 1.0) and 524.4.

BOARD NOTE: USEPA added USEPA OGWDW Methods, Method 524.3 (rev. 1.0) as an approved alternative method on August 3, 2009 (at 74 Fed. Reg. 38348). USEPA added USEPA OGWDW Methods, Method 524.4 as approved alternative methods on May 31, 2013 (at 78 Fed. Reg. 32558).

B) HAA5:

- i) By liquid-liquid extraction (diazomethane), gas chromatography, electron capture detector: Standard Methods, 19th, 20th, 21st, or 22nd ed., Method 6251 B.
- ii) By solid phase extractor (acidic methanol), gas chromatography, electron capture detector: USEPA Organic Methods, Method 552.1 (rev. 1.0).
- iii) By liquid-liquid extraction (acidic methanol), gas chromatography, electron capture detector: USEPA Organic Methods, Method 552.2 (rev. 1.0) or USEPA OGWDW Methods, Method 552.3 (rev. 1.0).
- iv) By ion chromatography, electrospray ionization, tandem mass spectrometry: USEPA OGWDW Methods, Method 557.
- v) Two-dimensional ion chromatography (IC) with suppressed conductivity detection: Thermo-Fisher Method 557.1.

BOARD NOTE: USEPA added Standard Methods, 21st ed., Method 6251 B as an approved alternative method on June 3, 2008 (at 73 Fed. Reg. 31616). USEPA added USEPA OGWDW Methods, Method 557 as an approved alternative method on November 10, 2009 (at 74 Fed. Reg. 57908). USEPA added Standard Methods, 22nd ed., Method 6251 B as an approved alternative method on May 31, 2013 (at 78 Fed. Reg. 32558).

4190 USEPA added Standard Methods Online, Method 6251 B-07 as an
 4191 approved alternative method on June 19, 2014 (at 79 Fed. Reg.
 4192 35081). USEPA added Thermo-Fisher Method 557.1 as an
 4193 approved alternative method on July 27, 2017 (at 82 Fed. Reg.
 4194 34861). Because Standard Methods, 22nd ed., Method 6251 B is
 4195 the same version as Standard Methods Online, Method 6251 B-07,
 4196 the Board has not listed the Standard Methods Online versions
 4197 separately.
 4198

4199 C) Bromate:

- 4200
- 4201 i) By ion chromatography: USEPA Organic and Inorganic
- 4202 Methods, Method 300.1 (rev. 1.0) or ASTM Method
- 4203 D6581-00.
- 4204
- 4205 ii) By ion chromatography and post-column reaction: USEPA
- 4206 OGWDW Methods, Method 317.0 (rev. 2.0) or 326.0 (rev.
- 4207 1.0).
- 4208
- 4209 iii) By inductively coupled plasma-mass spectrometer:
- 4210 USEPA Organic and Inorganic Methods, Method 321.8
- 4211 (rev. 1.0).
- 4212
- 4213 iv) By two-dimensional ion chromatography: USEPA
- 4214 OGWDW Methods, Method 302.0.
- 4215
- 4216 v) By ion chromatography, electrospray ionization, tandem
- 4217 mass spectrometry: USEPA OGWDW Methods, Method
- 4218 557.
- 4219
- 4220 vi) By chemically suppressed chromatography: ASTM
- 4221 Method D6581-08 A.
- 4222
- 4223 vii) By electrolytically suppressed chromatography: ASTM
- 4224 Method D6581-08 B.
- 4225

4226 BOARD NOTE: Ion chromatography and post column reaction or
 4227 inductively coupled plasma-mass spectrometry must be used for
 4228 monitoring of bromate for purposes of demonstrating eligibility of
 4229 reduced monitoring, as prescribed in Section 611.382(b)(3)(B).
 4230 For inductively coupled plasma-mass spectrometry, samples must
 4231 be preserved at the time of sampling with 50 mg ethylenediamine

4232 (EDA) per liter of sample, and the samples must be analyzed
4233 within 28 days.

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4235 BOARD NOTE: USEPA added USEPA OGWDW Methods,
4236 Methods 302.0 and 557 and ASTM Methods D6581-08 A and B as
4237 approved alternative methods on November 10, 2009 (at 74 Fed.
4238 Reg. 57908).

4239
4240 D) Chlorite:

- 4241
4242 i) By amperometric titration for daily monitoring pursuant to
4243 Section 611.382(b)(2)(A)(i): Standard Methods, 19th, 21st,
4244 or 22nd ed., Method 4500-ClO₂ E.
4245
4246 ii) By amperometric sensor for daily monitoring pursuant to
4247 Section 611.382(b)(2)(A)(i): ChlordioX Plus Test.
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4249 iii) By spectrophotometry: USEPA OGWDW Methods,
4250 Method 327.0 (rev. 1.1).
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4252 iv) By ion chromatography: USEPA Environmental Inorganic
4253 Methods, Method 300.0 (rev. 2.1); USEPA Organic and
4254 Inorganic Methods, Method 300.1 (rev. 1.0); USEPA
4255 OGWDW Methods, Method 317.0 (rev. 2.0), or 326.0 (rev.
4256 1.0); or ASTM Method D6581-00.
4257
4258 v) By chemically suppressed chromatography: ASTM
4259 Method D6581-08 A.
4260
4261 vi) By electrolytically suppressed chromatography: ASTM
4262 Method D6581-08 B.
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4264 BOARD NOTE: USEPA added Standard Methods, 21st ed.,
4265 Method 4500-ClO₂ E as an approved alternative method on June 3,
4266 2008 (at 73 Fed. Reg. 31616). USEPA added ASTM Methods
4267 D6581-08 A and B as approved alternative methods on November
4268 10, 2009 (at 74 Fed. Reg. 57908). USEPA added Standard
4269 Methods, 22nd ed., Method 4500-ClO₂ E as an approved alternative
4270 method on June 21, 2013 (at 78 Fed. Reg. 37463). USEPA added
4271 ChlordioX Plus Test as an approved alternative method on June
4272 19, 2014 (at 79 Fed. Reg. 35081).
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BOARD NOTE: Amperometric titration or spectrophotometry may be used for routine daily monitoring of chlorite at the entrance to the distribution system, as prescribed in Section 611.382(b)(2)(A)(i). Ion chromatography must be used for routine monthly monitoring of chlorite and additional monitoring of chlorite in the distribution system, as prescribed in Section 611.382(b)(2)(A)(ii) and (b)(2)(B).

- 2) Analyses under this Section for DBPs must be conducted by a certified laboratory in one of the categories listed in Section 611.490(a) except as specified under subsection (b)(3). To receive certification to conduct analyses for the DBP contaminants listed in Sections 611.312 and 611.381 and Subparts W and Y, the laboratory must fulfill the requirements of subsections (b)(2)(A), (b)(2)(C), and (b)(2)(D).
- A) The laboratory must analyze performance evaluation (PE) samples that are acceptable to USEPA or the Agency at least once during each consecutive 12-month period by each method for which the laboratory desires certification.
 - B) This subsection corresponds with 40 CFR 141.131(b)(2)(ii), which has expired by its own terms. This statement maintains structural consistency with the corresponding federal rule.
 - C) The laboratory must achieve quantitative results on the PE sample analyses that are within the acceptance limits set forth in subsections (b)(2)(C)(i) through (b)(2)(B)(xi), subject to the conditions of subsections (b)(2)(C)(xii) and (b)(2)(C)(xiii):
 - i) Chloroform (a THM): $\pm 20\%$ 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;

- 4317 viii) Monobromoacetic Acid (an HAA5): $\pm 40\%$ of true value;
- 4318
- 4319 ix) Dibromoacetic Acid (an HAA5): $\pm 40\%$ of true value;
- 4320
- 4321 x) Chlorite: $\pm 30\%$ of true value; and
- 4322
- 4323 xi) Bromate: $\pm 30\%$ of true value.
- 4324
- 4325 xii) The laboratory must meet all four of the individual THM
- 4326 acceptance limits set forth in subsections (b)(2)(B)(i)
- 4327 through (b)(2)(B)(iv) in order to successfully pass a PE
- 4328 sample for TTHM.
- 4329
- 4330 xiii) The laboratory must meet the acceptance limits for four out
- 4331 of the five HAA5 compounds set forth in subsections
- 4332 (b)(2)(B)(v) through (b)(2)(B)(ix) in order to successfully
- 4333 pass a PE sample for HAA5.
- 4334
- 4335 D) The laboratory must report quantitative data for concentrations at
- 4336 least as low as the minimum reporting levels (MRLs) listed in
- 4337 subsection (b)(2)(D)(i) through (b)(2)(D)(xi), subject to the
- 4338 limitations of subsections (b)(2)(D)(xii) and (b)(2)(D)(xiii), for all
- 4339 DBP samples analyzed for compliance with Sections 611.312 and
- 4340 611.385 and Subparts W and Y:
- 4341
- 4342 i) Chloroform (a THM): 0.0010 mg/l;
- 4343
- 4344 ii) Bromodichloromethane (a THM): 0.0010 mg/l;
- 4345
- 4346 iii) Dibromochloromethane (a THM): 0.0010 mg/l;
- 4347
- 4348 iv) Bromoform (a THM): 0.0010 mg/l;
- 4349
- 4350 v) Monochloroacetic Acid (an HAA5): 0.0020 mg/l;
- 4351
- 4352 vi) Dichloroacetic Acid (an HAA5): 0.0010 mg/l;
- 4353
- 4354 vii) Trichloroacetic Acid (an HAA5): 0.0010 mg/l;
- 4355
- 4356 viii) Monobromoacetic Acid (an HAA5): 0.0010 mg/l;
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- 4358 ix) Dibromoacetic Acid (an HAA5): 0.0010 mg/l;
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- x) Chlorite: 0.020 mg/ℓ, applicable to monitoring as required by Section 611.382(b)(2)(A)(ii) and (b)(2)(B); and
 - xi) Bromate: 0.0050, or 0.0010 mg/ℓ if the laboratory uses USEPA OGWDW Methods, Method 317.0 or 326.0 or USEPA Organic and Inorganic Methods, Method 321.8.
 - xii) The calibration curve must encompass the regulatory MRL concentration. Data may be reported for concentrations lower than the regulatory MRL as long as the precision and accuracy criteria are met by analyzing an MRL check standard at the lowest reporting limit chosen by the laboratory. The laboratory must verify the accuracy of the calibration curve at the MRL concentration by analyzing an MRL check standard with a concentration less than or equal to 110% of the MRL with each batch of samples. The measured concentration for the MRL check standard must be ±50% of the expected value, if any field sample in the batch has a concentration less than five times the regulatory MRL. Method requirements to analyze higher concentration check standards and meet tighter acceptance criteria for them must be met in addition to the MRL check standard requirement.
 - xiii) When adding the individual trihalomethane or haloacetic acid concentrations, for the compounds listed in subsections (b)(2)(D)(v) through (b)(2)(D)(ix), to calculate the TTHM or HAA5 concentrations, respectively, a zero is used for any analytical result that is less than the MRL concentration for that DBP, unless otherwise specified by the Agency.
- 3) A party approved by USEPA or the Agency must measure daily chlorite samples at the entrance to the distribution system.
- c) Disinfectant residuals.
- 1) A supplier must measure residual disinfectant concentrations for free chlorine, combined chlorine (chloramines), and chlorine dioxide by the appropriate of the methods listed in subsections (c)(1)(A) through (c)(1)(D), subject to the provisions of subsection (c)(1)(E):
 - A) Free Chlorine:

- 4404 i) Amperometric titration: Standard Methods, 19th, 20th, 21st,
4405 or 22nd ed., Method 4500-Cl D, or ASTM Method D1253-
4406 86, D1253-96, D1253-03, D1253-08, or D1253-14;
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- 4408 ii) DPD ferrous titration: Standard Methods, 19th, 20th, 21st, or
4409 22nd ed., Method 4500-Cl F;
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- 4411 iii) DPD colorimetric: Standard Methods, 19th, 20th, 21st, or
4412 22nd ed., Method 4500-Cl G or Hach Method 10260;
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- 4414 iv) Syringaldazine (FACTS): Standard Methods, 19th, 20th,
4415 21st, or 22nd ed., Method 4500-Cl H;
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- 4417 v) Test strips: ITS Method D99-003 if approved by the
4418 Agency pursuant to subsection (c)(2);
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- 4420 vi) Amperometric sensor: Palintest ChloroSense;
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- 4422 vii) On-line chlorine analyzer: USEPA OGWDW Methods,
4423 Method 334.0; or
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- 4425 viii) Indenophenol colorimetric: Hach Method 10241.
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BOARD NOTE: USEPA added Standard Methods, 21st ed.,
4427 Methods 4500-Cl D, F, G, and H as approved alternative methods
4428 on June 3, 2008 (at 73 Fed. Reg. 31616). USEPA added ASTM
4429 Method D1253-08, USEPA OGWDW Methods, Method 334.0,
4430 and Palintest ChloroSense as approved alternative methods on
4431 November 10, 2009 (at 74 Fed. Reg. 57908). USEPA added
4432 Standard Methods, 22nd ed., Methods 4500-Cl D, F, G, and H as
4433 approved alternative methods on June 21, 2013 (at 78 Fed. Reg.
4434 37463). USEPA added Hach Method 10260 as an approved
4435 alternative method on June 19, 2014 (at 79 Fed. Reg. 35081).
4436 USEPA added ASTM Method D1253-14 and Hach Method 10241
4437 as approved alternative methods on July 19, 2016 (at 81 Fed. Reg.
4438 46839).
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4440 B) Combined Chlorine:

- 4441 i) Amperometric titration: Standard Methods, 19th, 20th, 21st,
4442 or 22nd ed., Method 4500-Cl D, or ASTM Method D1253-
4443 86, D1253-96, D1253-03, D1253-08, or D1253-14;
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- 4447 ii) DPD ferrous titration: Standard Methods, 19th, 20th, 21st, or
- 4448 22nd ed., Method 4500-Cl F; or
- 4449
- 4450 iii) DPD colorimetric: Standard Methods, 19th, 20th, 21st, or
- 4451 22nd ed., Method 4500-Cl G or Hach Method 10260.
- 4452

BOARD NOTE: USEPA added Standard Methods, Methods 4500-Cl D, F, and G as approved alternative methods on June 3, 2008 (at 73 Fed. Reg. 31616). USEPA added ASTM Method D1253-08 as an approved alternative method on November 10, 2009 (at 74 Fed. Reg. 57908). USEPA added Standard Methods, 22nd ed., Methods 4500-Cl D, F, and G as approved alternative methods on June 21, 2013 (at 78 Fed. Reg. 37463). USEPA added Hach Method 10260 as an approved alternative method on June 19, 2014 (at 79 Fed. Reg. 35081). USEPA added ASTM Method D1253-14 as an approved alternative method on July 19, 2016 (at 81 Fed. Reg. 46839).

C) Total Chlorine:

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- 4466
- 4467 i) Amperometric titration: Standard Methods, 19th, 20th, 21st,
- 4468 or 22nd ed., Method 4500-Cl D, or ASTM Method D1253-
- 4469 86, D1253-96, D1253-03, D1253-08, or D1253-14;
- 4470
- 4471 ii) Low-level amperometric titration: Standard Methods, 19th,
- 4472 20th, 21st, or 22nd ed., Method 4500-Cl E;
- 4473
- 4474 iii) DPD ferrous titration: Standard Methods, 19th, 20th, 21st, or
- 4475 22nd ed., Method 4500-Cl F;
- 4476
- 4477 iv) DPD colorimetric: Standard Methods, 19th, 20th, 21st, or
- 4478 22nd ed., Method 4500-Cl G or Hach Method 10260;
- 4479
- 4480 v) Iodometric electrode: Standard Methods, 19th, 20th, 21st, or
- 4481 22nd ed., Method 4500-Cl I;
- 4482
- 4483 vi) Amperometric sensor: Palintest ChloroSense; or
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- 4485 vii) On-line chlorine analyzer: USEPA OGWDW Methods,
- 4486 Method 334.0.
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BOARD NOTE: USEPA added Standard Methods, Methods 4500-Cl D, E, F, G, and I as approved alternative methods on June

3, 2008 (at 73 Fed. Reg. 31616). USEPA added ASTM Method D1253-08, USEPA OGWDW Methods, Method 334.0, and Palintest ChloroSense as approved alternative methods on November 10, 2009 (at 74 Fed. Reg. 57908). USEPA added Standard Methods, 22nd ed., Methods 4500-Cl D, E, F, G, and I as approved alternative methods on June 21, 2013 (at 78 Fed. Reg. 37463). USEPA added Hach Method 10260 as an approved alternative method on June 19, 2014 (at 79 Fed. Reg. 35081). USEPA added ASTM Method D1253-14 as an approved alternative method on July 19, 2016 (at 81 Fed. Reg. 46839).

D) Chlorine Dioxide:

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

BOARD NOTE: USEPA added Standard Methods, 21st ed., Methods 4500-ClO₂ D and E as approved alternative methods on June 3, 2008 (at 73 Fed. Reg. 31616). USEPA added Standard Methods, 22nd ed., Method 4500-ClO₂ E as an approved alternative method on June 21, 2013 (at 78 Fed. Reg. 37463). USEPA added ChlordioX Plus Test as an approved alternative method on June 19, 2014 (at 79 Fed. Reg. 35081).

E) The methods listed are approved for measuring the specified disinfectant residual. The supplier may measure free chlorine or total chlorine for demonstrating compliance with the chlorine MRDL and combined chlorine, or total chlorine may be measured for demonstrating compliance with the chloramine MRDL.

2) Alternative methods available only upon specific approval by the Agency.

A) Test strips: ITS Method D99-003.

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BOARD NOTE: USEPA added ITS Method D99-003 as an approved alternative method on June 3, 2008 (at 73 Fed. Reg. 31616), contingent upon specific state approval. The Board has opted to provide that the Agency can grant such approvals on a case-by-case basis using the SEP mechanism.

B) If approved by the Agency, by an SEP issued pursuant to Section 611.110, a supplier may also measure residual disinfectant concentrations for chlorine, chloramines, and chlorine dioxide by using DPD colorimetric test kits.

3) A party approved by USEPA or the Agency must measure residual disinfectant concentration.

d) A supplier required to analyze parameters not included in subsections (b) and (c) must use the methods listed in this subsection (d). A party approved by USEPA or the Agency must measure the following parameters:

1) Alkalinity. All methods allowed in Section 611.611(a)(21) for measuring alkalinity.

2) Bromide:

A) USEPA Inorganic Methods, Method 300.0 (rev. 2.1);

B) USEPA Organic and Inorganic Methods, Method 300.1 (rev. 1.0);

C) USEPA OGWDW Methods, Method 317.0 (rev. 2.0) or Method 326.0 (rev. 1.0); or

D) ASTM Method D6581-00.

3) Total Organic Carbon (TOC), by any of the methods listed in subsection (d)(3)(A)(i), (d)(3)(A)(ii), (d)(3)(A)(iii), or (d)(3)(B), subject to the limitations of subsection (d)(3)(C):

A) High-temperature combustion:

i) Standard Methods, 19th (Supplement), 20th, 21st, or 22nd ed., Method 5310 B; or

ii) USEPA NERL Method 415.3 (rev. 1.1) or USEPA NERL Method 415.3 (rev. 1.2).

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- B) Persulfate-ultraviolet or heated-persulfate oxidation:
 - i) Standard Methods, 19th (Supplement), 20th, 21st, or 22nd ed., Method 5310 C; or
 - ii) USEPA NERL Method 415.3 (rev. 1.1) or USEPA NERL Method 415.3 (rev. 1.2); or
 - iii) Hach Method 10267.
 - C) Wet oxidation method:
 - i) Standard Methods, 19th (Supplement), 20th, 21st, or 22nd ed., Method 5310 D; or
 - ii) USEPA NERL Method 415.3 (rev. 1.1) or USEPA NERL Method 415.3 (rev. 1.2).
 - D) Ozone oxidation: Hach Method 10261.
 - E) Inorganic carbon must be removed from the samples prior to analysis. TOC samples may not be filtered prior to analysis. TOC samples must be acidified at the time of sample collection to achieve pH less than or equal to 2 with minimal addition of the acid specified in the method or by the instrument manufacturer. Acidified TOC samples must be analyzed within 28 days.
- BOARD NOTE: USEPA added Standard Methods, 21st ed., Methods 5310 B, C, and D as approved alternative methods on June 3, 2008 (at 73 Fed. Reg. 31616). USEPA added USEPA NERL Method 415.3 (rev. 1.2) as an approved alternative method on November 10, 2009 (at 74 Fed. Reg. 57908). USEPA added Standard Methods, 22nd ed., Methods 5310 B, C, and D as approved alternative methods on June 21, 2013 (at 78 Fed. Reg. 37463). USEPA added Hach Method 10267 as an approved alternative method on July 19, 2016 (at 81 Fed. Reg. 46839).
- 4) Specific Ultraviolet Absorbance (SUVA). SUVA is equal to the UV absorption at 254 nm (UV_{254}) (measured in m^{-1}) divided by the dissolved organic carbon (DOC) concentration (measured as mg/ℓ). In order to determine SUVA, it is necessary to separately measure UV_{254} and DOC. When determining SUVA, a supplier must use the methods stipulated in subsection (d)(4)(A) to measure DOC and the method stipulated in subsection (d)(4)(B) to measure UV_{254} . SUVA must be determined on

4619 water prior to the addition of disinfectants/oxidants by the supplier. DOC
 4620 and UV₂₅₄ samples used to determine a SUVA value must be taken at the
 4621 same time and at the same location.
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4623 A) Dissolved Organic Carbon (DOC). Prior to analysis, DOC samples
 4624 must be filtered through the 0.45 µm pore-diameter filter as soon as
 4625 practical after sampling, not to exceed 48 hours. After filtration,
 4626 DOC samples must be acidified to achieve pH less than or equal to
 4627 2 with minimal addition of the acid specified in the method or by
 4628 the instrument manufacturer. Acidified DOC samples must be
 4629 analyzed within 28 days after sample collection. Inorganic carbon
 4630 must be removed from the samples prior to analysis. Water passed
 4631 through the filter prior to filtration of the sample must serve as the
 4632 filtered blank. This filtered blank must be analyzed using
 4633 procedures identical to those used for analysis of the samples and
 4634 must meet the following standards: DOC less than 0.5 mg/ℓ.
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- 4636 i) High-Temperature Combustion Method: Standard
 4637 Methods, 19th (Supplement), 20th, 21st, or 22nd ed., Method
 4638 5310 B or USEPA NERL Methods 415.3 (rev. 1.1) or
 4639 415.3 (rev. 1.2).
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- 4641 ii) Persulfate-Ultraviolet or Heated-Persulfate Oxidation
 4642 Method, Standard Methods, 19th (Supplement), 20th, 21st, or
 4643 22nd ed., Method 5310 C or USEPA NERL Methods 415.3
 4644 (rev. 1.1) or 415.3 (rev. 1.2).
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- 4646 iii) Wet-Oxidation Method: Standard Methods, 19th
 4647 (Supplement), 20th, 21st, or 22nd ed., Method 5310 D or
 4648 USEPA NERL Methods 415.3 (rev. 1.1) or 415.3 (rev. 1.2).
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4650 BOARD NOTE: USEPA added Standard Methods, Methods 5310
 4651 B, C, and D as approved alternative methods on June 3, 2008 (at
 4652 73 Fed. Reg. 31616). USEPA added USEPA NERL Method 415.3
 4653 (rev. 1.2) as an approved alternative method on November 10,
 4654 2009 (at 74 Fed. Reg. 57908). USEPA added Standard Methods,
 4655 22nd ed., Methods 5310 B, C, and D as approved alternative
 4656 methods on June 21, 2013 (at 78 Fed. Reg. 37463).
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4658 B) Ultraviolet Absorption at 254 nm (UV₂₅₄) by spectrometry:
 4659 Standard Methods, 19th, 20th, 21st, or 22nd ed., Method 5910 B or
 4660 USEPA NERL Method 415.3 (rev. 1.1) or 415.3 (rev. 1.2). UV
 4661 absorption must be measured at 253.7 nm (may be rounded off to

254 nm). Prior to analysis, UV₂₅₄ samples must be filtered through a 0.45 µm pore-diameter filter. The pH of UV₂₅₄ samples may not be adjusted. Samples must be analyzed as soon as practical after sampling, not to exceed 48 hours; and

BOARD NOTE: USEPA added Standard Methods, 21st ed., Method 5910 B as an approved alternative method on June 3, 2008 (at 73 Fed. Reg. 31616). USEPA added USEPA NERL Method 415.3 (rev. 1.2) as an approved alternative method on November 10, 2009 (at 74 Fed. Reg. 57908). USEPA added Standard Methods, 22nd ed., Method 5910 B as an approved alternative method on June 21, 2013 (at 78 Fed. Reg. 37463). USEPA added Standard Methods Online, Method 5910 B-11 as an approved alternative method on June 19, 2014 (at 79 Fed. Reg. 35081). Because Standard Methods, 22nd ed., Methods 5910 B is the same version as Standard Methods Online, Method 5910 B-11, the Board has not listed the Standard Methods Online versions separately.

5) pH. All methods allowed in Section 611.611(a)(17) for measuring pH.

6) Magnesium. All methods allowed in Section 611.611(a) for measuring magnesium.

BOARD NOTE: Derived from 40 CFR 141.131 and appendix A to 40 CFR 141 (2017)(2016).

(Source: Amended at 42 Ill. Reg. _____, effective _____)

SUBPART L: MICROBIOLOGICAL MONITORING AND ANALYTICAL REQUIREMENTS

Section 611.531 Analytical Requirements

The analytical methods specified in this Section, or alternative methods approved by the Agency pursuant to Section 611.480, must be used to demonstrate compliance with the requirements of only 611.Subpart B. Measurements for pH, temperature, turbidity, and RDCs must be conducted under the supervision of a certified operator. Measurements for total coliforms, fecal coliforms and HPC must be conducted by a certified laboratory in one of the categories listed in Section 611.490(a). The following procedures must be performed by the following methods, incorporated by reference in Section 611.102:

a) A supplier must conduct analyses as follows:

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- 1) The supplier must conduct analyses for pH and temperature in accordance with one of the methods listed at Section 611.611; and
 - 2) The supplier must conduct analyses for total coliforms, fecal coliforms, heterotrophic bacteria, and turbidity in accordance with one of the following methods, and by using analytical test procedures contained in USEPA Technical Notes, incorporated by reference in Section 611.102, as follows:

4715 A) Total Coliforms.

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4717 BOARD NOTE: The time from sample collection to initiation of
4718 analysis for source (raw) water samples required by Section
4719 611.532 and Subpart B only must not exceed eight hours. The
4720 supplier is encouraged but not required to hold samples below 10°
4721 C during transit.

- 4722
4723 i) Total coliform fermentation technique: Standard Methods,
4724 18th, 19th, 20th, 21st, or 22nd ed., Method 9221 A, B, and C.

4725
4726 BOARD NOTE: Lactose broth, as commercially available,
4727 may be used in lieu of lauryl tryptose broth if the supplier
4728 conducts at least 25 parallel tests between this medium and
4729 lauryl tryptose broth using the water normally tested and
4730 this comparison demonstrates that the false-positive rate
4731 and false-negative rate for total coliforms, using lactose
4732 broth, is less than 10 percent. If inverted tubes are used to
4733 detect gas production, the media should cover these tubes at
4734 least one-half to two-thirds after the sample is added. No
4735 requirement exists to run the completed phase on 10
4736 percent of all total coliform-positive confirmed tubes.

- 4737
4738 ii) Total coliform membrane filter technique: Standard
4739 Methods, 18th, 19th, 20th, 21st, or 22nd ed., Method 9222 A,
4740 B, and C.

- 4741
4742 iii) ONPG-MUG test (also known as the Colilert® Test):
4743 Standard Methods, 18th, 19th, 20th, or 21st ed., Method 9223
4744 or Standard Methods, 21st or 22nd ed., Method 9223B.

4745
4746 BOARD NOTE: USEPA added Standard Methods, 21st ed.,
4747 Methods 9221 A, B, and C; 9222 A, B, and C; and 9223 as

4748 approved alternative methods on June 3, 2008 (at 73 Fed. Reg.
4749 31616).

4750
4751 USEPA added Standard Methods, 22nd ed., Methods 9221 A, B,
4752 and C and 9223 B as approved alternative methods on June 21,
4753 2013 (at 78 Fed. Reg. 37463). USEPA added Standard Methods
4754 Online, Methods 9221 A, B, and C-06 and 9223 B-04 as approved
4755 alternative methods on June 19, 2014 (at 79 Fed. Reg. 35081).
4756 USEPA listed Standard Methods Online, Method 9223 B-97 in
4757 note 1 to the table in 40 CFR 141.25(a). This is identical to
4758 Standard Methods 21st ed., Method 9223 B. The Board lists both
4759 Standard Methods, Methods 9223 and 9223 B. Because Standard
4760 Methods, 22nd ed., Methods 9221 A, B, and C and 9223 B are the
4761 same versions as Standard Methods Online, Methods 9221 A, B,
4762 and C-06 and 9223 B-04, the Board has not listed the Standard
4763 Methods Online versions separately.
4764

4765 B) Fecal Coliforms.
4766

4767 BOARD NOTE: The time from sample collection to initiation of
4768 analysis for source (raw) water samples required by Section
4769 611.532 and Subpart B only must not exceed eight hours. The
4770 supplier is encouraged but not required to hold samples below 10°
4771 C during transit.
4772

- 4773 i) Fecal coliform procedure: Standard Methods, 18th, 19th,
4774 20th, 21st, or 22nd ed., Method 9221 E.
4775

4776 BOARD NOTE: A-1 broth may be held up to seven days in
4777 a tightly closed screwcap tube at 4° C (39° F).
4778

- 4779 ii) Fecal Coliform Membrane Filter Procedure: Standard
4780 Methods, 18th, 19th, 20th, 21st, or 22nd ed., Method 9222 D.
4781

4782 BOARD NOTE: USEPA added Standard Methods, 21st ed.,
4783 Methods 9221 E and 9222 D as approved alternative methods on
4784 June 3, 2008 (at 73 Fed. Reg. 31616). USEPA added Standard
4785 Methods, 22nd ed., Methods 9221 E and 9222 D as approved
4786 alternative methods on June 21, 2013 (at 78 Fed. Reg. 37463).
4787 USEPA added Standard Methods Online, Methods 9221 E-06 and
4788 9222 D-06 as approved alternative methods on June 19, 2014 (at
4789 79 Fed. Reg. 35081). Because Standard Methods, 22nd ed.,
4790 Methods 9221 E and 9222 D are the same versions as Standard

4791 Methods Online, Methods 9221 E-06 and 9222 D-06, the Board
4792 has not listed the Standard Methods Online versions separately.
4793

4794 C) Heterotrophic bacteria.
4795

- 4796 i) Pour plate method: Standard Methods, 18th, 19th, 20th, 21st,
4797 or 22nd ed., Method 9215 B.
4798

4799 BOARD NOTE: The time from sample collection to
4800 initiation of analysis must not exceed eight hours. The
4801 supplier is encouraged but not required to hold samples
4802 below 10° C during transit.
4803

- 4804 ii) SimPlate method.
4805

4806 BOARD NOTE: USEPA added Standard Methods, 21st ed.,
4807 Method 9215 B as an approved alternative method on June 3, 2008
4808 (at 73 Fed. Reg. 31616). USEPA added Standard Methods, 22nd
4809 ed., Method 9215 B as an approved alternative method on June 21,
4810 2013 (at 78 Fed. Reg. 37463). USEPA added Standard Methods
4811 Online, Method 9215 B-04 as an approved alternative method on
4812 June 19, 2014 (at 79 Fed. Reg. 35081). Because Standard
4813 Methods, 22nd ed., Method 9215 B is the same version as Standard
4814 Methods Online, Method 9215 B-04, the Board has not listed the
4815 Standard Methods Online versions separately.
4816

4817 D) Turbidity.
4818

4819 BOARD NOTE: Styrene divinyl benzene beads (e.g., AMCO-
4820 AEPA-1 or equivalent) and stabilized formazin (e.g., Hach
4821 StablCal™ or equivalent) are acceptable substitutes for formazin.
4822

- 4823 i) Nephelometric method: Standard Methods, 18th, 19th, 20th,
4824 21st, or 22nd ed., Method 2130 B.
4825

- 4826 ii) Nephelometric method: USEPA Environmental Inorganic
4827 Methods, Method 180.1 (rev.2.0).
4828

- 4829 iii) GLI Method 2.
4830

- 4831 iv) Hach FilterTrak Method 10133.
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- 4833 v) Laser nephelometry (on-line): Mitchell Method M5271,
rev. 1.1 and Mitchell Method M5331, rev. 1.2.

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- vi) Laser nephelometry (on-line): Lovibond PTV 6000.
- vii) LED nephelometry (on-line): Mitchell Method M5331, rev. 1.1 and Mitchell Method M5331, rev. 1.2.
- viii) LED nephelometry (on-line): AMI Turbiwell Method.
- ix) LED nephelometry (on-line): Lovibond PTV 1000 or Lovibond PTV 2000.
- xviii) LED nephelometry (portable): Orion Method AQ4500.
- xix) 360° Nephelometry: Hach Method 10258.

BOARD NOTE: USEPA added Standard Methods, 21st ed., Method 9130 B as an approved alternative method on June 3, 2008 (at 73 Fed. Reg. 31616). USEPA added Mitchell Method M5271 and Orion Method AQ4500 as approved alternative methods on August 3, 2009 (at 74 Fed. Reg. 38348). USEPA added AMI Turbiwell Method as an approved alternative method on November 10, 2009 (at 74 Fed. Reg. 57908). USEPA added Standard Methods, 22nd ed., Method 2130 B as an approved alternative method on June 21, 2013 (at 78 Fed. Reg. 37463). USEPA added Hach Method 10258 and Mitchell Method M5331, rev. 1.2 as approved alternative methods on July 19, 2016 (at 81 Fed. Reg. 46839). USEPA added Lovibond PTV 1000, Lovibond PTV 2000, and Lovibond PTV 6000 as approved alternative methods on July 27, 2017 (at 82 Fed. Reg. 34861).

- b) A supplier must measure residual disinfectant concentrations with one of the following analytical methods:
 - 1) Free chlorine.
 - A) Amperometric Titration.
 - i) Standard Methods, 18th, 19th, 20th, 21st, or 22nd ed., Method 4500-Cl D.
 - ii) ASTM Method D1253-03, D1253-08, or D1253-14.
 - B) DPD Ferrous Titrimetric: Standard Methods, 18th, 19th, 20th, 21st,

- 4877 or 22nd ed., Method 4500-CI F.
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 4879 C) DPD Colimetric:
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 4881 i) Standard Methods, 18th, 19th, 20th, 21st, or 22nd ed., Method
 4882 4500-CI G; or
 4883
 4884 ii) Hach Method 10260.
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 4886 D) Syringaldazine (FACTS): Standard Methods, 18th, 19th, 20th, 21st,
 4887 or 22nd ed., Method 4500-CI H.
 4888
 4889 E) On-line chlorine analyzer: USEPA OGWDW Methods, Method
 4890 334.0.
 4891
 4892 F) Amperometric sensor: Palintest ChloroSense.
 4893
 4894 G) Indophenol colorimetric: Hach Method 10241.
 4895

4896 BOARD NOTE: USEPA added Standard Methods, 21st ed., Methods
 4897 4500-CI D, F, G, and H; Method 4500-CIO₂ C and E as approved
 4898 alternative methods on June 3, 2008 (at 73 Fed. Reg. 31616). USEPA
 4899 added ASTM Method D1253-08, USEPA OGWDW Methods, Method
 4900 334.0, and Palintest ChloroSense as approved alternative methods on
 4901 November 10, 2009 (at 74 Fed. Reg. 57908). USEPA added Standard
 4902 Methods, 22nd ed., Methods 4500-CI B, F, G, and H as approved
 4903 alternative methods on June 21, 2013 (at 78 Fed. Reg. 37463). USEPA
 4904 added Hach Method 10260 as an approved alternative method on June 19,
 4905 2014 (at 79 Fed. Reg. 35081). USEPA added ASTM Method D1253-14
 4906 and Hach Method 10241 as approved alternative methods on July 19, 2016
 4907 (at 81 Fed. Reg. 46839).
 4908

- 4909 2) Total chlorine.
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 4911 A) Amperometric Titration:.
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 4913 i) Standard Methods, 18th, 19th, 20th, 21st, or 22nd ed., Method
 4914 4500-CI D.
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 4916 ii) ASTM Method D1253-03, D1253-08, or D1253-14.
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 4918 B) Amperometric Titration (low level measurement): Standard
 4919 Methods, 18th, 19th, 20th, 21st, or 22nd ed., Method 4500-CI E.

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- C) DPD Ferrous Titrimetric: Standard Methods, 18th, 19th, 20th, 21st, or 22nd ed., Method 4500-Cl F.
- D) DPD Colimetric:
 - i) Standard Methods, 18th, 19th, 20th, 21st, or 22nd ed., Method 4500-Cl G; or
 - ii) Hach Method 10260.
- E) Iodometric Electrode: Standard Methods, 18th, 19th, 20th, 21st, or 22nd ed., Method 4500-Cl I.
- F) On-line chlorine analyzer: USEPA OGWDW Methods, Method 334.0.
- G) Amperometric sensor: Palintest ChloroSense.

BOARD NOTE: USEPA added Standard Methods, 21st ed., Methods 4500-Cl D, E, F, G, and I as approved alternative methods on June 3, 2008 (at 73 Fed. Reg. 31616). USEPA added ASTM Method D1253-08, USEPA OGWDW Methods, Method 334.0, and Palintest ChloroSense as approved alternative methods on November 10, 2009 (at 74 Fed. Reg. 57908). USEPA added Standard Methods, 22nd ed., Methods 4500-Cl D, E, F, G, and I as approved alternative methods on June 21, 2013 (at 78 Fed. Reg. 37463). USEPA added Hach Method 10260 as an approved alternative method on June 19, 2014 (at 79 Fed. Reg. 35081). USEPA added ASTM Method D1253-14 as an approved alternative method on July 19, 2016 (at 81 Fed. Reg. 46839).

- 3) Chlorine dioxide.
 - A) Amperometric Titration:
 - i) Standard Methods, 18th, 19th, 20th, 21st, or 22nd ed., Method 4500-ClO₂ C or E; or
 - ii) ChlordioX Plus Test.
 - B) DPD Method: Standard Methods, 18th, 19th, or 20th ed., Method 4500-ClO₂ D.

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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 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 on May 31, 2013 (at 78 Fed. Reg. 32558). USEPA added ChlordioX Plus Test as an approved alternative method on June 19, 2014 (at 79 Fed. Reg. 35081).

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

BOARD NOTE: USEPA added Standard Methods, 21st ed., Method 4500-O₃ B as an approved alternative method on June 3, 2008 (at 73 Fed. Reg. 31616). USEPA added Standard Methods, 22nd ed., Method 4500-O₃ B as an approved alternative method on May 31, 2013 (at 78 Fed. Reg. 32558).

5) Alternative test methods: The Agency may grant a SEP pursuant to Section 611.110 that allows a supplier to use alternative chlorine test methods as follows:

A) DPD colorimetric test kits: Residual disinfectant concentrations for free chlorine and combined chlorine may also be measured by using DPD colorimetric test kits.

B) Continuous monitoring for free and total chlorine: Free and total chlorine residuals may be measured continuously by adapting a specified chlorine residual method for use with a continuous monitoring instrument, provided the chemistry, accuracy, and precision remain the same. Instruments used for continuous monitoring must be calibrated with a grab sample measurement at least every five days or as otherwise provided by the Agency.

BOARD NOTE: Suppliers may use a five-tube test or a 10-tube test.

BOARD NOTE: Derived from 40 CFR 141.74(a) and appendix A to subpart C of 40 CFR 141 (2017)(2016).

(Source: Amended at 42 Ill. Reg. _____, effective _____)

SUBPART N: INORGANIC MONITORING AND ANALYTICAL REQUIREMENTS

Section 611.611 Inorganic Analysis

Analytical methods are from documents incorporated by reference in Section 611.102. These are mostly referenced by a short name defined by Section 611.102(a). Other abbreviations are defined in Section 611.101.

- a) Analysis for the following contaminants must be conducted using the following methods or an alternative method approved pursuant to Section 611.480. Criteria for analyzing arsenic, chromium, copper, lead, nickel, selenium, sodium, and thallium with digestion or directly without digestion, and other analytical procedures, are contained in USEPA Technical Notes, incorporated by reference in Section 611.102.

BOARD NOTE: Because MDLs reported in USEPA Environmental Metals Methods 200.7 and 200.9 were determined using a 2× preconcentration step during sample digestion, MDLs determined when samples are analyzed by direct analysis (i.e., no sample digestion) will be higher. For direct analysis of cadmium and arsenic by USEPA Environmental Metals Method 200.7, and arsenic by Standard Methods, Method 3120 B, sample preconcentration using pneumatic nebulization may be required to achieve lower detection limits. Preconcentration may also be required for direct analysis of antimony, lead, and thallium by USEPA Environmental Metals Method 200.9; antimony and lead by Standard Methods, Method 3113 B; and lead by ASTM Method D3559-96 D or D3559-03 D unless multiple in-furnace depositions are made.

- 1) Alkalinity.
 - A) Titrimetric.
 - i) ASTM Method D1067-92 B, D1067-02 B, D1067-06 B, or D1067-11 B; or
 - ii) Standard Methods, 18th, 19th, 20th, 21st, or 22nd ed., Method 2320 B.
 - B) Electrometric titration: USGS Method I-1030-85.

BOARD NOTE: USEPA added Standard Methods, 21st ed., Method 2320 B as an approved alternative method on June 3, 2008 (at 73 Fed. Reg. 31616). USEPA added Standard Methods, 22nd ed., Method 2320 B and

5049 ASTM Method D1067-11 B as approved alternative methods on May 31,
 5050 2013 (at 78 Fed. Reg. 32558).

5051
 5052 2) Antimony.

5053
 5054 A) Inductively coupled plasma-mass spectrometry: USEPA
 5055 Environmental Metals Methods, Method 200.8 (rev. 5.3).

5056
 5057 B) Atomic absorption, hydride technique: ASTM Method D3697-92,
 5058 D3697-02, D3697-07, or D3697-12.

5059
 5060 C) Atomic absorption, platform furnace technique: USEPA
 5061 Environmental Metals Methods, Method 200.9 (rev. 2.2).

5062
 5063 D) Atomic absorption, furnace technique:

5064
 5065 i) Standard Methods, 18th, 19th, 21st, or 22nd ed., Method 3113
 5066 B; or

5067
 5068 ii) Standard Methods Online, Method 3113 B-04.

5069
 5070 E) Axially viewed inductively coupled plasma-atomic emission
 5071 spectrometry (AVICP-AES): USEPA NERL Method 200.5.

5072
 5073 BOARD NOTE: USEPA added Standard Methods, 21st ed., Method
 5074 3113B and USEPA NERL Method 200.5 as approved alternative methods
 5075 on June 3, 2008 (at 73 Fed. Reg. 31616). USEPA added ASTM Method
 5076 D3697-07 as an approved alternative method on November 10, 2009 (at
 5077 74 Fed. Reg. 57908. USEPA added Standard Methods Online, Method
 5078 3113 B-04 as an approved alternative method on June 24, 2011 (at 76 Fed.
 5079 Reg. 37014). USEPA added Standard Methods, 22nd ed., Method 3113 B
 5080 as an approved alternative method on May 31, 2013 (at 78 Fed. Reg.
 5081 32558). USEPA added Standard Methods Online, Method 3113 B-10 as
 5082 an approved alternative method on June 19, 2014 (at 79 Fed. Reg. 35081).
 5083 Because Standard Methods, 22nd ed., Method 3113 B is the same version
 5084 as Standard Methods Online, Method 3113 B-10, the Board has not listed
 5085 the Standard Methods Online versions separately. USEPA added ASTM
 5086 Method D3697-12 as an approved alternative method on July 19, 2016 (at
 5087 81 Fed. Reg. 46839).

5088
 5089 3) Arsenic.

5090
 5091 BOARD NOTE: If ultrasonic nebulization is used in the determination of
 5092 arsenic by Method 200.8, the arsenic must be in the pentavalent state to

5093 provide uniform signal response. For direct analysis of arsenic with
 5094 Method 200.8 using ultrasonic nebulization, samples and standards must
 5095 contain one mg/ℓ of sodium hypochlorite.
 5096

- 5097 A) Inductively coupled plasma-mass spectrometry: USEPA
 5098 Environmental Metals Methods, Method 200.8 (rev. 5.3).
 5099
- 5100 B) Atomic absorption, platform furnace technique: USEPA
 5101 Environmental Metals Methods, Method 200.9 (rev. 2.2).
 5102
- 5103 C) Atomic absorption, furnace technique.
 5104
- 5105 i) ASTM Method D2972-97 C, D2972-03 C, ~~or~~ D2972-08 C,
 5106 or D2972-15C;
 5107
- 5108 ii) Standard Methods, 18th, 19th, 21st, or 22nd ed., Method 3113
 5109 B; or
 5110
- 5111 iii) Standard Methods Online, Method 3113 B-04.
 5112
- 5113 D) Atomic absorption, hydride technique.
 5114
- 5115 i) ASTM Method D2972-97 B, D2972-03 C, ~~or~~ D2972-08 B,
 5116 or D2972-15 B;
 5117
- 5118 ii) Standard Methods, 18th, 19th, 21st, or 22nd ed., Method 3114
 5119 B; or
 5120
- 5121 iii) Standard Methods Online, Method 3114 B-04.
 5122
- 5123 E) Axially viewed inductively coupled plasma-atomic emission
 5124 spectrometry (AVICP-AES): USEPA NERL Method 200.5.
 5125

5126 BOARD NOTE: USEPA added Standard Methods, 21st ed., Methods
 5127 3113 B and 3114 B and USEPA NERL Method 200.5 as approved
 5128 alternative methods on June 3, 2008 (at 73 Fed. Reg. 31616). USEPA
 5129 added ASTM Methods D2972-08 B and C as approved alternative
 5130 methods on November 10, 2009 (at 74 Fed. Reg. 57908). USEPA added
 5131 Standard Methods Online, Method 3113 B-04 and Method 3114 B-09 as
 5132 approved alternative methods on June 24, 2011 (at 76 Fed. Reg. 37014).
 5133 USEPA added Standard Methods, 22nd ed., Methods 3113 B and 3114 B
 5134 as approved alternative methods on May 31, 2013 (at 78 Fed. Reg. 32558).
 5135 Because Standard Methods, 22nd ed., Method 3114 B is the same version
 5136 as Standard Methods Online 3114 B-09, the Board has not listed the

5137 Standard Methods Online version separately. USEPA added Standard
 5138 Methods Online, Method 3113 B-10 as an approved alternative method on
 5139 June 19, 2014 (at 79 Fed. Reg. 35081). USEPA added ASTM Methods
 5140 D2972-15 B and C as approved alternative methods on July 27, 2017 (at
 5141 82 Fed. Reg. 34861). Because Standard Methods, 22nd ed., Method 3113
 5142 B is the same version as Standard Methods Online, Method 3113 B-10, the
 5143 Board has not listed the Standard Methods Online versions separately.
 5144

5145 4) Asbestos: Transmission electron microscopy: USEPA Asbestos Method
 5146 100.1 or USEPA Asbestos Method 100.2.
 5147

5148 5) Barium.
 5149

5150 A) Inductively coupled plasma.
 5151

5152 i) USEPA Environmental Metals Methods, Method 200.7
 5153 (rev. 4.4); or
 5154

5155 ii) Standard Methods, 18th, 19th, 20th, 21st, or 22nd ed., Method
 5156 3120 B.
 5157

5158 B) Inductively coupled plasma-mass spectrometry: USEPA
 5159 Environmental Metals Methods, Method 200.8 (rev. 5.3).
 5160

5161 C) Atomic absorption, direct aspiration technique: Standard Methods,
 5162 18th, 19th, 21st, or 22nd ed., Method 3111 D.
 5163

5164 D) Atomic absorption, furnace technique:
 5165

5166 i) Standard Methods, 18th, 19th, 21st, or 22nd ed., Method 3113
 5167 B; or
 5168

5169 ii) Standard Methods Online, Method 3113 B-04.
 5170

5171 E) Axially viewed inductively coupled plasma-atomic emission
 5172 spectrometry (AVICP-AES): USEPA NERL Method 200.5.
 5173

5174 BOARD NOTE: USEPA added Standard Methods, 21st ed., Methods
 5175 3111 D, 3113 B, and 3120 B and USEPA NERL Method 200.5 as
 5176 approved alternative methods on June 3, 2008 (at 73 Fed. Reg. 31616).
 5177 USEPA added Standard Methods Online, Method 3113 B-04 as an
 5178 approved alternative method on June 24, 2011 (at 76 Fed. Reg. 37014).
 5179 USEPA added Standard Methods, 22nd ed., Methods 3111 D, 3113 B, and

5180 3120 B as approved alternative methods on May 31, 2013 (at 78 Fed. Reg.
 5181 32558). USEPA added Standard Methods Online, Method 3113 B-10 as
 5182 an approved alternative method on June 19, 2014 (at 79 Fed. Reg. 35081).
 5183 Because Standard Methods, 22nd ed., Method 3113 B is the same version
 5184 as Standard Methods Online, Method 3113 B-10, the Board has not listed
 5185 the Standard Methods Online versions separately.
 5186

5187 6) Beryllium.

5188 A) Inductively coupled plasma.

5189 i) USEPA Environmental Metals Methods, Method 200.7
 5190 (rev. 4.4); or

5191 ii) Standard Methods, 18th, 19th, 20th, 21st, or 22nd ed., Method
 5192 3120 B.
 5193

5194 B) Inductively coupled plasma-mass spectrometry: USEPA
 5195 Environmental Metals Methods, Method 200.8 (rev. 5.3).
 5196

5197 C) Atomic absorption, platform furnace technique: USEPA
 5198 Environmental Metals Methods, Method 200.9 (rev. 2.2).
 5199

5200 D) Atomic absorption, furnace technique.

5201 i) ASTM Method D3645-97 B, D3645-03 B, or ~~D3645-08 B,~~
 5202 D3645-15 B;
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5204 ii) Standard Methods, 18th, 19th, 21st, or 22nd ed., Method 3113
 5205 B; or
 5206

5207 iii) Standard Methods Online, Method 3113 B-04.
 5208

5209 E) Axially viewed inductively coupled plasma-atomic emission
 5210 spectrometry (AVICP-AES): USEPA NERL Method 200.5.
 5211

5212 BOARD NOTE: USEPA added Standard Methods, 21st ed., Methods
 5213 3113 B and 3120 B and USEPA NERL Method 200.5 as approved
 5214 alternative methods on June 3, 2008 (at 73 Fed. Reg. 31616). USEPA
 5215 added ASTM Method D3645-08 B as an approved alternative method on
 5216 November 10, 2009 (at 74 Fed. Reg. 57908). USEPA added Standard
 5217 Methods Online, Method 3113 B-04 as an approved alternative method on
 5218 June 24, 2011 (at 76 Fed. Reg. 37014). USEPA added Standard Methods,
 5219
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5223 22nd ed., Methods 3113 B and 3120 B as approved alternative methods on
 5224 May 31, 2013 (at 78 Fed. Reg. 32558). USEPA added Standard Methods
 5225 Online, Method 3113 B-10 as an approved alternative method on June 19,
 5226 2014 (at 79 Fed. Reg. 35081). USEPA added ASTM Method D3645-15 B
 5227 as an approved alternative method on July 27, 2017 (at 82 Fed. Reg.
 5228 34861). Because Standard Methods, 22nd ed., Method 3113 B is the same
 5229 version as Standard Methods Online, Method 3113 B-10, the Board has
 5230 not listed the Standard Methods Online versions separately.

5231
 5232 7) Cadmium.

- 5233
 5234 A) Inductively coupled plasma arc furnace: USEPA Environmental
 5235 Metals Methods, Method 200.7 (rev. 4.4).
 5236
 5237 B) Inductively coupled plasma-mass spectrometry: USEPA
 5238 Environmental Metals Methods, Method 200.8 (rev. 5.3).
 5239
 5240 C) Atomic absorption, platform furnace technique: USEPA
 5241 Environmental Metals Methods, Method 200.9 (rev. 2.2).
 5242
 5243 D) Atomic absorption, furnace technique:
 5244
 5245 i) Standard Methods, 18th, 19th, 21st, or 22nd ed., Method 3113
 5246 B; or
 5247
 5248 ii) Standard Methods Online, Method 3113 B-04.
 5249
 5250 E) Axially viewed inductively coupled plasma-atomic emission
 5251 spectrometry (AVICP-AES): USEPA NERL Method 200.5.
 5252

5253 BOARD NOTE: USEPA added Standard Methods, 21st ed., Method 3113
 5254 B and USEPA NERL Method 200.5 as approved alternative methods on
 5255 June 3, 2008 (at 73 Fed. Reg. 31616). USEPA added Standard Methods
 5256 Online, Method 3113 B-04 as an approved alternative method on June 24,
 5257 2011 (at 76 Fed. Reg. 37014). USEPA added Standard Methods, 22nd ed.,
 5258 Method 3113 B as an approved alternative method on May 31, 2013 (at 78
 5259 Fed. Reg. 32558). USEPA added Standard Methods Online, Method 3113
 5260 B-10 as an approved alternative method on June 19, 2014 (at 79 Fed. Reg.
 5261 35081). Because Standard Methods, 22nd ed., Method 3113 B is the same
 5262 version as Standard Methods Online, Method 3113 B-10, the Board has
 5263 not listed the Standard Methods Online versions separately.

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 5265 8) Calcium.

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- A) EDTA titrimetric.
 - i) ASTM Method D511-93 A, D511-03 A, D511-09 A, or D511-14A; or
 - ii) Standard Methods, 18th or 19th ed., Method 3500-Ca D or Standard Methods, 20th, 21st, or 22nd ed., Method 3500-Ca B.

- B) Atomic absorption, direct aspiration.
 - i) ASTM Method D511-93 B, D511-03 B, D511-09 B, or D511-14B; or
 - ii) Standard Methods, 18th, 19th, 21st, or 22nd ed., Method 3111 B.

- C) Inductively coupled plasma.
 - i) USEPA Environmental Metals Methods, Method 200.7 (rev. 4.4); or
 - ii) Standard Methods, 18th, 19th, 20th, 21st, or 22nd ed., Method 3120 B.

- D) Ion chromatography: ASTM Method D6919-03 or D6919-09.

- E) Axially viewed inductively coupled plasma-atomic emission spectrometry (AVICP-AES): USEPA NERL Method 200.5.

BOARD NOTE: USEPA added Standard Methods, 21st ed., Methods 3111 B, 3120 B, and 3500-Ca B and USEPA NERL Method 200.5 as approved alternative methods on June 3, 2008 (at 73 Fed. Reg. 31616). USEPA added ASTM Methods D511-09 A and B as approved alternative methods on November 10, 2009 (at 74 Fed. Reg. 57908). USEPA added ASTM Method D6919-09 as an approved alternative method on June 24, 2011 (at 76 Fed. Reg. 37014). USEPA added Standard Methods, 22nd ed., Methods 3111 B, 3120 B, and 3500-Ca B as approved alternative methods on May 31, 2013 (at 78 Fed. Reg. 32558). USEPA added ASTM Method D511-14 A and B as approved alternative methods on July 19, 2016 (at 81 Fed. Reg. 46839).

- 5309 9) Chromium.
 5310
 5311 A) Inductively coupled plasma.
 5312
 5313 i) USEPA Environmental Metals Methods, Method 200.7
 5314 (rev. 4.4); or
 5315
 5316 ii) Standard Methods, 18th, 19th, 20th, 21st, or 22nd ed., Method
 5317 3120 B.
 5318
 5319 B) Inductively coupled plasma-mass spectrometry: USEPA
 5320 Environmental Metals Methods, Method 200.8 (rev. 5.3).
 5321
 5322 C) Atomic absorption, platform furnace technique: USEPA
 5323 Environmental Metals Methods, Method 200.9 (rev. 2.2).
 5324
 5325 D) Atomic absorption, furnace technique:
 5326
 5327 i) Standard Methods, 18th, 19th, 21st, or 22nd ed., Method 3113
 5328 B; or
 5329
 5330 ii) Standard Methods Online, Method 3113 B-04.
 5331
 5332 E) Axially viewed inductively coupled plasma-atomic emission
 5333 spectrometry (AVICP-AES): USEPA NERL Method 200.5.
 5334
 5335 BOARD NOTE: USEPA added Standard Methods, 21st ed., Methods
 5336 3113 B and 3120 B and USEPA NERL Method 200.5 as approved
 5337 alternative methods on June 3, 2008 (at 73 Fed. Reg. 31616). USEPA
 5338 added Standard Methods Online, Method 3113 B-04 as an approved
 5339 alternative method on June 24, 2011 (at 76 Fed. Reg. 37014). USEPA
 5340 added Standard Methods, 22nd ed., Methods 3113 B and 3120 B as
 5341 approved alternative methods on May 31, 2013 (at 78 Fed. Reg. 32558).
 5342 USEPA added Standard Methods Online, Method 3113 B-10 as an
 5343 approved alternative method on June 19, 2014 (at 79 Fed. Reg. 35081).
 5344 Because Standard Methods, 22nd ed., Method 3113 B is the same version
 5345 as Standard Methods Online, Method 3113 B-10, the Board has not listed
 5346 the Standard Methods Online versions separately.
 5347
 5348 10) Copper.
 5349
 5350 A) Atomic absorption, furnace technique.
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- i) ASTM Method D1688-95 C, D1688-02 C, D1688-07 C, or D1688-12 C;
 - ii) Standard Methods, 18th, 19th, 21st, or 22nd ed., Method 3113 B; or
 - iii) Standard Methods Online, Method 3113 B-04.
- B) Atomic absorption, direct aspiration.
- i) ASTM Method D1688-95 A, D1688-02 A, D1688-07 A, or D1688-12 A; or
 - ii) Standard Methods, 18th, 19th, 21st, or 22nd ed., Method 3111 B.
- C) Inductively coupled plasma.
- i) USEPA Environmental Metals Methods, Method 200.7 (rev. 4.4); or
 - ii) Standard Methods, 18th, 19th, 20th, 21st, or 22nd ed., Method 3120 B.
- D) Inductively coupled plasma-mass spectrometry: USEPA Environmental Metals Methods, Method 200.8 (rev. 5.3).
- E) Atomic absorption, platform furnace technique: USEPA Environmental Metals Methods, Method 200.9 (rev. 2.2).
- F) Axially viewed inductively coupled plasma-atomic emission spectrometry (AVICP-AES): USEPA NERL Method 200.5.
- G) Colorimetric: Hach Method 8026 or 10272.

BOARD NOTE: USEPA added Standard Methods, 21st ed., Methods 3111 B, 3113 B, and 3120 B and USEPA NERL Method 200.5 as an approved alternative method on June 3, 2008 (at 73 Fed. Reg. 31616). USEPA added ASTM Methods D1688-07 A and C as approved alternative methods on November 10, 2009 (at 74 Fed. Reg. 57908). USEPA added Standard Methods Online, Method 3113 B-04 as an approved alternative method on June 24, 2011 (at 76 Fed. Reg. 37014). USEPA added Standard Methods, 22nd ed., Methods 3111 B, 3113 B, and 3120 B as approved

5395 alternative methods on May 31, 2013 (at 78 Fed. Reg. 32558). USEPA
 5396 added Standard Methods Online, Method 3113 B-10 as an approved
 5397 alternative method on June 19, 2014 (at 79 Fed. Reg. 35081). Because
 5398 Standard Methods, 22nd ed., Method 3113 B is the same version as
 5399 Standard Methods Online, Method 3113 B-10, the Board has not listed the
 5400 Standard Methods Online versions separately. USEPA added ASTM
 5401 Method D1688-12 A and C and Hach Methods 8026 and 10272 as
 5402 approved alternative methods on July 19, 2016 (at 81 Fed. Reg. 46839).
 5403

5404 11) Conductivity; Conductance.

- 5405
 5406 A) ASTM Method D1125-95(1999) A or D1125-14 A; or
 5407
 5408 B) Standard Methods, 18th, 19th, 20th, 21st, or 22nd ed., Method 2510
 5409 B.
 5410

5411 BOARD NOTE: USEPA added Standard Methods, 21st ed., Method 2510
 5412 B as an approved alternative method on June 3, 2008 (at 73 Fed. Reg.
 5413 31616). USEPA added Standard Methods, 22nd ed., Method 2510 B as an
 5414 approved alternative method on May 31, 2013 (at 78 Fed. Reg. 32558).
 5415 USEPA added ASTM Method D1125-14 A as an approved alternative
 5416 method on July 19, 2016 (at 81 Fed. Reg. 46839).
 5417

5418 12) Cyanide.

- 5419
 5420 A) Manual distillation (ASTM Method D2036-98 A or Standard
 5421 Methods, 18th, 19th, or 20th ed., Method 4500-CN⁻ C), followed by
 5422 spectrophotometric, amenable.
 5423
 5424 i) ASTM Method D2036-98 B or D2036-06 B; or
 5425
 5426 ii) Standard Methods, 18th, 19th, 20th, 21st, or 22nd ed., Method
 5427 4500-CN⁻ G.
 5428
 5429 B) Manual distillation (ASTM Method D2036-98 A or Standard
 5430 Methods, 18th, 19th, or 20th ed., Method 4500-CN⁻ C), followed by
 5431 spectrophotometric, manual.
 5432
 5433 i) ASTM Method D2036-98 A or D2036-06 A;
 5434
 5435 ii) Standard Methods, 18th, 19th, 20th, 21st, or 22nd ed., Method
 5436 4500-CN⁻ E; or
 5437

- 5481 iv) Hach SPADNS 2 Method 10225.
5482
5483 B) Manual distillation, colorimetric SPADNS: Standard Methods,
5484 18th, 19th, 20th, 21st, or 22nd ed., Method 4500-F⁻ B and D.
5485
5486 C) Manual electrode.
5487
5488 i) ASTM Method D1179-93 B, D1179-99 B, D1179-04 B, or
5489 D1179-10B; or
5490
5491 ii) Standard Methods, 18th, 19th, 20th, 21st, or 22nd ed., Method
5492 4500-F⁻ C.
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5494 D) Automated electrode: Technicon Methods, Method 380-75WE.
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5496 E) Automated alizarin.
5497
5498 i) Standard Methods, 18th, 19th, 20th, 21st, or 22nd ed., Method
5499 4500-F⁻ E; or
5500
5501 ii) Technicon Methods, Method 129-71W.
5502
5503 F) Capillary ion electrophoresis: ASTM Method D6508-00(2005).
5504
5505 BOARD NOTE: On March 12, 2007 (at 72 Fed. Reg. 11200),
5506 USEPA amended the entry for fluoride to add capillary ion
5507 electrophoresis in the table at corresponding 40 CFR 141.23(k)(1)
5508 to allow the use of "Waters Method D6508, Rev. 2". The Board
5509 attempt to locate a copy of the method disclosed that it is an
5510 ASTM method originally approved in 2000 and reapproved in
5511 2005. The Board has cited to the ASTM Method D6508-00
5512 (2005).
5513
5514 BOARD NOTE: USEPA added Standard Methods, 21st ed., Methods
5515 4110 B and 4500-F⁻ B, C, D, and E and ASTM Method D1179-04 B as
5516 approved alternative methods on June 3, 2008 (at 73 Fed. Reg. 31616).
5517 USEPA added Hach SPADNS 2 Method 10225 as an approved alternative
5518 method on June 24, 2011 (at 76 Fed. Reg. 37014). USEPA added ASTM
5519 Method D1179-10 B as an approved alternative method on June 28, 2012
5520 (at 77 Fed. Reg. 38523). USEPA added Standard Methods, 22nd ed.,
5521 Methods 4110 B and 4500-F⁻ B, C, D, and E as approved alternative
5522 methods on May 31, 2013 (at 78 Fed. Reg. 32558). USEPA added ASTM

5523 Method D4327-11 as an approved alternative method on June 19, 2014 (at
 5524 79 Fed. Reg. 35081).

5525
 5526 14) Lead.

5527
 5528 A) Atomic absorption, furnace technique.

5529
 5530 i) ASTM Method D3559-96 D, D3559-03 D, ~~or~~ D3559-08 D,
 5531 or D3559-08 D;

5532
 5533 ii) Standard Methods, 18th, 19th, 21st, or 22nd ed., Method 3113
 5534 B; or

5535
 5536 iii) Standard Methods Online, Method 3113 B-04.

5537
 5538 B) Inductively coupled plasma-mass spectrometry: USEPA
 5539 Environmental Metals Methods, Method 200.8 (rev. 5.3).

5540
 5541 C) Atomic absorption, platform furnace technique: USEPA
 5542 Environmental Metals Methods, Method 200.9 (rev. 2.2).

5543
 5544 D) Differential Pulse Anodic Stripping Voltammetry: Palintest
 5545 Method 1001.

5546
 5547 E) Axially viewed inductively coupled plasma-atomic emission
 5548 spectrometry (AVICP-AES): USEPA NERL Method 200.5.

5549
 5550 BOARD NOTE: USEPA added Standard Methods, 21st ed., Method 3113
 5551 B and USEPA NERL Method 200.5 as approved alternative methods on
 5552 June 3, 2008 (at 73 Fed. Reg. 31616). USEPA added ASTM Method
 5553 D3559-08 D as an approved alternative method on November 10, 2009 (at
 5554 74 Fed. Reg. 57908). USEPA added Standard Methods Online, Method
 5555 3113 B-04 as an approved alternative method on June 24, 2011 (at 76 Fed.
 5556 Reg. 37014). USEPA added Standard Methods, 22nd ed., Method 3113 B
 5557 as an approved alternative method on May 31, 2013 (at 78 Fed. Reg.
 5558 32558). USEPA added Standard Methods Online, Method 3113 B-10 as
 5559 an approved alternative method on June 19, 2014 (at 79 Fed. Reg. 35081).
 5560 USEPA added ASTM Method D3559-08 D as an approved alternative
 5561 method on July 27, 2017 (at 82 Fed. Reg. 34861). Because Standard
 5562 Methods, 22nd ed., Method 3113 B is the same version as Standard
 5563 Methods Online, Method 3113 B-10, the Board has not listed the Standard
 5564 Methods Online versions separately.
 5565

- 5566 15) Magnesium.
 5567
 5568 A) Atomic absorption.
 5569
 5570 i) ASTM Method D511-93 B, D511-03 B, D511-09 B, or
 5571 D511-14 B; or
 5572
 5573 ii) Standard Methods, 18th, 19th, 21st, or 22nd ed., Method 3111
 5574 B.
 5575
 5576 B) Inductively coupled plasma.
 5577
 5578 i) USEPA Environmental Metals Methods, Method 200.7
 5579 (rev. 4.4); or
 5580
 5581 ii) Standard Methods, 18th, 19th, 20th, 21st, or 22nd ed., Method
 5582 3120 B.
 5583
 5584 C) Complexation titrimetric.
 5585
 5586 i) ASTM Method D511-93 A, D511-03 A, D511-09 A, or
 5587 D511-14 A; or
 5588
 5589 ii) Standard Methods, 18th or 19th ed., Method 3500-Mg E or
 5590 Standard Methods, 20th, 21st, or 22nd ed., Method 3500-Mg
 5591 B.
 5592
 5593 D) Ion chromatography: ASTM Method D6919-03 or D6919-09.
 5594
 5595 E) Axially viewed inductively coupled plasma-atomic emission
 5596 spectrometry (AVICP-AES): USEPA NERL Method 200.5.
 5597

5598 BOARD NOTE: USEPA added Standard Methods, 21st ed., Methods
 5599 3111 B, 3120 B, and 3500-Mg B and USEPA NERL Method 200.5 as
 5600 approved alternative methods on June 3, 2008 (at 73 Fed. Reg. 31616).
 5601 USEPA added ASTM Methods D511-09 A and B as approved alternative
 5602 methods on November 10, 2009 (at 74 Fed. Reg. 57908). USEPA added
 5603 ASTM Method D6919-09 as an approved alternative method on June 24,
 5604 2011 (at 76 Fed. Reg. 37014). USEPA added Standard Methods, 22nd ed.,
 5605 Methods 3111 B, 3120 B, and 3500-Mg B as approved alternative
 5606 methods on May 31, 2013 (at 78 Fed. Reg. 32558). USEPA added ASTM
 5607 Method D511-14 A and B as approved alternative methods on July 19,
 5608 2016 (at 81 Fed. Reg. 46839).

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- 16) Mercury.
 - A) Manual cold vapor technique.
 - i) USEPA Environmental Metals Methods, Method 245.1 (rev. 3.0);
 - ii) ASTM Method D3223-97, D3223-02, or D3223-12; or
 - iii) Standard Methods, 18th, 19th, 21st, or 22nd ed., Method 3112 B.
 - B) Automated cold vapor technique: USEPA Inorganic Methods, Method 245.2.
 - C) Inductively coupled plasma-mass spectrometry: USEPA Environmental Metals Methods, Method 200.8 (rev. 5.3).

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BOARD NOTE: USEPA added Standard Methods, 21st ed., Method 3112 B as an approved alternative method on June 3, 2008 (at 73 Fed. Reg. 31616). USEPA added Standard Methods Online, Method 3112 B-09 as an approved alternative method on June 28, 2012 (at 77 Fed. Reg. 38523). USEPA added Standard Methods, 22nd ed., Method 3112 B as an approved alternative method on May 31, 2013 (at 78 Fed. Reg. 32558). Because Standard Methods, 22nd ed., Method 3112 B is the same version as Standard Methods Online 3112 B-09, the Board has not listed the Standard Methods Online version separately. USEPA added ASTM D3223 B-12 as an approved alternative method on June 19, 2014 (at 79 Fed. Reg. 35081).

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- 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).

- 5652 C) Atomic absorption, platform furnace technique: USEPA
- 5653 Environmental Metals Methods, Method 200.9 (rev. 2.2).
- 5654
- 5655 D) Atomic absorption, direct aspiration technique: Standard Methods,
- 5656 18th, 19th, 21st, or 22nd ed., Method 3111 B.
- 5657
- 5658 E) Atomic absorption, furnace technique:
- 5659
- 5660 i) Standard Methods, 18th, 19th, 21st, or 22nd ed., Method 3113
- 5661 B; or
- 5662
- 5663 ii) Standard Methods Online, Method 3113 B-04.
- 5664
- 5665 F) Axially viewed inductively coupled plasma-atomic emission
- 5666 spectrometry (AVICP-AES): USEPA NERL Method 200.5.
- 5667

5668 BOARD NOTE: USEPA added Standard Methods, 21st ed., Methods

5669 3111 B, 3113 B, and 3120 B and USEPA NERL Method 200.5 as

5670 approved alternative methods on June 3, 2008 (at 73 Fed. Reg. 31616).

5671 USEPA added Standard Methods Online, Method 3113 B-04 as an

5672 approved alternative method on June 24, 2011 (at 76 Fed. Reg. 37014).

5673 USEPA added Standard Methods, 22nd ed., Methods 3111 B, 3113 B, and

5674 3120 B as approved alternative methods on May 31, 2013 (at 78 Fed. Reg.

5675 32558). USEPA added Standard Methods Online, Method 3113 B-10 as

5676 an approved alternative method on June 19, 2014 (at 79 Fed. Reg. 35081).

5677 Because Standard Methods, 22nd ed., Method 3113 B is the same version

5678 as Standard Methods Online, Method 3113 B-10, the Board has not listed

5679 the Standard Methods Online versions separately.

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5681 18) Nitrate.

- 5682
- 5683 A) Ion chromatography.
- 5684
- 5685 i) USEPA Environmental Inorganic Methods, Method 300.0
- 5686 (rev. 2.1) or USEPA Organic and Inorganic Methods,
- 5687 Method 300.1 (rev. 1.0);
- 5688
- 5689 ii) ASTM Method D4327-97, D4327-03, or D4327-11;
- 5690
- 5691 iii) Standard Methods, 18th, 19th, 20th, 21st, or 22nd ed., Method
- 5692 4110 B; or
- 5693

- 5694 iv) Waters Method B-1011, available from Millipore
 5695 Corporation.
 5696
 5697 B) Automated cadmium reduction.
 5698
 5699 i) USEPA Environmental Inorganic Methods, Method 353.2
 5700 (rev. 2.0);
 5701
 5702 ii) ASTM Method D3867-90 A; or
 5703
 5704 iii) Standard Methods, 18th, 19th, 20th, 21st, or 22nd ed., Method
 5705 4500-NO₃⁻ F.
 5706
 5707 C) Ion selective electrode.
 5708
 5709 i) Standard Methods, 18th, 19th, 20th, 21st, or 22nd ed., Method
 5710 4500-NO₃⁻ D; or
 5711
 5712 ii) Technical Bulletin 601.
 5713
 5714 D) Manual cadmium reduction.
 5715
 5716 i) ASTM Method D3867-90 B; or
 5717
 5718 ii) Standard Methods, 18th, 19th, 20th, 21st, or 22nd ed., Method
 5719 4500-NO₃⁻ E.
 5720
 5721 E) Capillary ion electrophoresis: ASTM Method D6508-00(2005)or
 5722 D6508-15.
 5723
 5724 F) Reduction-colorimetric: Syssta Easy (1-Reagent) or NECi Nitrate-
 5725 Reductase Method.
 5726
 5727 G) Direct colorimetric: Hach TNTplus 835/836 Method 10206.
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5729 BOARD NOTE: USEPA added Standard Methods, 21st ed., Methods
 5730 4110 B and 4500-NO₃⁻ D, E, and F as approved alternative methods on
 5731 June 3, 2008 (at 73 Fed. Reg. 31616). USEPA added Syssta Easy (1-
 5732 Reagent) as an approved alternative method on August 3, 2009 (at 73 Fed.
 5733 Reg. 38348). USEPA added Hach TNTplus 835/836 Method 10206 as an
 5734 approved alternative method on June 24, 2011 (at 76 Fed. Reg. 37014).
 5735 USEPA added Standard Methods, 22nd ed., Methods 4110 B and 4500-
 5736 NO₃⁻ D, E, and F as approved alternative methods on May 31, 2013 (at 78

- 5737 Fed. Reg. 32558). USEPA added ASTM D4327-11 as an approved
5738 alternative method on June 19, 2014 (at 79 Fed. Reg. 35081). USEPA
5739 added NECi Nitrate-Reductase Method as an approved alternative method
5740 on July 19, 2016 (at 81 Fed. Reg. 46839). USEPA added ASTM Method
5741 D6508-15 as an approved alternative method on July 27, 2017 (at 82 Fed.
5742 Reg. 34861).
- 5743
- 5744 19) Nitrite.
- 5745
- 5746 A) Ion chromatography.
- 5747
- 5748 i) USEPA Environmental Inorganic Methods, Method 300.0
5749 (rev. 2.1) or USEPA Organic and Inorganic Methods,
5750 Method 300.1 (rev. 1.0);
- 5751
- 5752 ii) ASTM Method D4327-97, D4327-03, or D4327-11;
- 5753
- 5754 iii) Standard Methods, 18th, 19th, 20th, 21st, or 22nd ed., Method
5755 4110 B; or
- 5756
- 5757 iv) Waters Method B-1011, available from Millipore
5758 Corporation.
- 5759
- 5760 B) Automated cadmium reduction.
- 5761
- 5762 i) USEPA Environmental Inorganic Methods, Method 353.2
5763 (rev. 2.0);
- 5764
- 5765 ii) ASTM Method D3867-90 A; or
- 5766
- 5767 iii) Standard Methods, 18th, 19th, 20th, 21st, or 22nd ed., Method
5768 4500-NO₃⁻ F.
- 5769
- 5770 C) Manual cadmium reduction.
- 5771
- 5772 i) ASTM Method D3867-90 B; or
- 5773
- 5774 ii) Standard Methods, 18th, 19th, 20th, 21st, or 22nd ed., Method
5775 4500-NO₃⁻ E.
- 5776
- 5777 D) Spectrophotometric: Standard Methods, 18th, 19th, 20th, 21st, or
5778 22nd ed., Method 4500-NO₂⁻ B.
- 5779

- 5780 E) Capillary ion electrophoresis: ASTM Method D6508-00(2005), or
- 5781 D6508-15.
- 5782
- 5783 F) Reduction-colorimetric: Syssta Easy (1-Reagent) or NECi Nitrate-
- 5784 Reductase Method.
- 5785

BOARD NOTE: USEPA added Standard Methods, 21st ed., Methods 4110 B, 4500-NO₃⁻ E and F; and 4500-NO₂⁻ B as approved alternative methods on June 3, 2008 (at 73 Fed. Reg. 31616). USEPA added Syssta Easy (1-Reagent) as an approved alternative method on August 3, 2009 (at 73 Fed. Reg. 38348). USEPA added Standard Methods, 22nd ed., Methods 4110 B, 4500-NO₃⁻ E and F, and 4500-NO₂⁻ B as approved alternative methods on May 31, 2013 (at 78 Fed. Reg. 32558). USEPA added ASTM D4327-11 as an approved alternative method on June 19, 2014 (at 79 Fed. Reg. 35081). USEPA added NECi Nitrate-Reductase Method as an approved alternative method on July 19, 2016 (at 81 Fed. Reg. 46839). USEPA added ASTM Method D6508-15 as an approved alternative method on July 27, 2017 (at 82 Fed. Reg. 34861).

20) Orthophosphate (unfiltered, without digestion or hydrolysis).

- 5800 A) Automated colorimetric, ascorbic acid.
- 5801
- 5802 i) USEPA Environmental Inorganic Methods, Method 365.1
- 5803 (rev. 2.0);
- 5804
- 5805 ii) Standard Methods, 18th, 19th, 20th, 21st, or 22nd ed., Method
- 5806 4500-P F; or
- 5807
- 5808 iii) Thermo-Fisher Discrete Analyzer.
- 5809
- 5810 B) Single reagent colorimetric, ascorbic acid.
- 5811
- 5812 i) ASTM Method D515-88 A; or
- 5813
- 5814 ii) Standard Methods, 18th, 19th, 20th, 21st, or 22nd ed., Method
- 5815 4500-P E.
- 5816
- 5817 C) Colorimetric, phosphomolybdate: USGS Method I-1601-85.
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- 5819
- 5820 D) Phosphorus, orthophosphate, colorimetry, phosphomolybdate,
- 5821 automated-segmented flow: USGS Method I-2601-90.
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- E) Colorimetric, phosphomolybdate, automated discrete: USGS Method I-2598-85.
 - F) Ion Chromatography.
 - i) USEPA Environmental Inorganic Methods, Method 300.0 (rev. 2.1) or USEPA Organic and Inorganic Methods, Method 300.1 (rev. 1.0);
 - ii) ASTM Method D4327-97, D4327-03, or D4327-11; or
 - iii) Standard Methods, 18th, 19th, 20th, 21st, or 22nd ed., Method 4110 B.
 - G) Capillary ion electrophoresis: ASTM Method D6508-00(2005), or D6508-15.

 BOARD NOTE: USEPA added Standard Methods, 21st ed., Methods 4110 B and 4500-P E and F as approved alternative methods on June 3, 2008 (at 73 Fed. Reg. 31616). Because Standard Methods, 21st ed., Methods 4500-P E and F are the same versions as Standard Methods Online 4500-P E-99 and F-99, the Board has not listed the Standard Methods Online versions separately. USEPA added Standard Methods, 22nd ed., Methods 4500-P E and F and 4110 B as approved alternative methods on May 31, 2013 (at 78 Fed. Reg. 32558). USEPA added ASTM D4327-11 as an approved alternative method on June 19, 2014 (at 79 Fed. Reg. 35081). USEPA added Thermo-Fisher Discrete Analyzer as an approved alternative method on July 19, 2016 (at 81 Fed. Reg. 46839). USEPA added ASTM Method D6508-15 as an approved alternative method on July 27, 2017 (at 82 Fed. Reg. 34861).
 - 21) pH: electrometric.
 - A) USEPA Inorganic Methods, Method 150.1 or Method 150.2;
 - B) ASTM Method D1293-95, D1293-99, or D1293-12; or
 - C) Standard Methods, 18th, 19th, 20th, 21st, or 22nd ed., Method 4500-H⁺ B.
 - D) USEPA Method 150.3.

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BOARD NOTE: USEPA added Standard Methods, 21st ed., Method 4500-H⁺ B as an approved alternative method on June 3, 2008 (at 73 Fed. Reg. 31616). USEPA added Standard Methods, 22nd ed., Method 4500-H⁺ B and ASTM Method D1293-12 as approved alternative methods on May 31, 2013 (at 78 Fed. Reg. 32558). USEPA added USEPA Method 150.3 as an approved alternative method on July 27, 2017 (at 82 Fed. Reg. 34861).

22) Selenium.

A) Atomic absorption, hydride.

- i) ASTM Method D3859-98 A, D3859-03 A, ~~or~~ D3859-08 A, or D3859-15 A; or
- ii) Standard Methods, 18th, 19th, 21st, or 22nd ed., Method 3114 B.

B) Inductively coupled plasma-mass spectrometry: USEPA Environmental Metals Methods, Method 200.8 (rev. 5.3).

C) Atomic absorption, platform furnace technique: USEPA Environmental Metals Methods, Method 200.9 (rev. 2.2).

D) Atomic absorption, furnace technique.

- i) ASTM Method D3859-98 B, D3859-03 B, ~~or~~ D3859-08 B, or D3859-15 B;
- ii) Standard Methods, 18th, 19th, 21st, or 22nd ed., Method 3113 B; or
- iii) Standard Methods Online, Method 3113 B-04.

E) Axially viewed inductively coupled plasma-atomic emission spectrometry (AVICP-AES): USEPA NERL Method 200.5.

BOARD NOTE: USEPA added Standard Methods, 21st ed., Methods 3113 B and 3114 B and USEPA NERL Method 200.5 as approved alternative methods on June 3, 2008 (at 73 Fed. Reg. 31616). USEPA added ASTM Methods D3859-08 A and B as approved alternative methods on November 10, 2009 (at 74 Fed. Reg. 57908). USEPA added Standard Methods Online, Method 3113 B-04 and Method 3114 B-09 as

5909 approved alternative methods on June 24, 2011 (at 76 Fed. Reg. 37014).
 5910 USEPA added Standard Methods, 22nd ed., Methods 3113 B and 3114 B
 5911 as approved alternative methods on May 31, 2013 (at 78 Fed. Reg. 32558).
 5912 Because Standard Methods, 22nd ed., Method 3114 B is the same version
 5913 as Standard Methods Online 3114 B-09, the Board has not listed the
 5914 Standard Methods Online version separately. USEPA added Standard
 5915 Methods Online, Method 3113 B-10 as an approved alternative method on
 5916 June 19, 2014 (at 79 Fed. Reg. 35081). USEPA added ASTM Methods
 5917 D3859-15 A and B as approved alternative methods on July 27, 2017 (at
 5918 82 Fed. Reg. 34861). Because Standard Methods, 22nd ed., Method 3113
 5919 B is the same version as Standard Methods Online, Method 3113 B-10, the
 5920 Board has not listed the Standard Methods Online versions separately.

5921
 5922 23) Silica.

- 5923 A) Colorimetric, molybdate blue: USGS Method I-1700-85.
- 5924 B) Colorimetric, molybdate blue, automated-segmented flow: USGS
 5925 Method I-2700-85.
- 5926 C) Colorimetric: ASTM Method D859-94, D859-00, D859-05, or
 5927 D859-10.
- 5928 D) Molybdosilicate: Standard Methods, 18th or 19th ed., Method
 5929 4500-Si D or Standard Methods, 20th, 21st, or 22nd ed., Method
 5930 4500-SiO₂ C.
- 5931 E) Heteropoly blue: Standard Methods, 18th or 19th ed., Method
 5932 4500-Si E or Standard Methods, 20th, 21st, or 22nd ed., Method
 5933 4500-SiO₂ D.
- 5934 F) Automated method for molybdate-reactive silica: Standard
 5935 Methods, 18th or 19th ed., Method 4500-Si F or Standard Methods,
 5936 20th, 21st, or 22nd ed., Method 4500-SiO₂ E.
- 5937 G) Inductively coupled plasma.
- 5938 i) USEPA Environmental Metals Methods, Method 200.7
 5939 (rev. 4.4); or
- 5940 ii) Standard Methods, 18th, 19th, 20th, 21st, or 22nd ed., Method
 5941 3120 B.

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5952 H) Axially viewed inductively coupled plasma-atomic emission
5953 spectrometry (AVICP-AES): USEPA NERL Method 200.5.
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5955 BOARD NOTE: USEPA added ASTM Method D859-05, Standard
5956 Methods, 21st ed.; Methods 3120 B and 4500-SiO₂ C, D, and E; and
5957 USEPA NERL Method 200.5 as approved alternative methods on June 3,
5958 2008 (at 73 Fed. Reg. 31616). USEPA added ASTM Method D859-10 as
5959 an approved alternative method on June 28, 2012 (at 77 Fed. Reg. 38523).
5960 USEPA added Standard Methods, 22nd ed., Methods 3120 B and 4500-
5961 SiO₂ C, D, and E as approved alternative methods on May 31, 2013 (at 78
5962 Fed. Reg. 32558).
5963

5964 24) Sodium.
5965

5966 A) Inductively coupled plasma: USEPA Environmental Metals
5967 Methods, Method 200.7 (rev. 4.4).
5968

5969 B) Atomic absorption, direct aspiration: Standard Methods, 18th, 19th,
5970 21st, or 22nd ed., Method 3111 B.
5971

5972 C) Ion chromatography: ASTM Method D6919-03 or D6919-09.
5973

5974 D) Axially viewed inductively coupled plasma-atomic emission
5975 spectrometry (AVICP-AES): USEPA NERL Method 200.5.
5976

5977 BOARD NOTE: USEPA added Standard Methods, 21st ed., Method 3111
5978 B and USEPA NERL Method 200.5 as approved alternative methods on
5979 June 3, 2008 (at 73 Fed. Reg. 31616). USEPA added ASTM Method
5980 D6919-09 as an approved alternative method on June 24, 2011 (at 76 Fed.
5981 Reg. 37014). USEPA added Standard Methods, 22nd ed., Method 3111 B
5982 as an approved alternative method on May 31, 2013 (at 78 Fed. Reg.
5983 32558).
5984

5985 25) Temperature; thermometric: Standard Methods, 18th, 19th, 20th, 21st, or
5986 22nd ed., Method 2550.
5987

5988 BOARD NOTE: USEPA added Standard Methods, 21st ed., Method 2550
5989 as an approved alternative method on June 3, 2008 (at 73 Fed. Reg.
5990 31616). USEPA added Standard Methods, 22nd ed., Method 2550 as an
5991 approved alternative method on May 31, 2013 (at 78 Fed. Reg. 32558).
5992 USEPA added Standard Methods Online, Method 2550-10 as an approved
5993 alternative method on June 19, 2014 (at 79 Fed. Reg. 35081). Because
5994 Standard Methods, 22nd ed., Method 2550 is the same version as Standard

5995 Methods Online, Method 2550-10, the Board has not listed the Standard
5996 Methods Online versions separately.

5997
5998 26) Thallium.
5999

6000 A) Inductively coupled plasma-mass spectrometry: USEPA
6001 Environmental Metals Methods, Method 200.8 (rev. 5.3).

6002
6003 B) Atomic absorption, platform furnace technique: USEPA
6004 Environmental Metals Methods, Method 200.9 (rev. 2.2).

- 6005
6006 b) Sample collection for antimony, arsenic, asbestos, barium, beryllium, cadmium,
6007 chromium, cyanide, fluoride, mercury, nickel, nitrate, nitrite, selenium, and
6008 thallium pursuant to Sections 611.600 through 611.604 must be conducted using
6009 the following sample preservation, container, and maximum holding time
6010 procedures:

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6012 BOARD NOTE: For cyanide determinations samples must be adjusted with
6013 sodium hydroxide to pH 12 at the time of collection. When chilling is indicated
6014 the sample must be shipped and stored at 4° C or less. Acidification of nitrate or
6015 metals samples may be with a concentrated acid or a dilute (50% by volume)
6016 solution of the applicable concentrated acid. Acidification of samples for metals
6017 analysis is encouraged and allowed at the laboratory rather than at the time of
6018 sampling provided the shipping time and other instructions in Section 8.3 of
6019 USEPA Environmental Metals Method 200.7, 200.8, or 200.9 are followed.

6020
6021 1) Antimony.

6022 A) Preservative: Concentrated nitric acid to pH less than 2.

6023 B) Plastic or glass (hard or soft).

6024 C) Holding time: Samples must be analyzed as soon after collection
6025 as possible, but in any event within six months.

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6029 2) Arsenic.

6030 A) Preservative: Concentrated nitric acid to pH less than 2.

6031 B) Plastic or glass (hard or soft).

6032 C) Holding time: Samples must be analyzed as soon after collection
6033 as possible, but in any event within six months.
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- 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).

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- 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.

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- 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.

- 6167 c) Analyses under this Subpart N must be conducted by a certified laboratory in one
 6168 of the categories listed in Section 611.490(a). The Agency must certify
 6169 laboratories to conduct analyses for antimony, arsenic, asbestos, barium,
 6170 beryllium, cadmium, chromium, cyanide, fluoride, mercury, nickel, nitrate, nitrite,
 6171 selenium, and thallium if the laboratory does as follows:
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- 1) It analyzes performance evaluation (PE) samples, provided by the Agency
 6173 pursuant to 35 Ill. Adm. Code 186, that include those substances at levels
 6174 not in excess of levels expected in drinking water; and
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 - 2) It achieves quantitative results on the analyses within the following
 6176 acceptance limits:
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 - A) Antimony: $\pm 30\%$ at greater than or equal to 0.006 mg/l.
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 - B) Arsenic: $\pm 30\%$ at greater than or equal to 0.003 mg/l.
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 - C) Asbestos: 2 standard deviations based on study statistics.
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 - D) Barium: $\pm 15\%$ at greater than or equal to 0.15 mg/l.
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 - E) Beryllium: $\pm 15\%$ at greater than or equal to 0.001 mg/l.
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 - F) Cadmium: $\pm 20\%$ at greater than or equal to 0.002 mg/l.
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 - G) Chromium: $\pm 15\%$ at greater than or equal to 0.01 mg/l.
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 - H) Cyanide: $\pm 25\%$ at greater than or equal to 0.1 mg/l.
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 - I) Fluoride: $\pm 10\%$ at 1 to 10 mg/l.
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 - J) Mercury: $\pm 30\%$ at greater than or equal to 0.0005 mg/l.
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 - K) Nickel: $\pm 15\%$ at greater than or equal to 0.01 mg/l.
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 - L) Nitrate: $\pm 10\%$ at greater than or equal to 0.4 mg/l.
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 - M) Nitrite: $\pm 15\%$ at greater than or equal to 0.4 mg/l.
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 - N) Selenium: $\pm 20\%$ at greater than or equal to 0.01 mg/l.
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 - O) Thallium: $\pm 30\%$ at greater than or equal to 0.002 mg/l.
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6210 BOARD NOTE: Derived from 40 CFR 141.23(k) and appendix A to subpart C of 40 CFR 141
6211 (2017)(~~2016~~).

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6213 (Source: Amended at 42 Ill. Reg. _____, effective _____)
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6215 SUBPART Q: RADIOLOGICAL MONITORING AND ANALYTICAL REQUIREMENTS
6216

6217 **Section 611.720 Analytical Methods**
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6219 a) The methods specified below, or alternative methods approved by the Agency
6220 pursuant to Section 611.480, incorporated by reference in Section 611.102, are to
6221 be used to determine compliance with Section 611.330, except in cases where
6222 alternative methods have been approved in accordance with Section 611.480.
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6224 1) Gross Alpha and Beta.
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6226 A) Standard Methods.
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6228 i) Evaporation: Method 302, 13th ed.; or
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6230 ii) Evaporation: Method 7110 B, 17th, 18th, 19th, 20th, 21st, or
6231 22nd ed.;
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6233 B) Evaporation: USEPA Interim Radiochemical Methods: pages 1-3;
6234

6235 C) Evaporation: USEPA Radioactivity Methods, Method 900.0;
6236

6237 D) Evaporation: USEPA Radiochemical Analyses: pages 1-5;
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6239 E) Evaporation: USEPA Radiochemistry Procedures, Method 00-01;
6240 or
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6242 F) Evaporation: USGS Method R-1120-76.
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6244 G) Liquid scintillation: ASTM Method D7283-17.
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6246 H) Liquid scintillation: Standard Methods Online, Method 7110 D-
6247 17.
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6249 BOARD NOTE: USEPA added Standard Methods, 21st ed., Method
6250 7110 B as an approved alternative method on June 3, 2008 (at 73 Fed.
6251 Reg. 31616). USEPA added Standard Methods, 22nd ed., Method 7110 B
6252 as an approved alternative method on June 21, 2013 (at 78 Fed. Reg.

6253 37463). USEPA added ASTM Method D7283-17 and Standard Methods
6254 Online, Method 7110 D-17 as approved alternative methods on July 27,
6255 2017 (at 82 Fed. Reg. 34861).
6256

6257 2) Gross Alpha.
6258

6259 A) Coprecipitation: Standard Methods, 18th, 19th, 20th, 21st, or 22nd
6260 ed., Method 7110 C; or

6261
6262 B) Coprecipitation: USEPA Radiochemistry Procedures, Method 00-
6263 02.
6264

6265 BOARD NOTE: USEPA added Standard Methods, 21st ed., Method 7110
6266 C as an approved alternative method on June 3, 2008 (at 73 Fed. Reg.
6267 31616). See the comment appended to 611.611(a)(2)(D)(ii) re Standard
6268 Methods Online, Method 3113 B-04 for antimony. USEPA added
6269 Standard Methods, 22nd ed., Method 7110 C as an approved alternative
6270 method on June 21, 2013 (at 78 Fed. Reg. 37463).
6271

6272 3) Radium-226.
6273

6274 A) ASTM Methods.

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6276 i) Radiochemical: Method D2460-97 or D2460-07; or

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6278 ii) Radon emanation: Method D3454-97 or D3454-05;
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6280 B) Radiochemical: New York Radium Method;

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6282 C) Standard Methods.

6283
6284 i) Radiochemical: Method 304, 13th ed.;

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6286 ii) Radon emanation: Method 305, 13th ed.;

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6288 iii) Radiochemical: Method 7500-Ra B, 17th, 18th, 19th, 20th,
6289 21st, or 22nd ed.; or

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6291 iv) Radon emanation: Method 7500-Ra C, 17th, 18th, 19th,
6292 20th, 21st, or 22nd ed.;

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6294 v) Gamma spectrometry: Method 7500-Ra E, 22nd ed.;
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- D) Radon emanation: EML Procedures Manual (27th or 28th ed.), Method Ra-04;
 - E) USEPA Interim Radiochemical Methods: ~~pages 13-15 or 16-23;~~
 - i) Radiochemical: pages 13-15; or
 - ii) Radon emanation: pages 16-23;
 - F) USEPA Radioactivity Methods; ~~Methods 903.0, 903.1;~~
 - i) Radiochemical: Method 903.0; or
 - ii) Radon emanation: Method 903.1;
 - G) Radiochemical: USEPA Radiochemical Analyses, pages 19-32;
 - H) Radiochemical: USEPA Radiochemistry Procedures; ~~Method Ra-03 or Ra-04; or~~
 - i) Radiochemical: Method Ra-03; or
 - ii) Radon emanation: Method Ra-04; or
 - I) USGS Methods.
 - i) Radiochemical: USGS Method R-1140-76; or
 - ii) Radon emanation: USGS Method R-1141-76.
 - J) Radiochemical: Georgia Radium Method.
- BOARD NOTE: USEPA added Standard Methods, 21st ed., Methods 7500-Ra B and C as approved alternative methods on June 3, 2008 (at 73 Fed. Reg. 31616). USEPA added ASTM Methods D2460-07 and D3454-05 as approved alternative methods on June 8, 2010 (at 75 Fed. Reg. 32295). USEPA added Standard Methods, 22nd ed., Methods 7500-Ra B and C as approved alternative methods on June 21, 2013 (at 78 Fed. Reg. 37463). USEPA added Standard Methods, 22nd ed., Method 7500-Ra E as an approved alternative method on July 27, 2017 (at 82 Fed. Reg. 34861).
- 4) Radium-228.

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- A) ~~Standard Methods, 17th, 18th, 19th, 20th, 21st, or 22nd ed., Method 7500-Ra D;~~
 - i) Radiochemical: Method 7500-Ra D (Standard Methods, 17th, 18th, 19th, 20th, 21st, or 22nd ed.);
 - ii) Gamma spectrometry: Method 7500-Ra E (Standard Methods, 22nd ed.);
- B) Radiochemical: New York Radium Method;
- C) Radiochemical: USEPA Interim Radiochemical Methods, pages 24-28;
- D) Radiochemical: USEPA Radioactivity Methods, Method 904.0;
- E) Radiochemical: USEPA Radiochemical Analyses, pages 19-32;
- F) Radiochemical: USEPA Radiochemistry Procedures, Method Ra-05;
- G) Radiochemical: USGS Method R-1142-76;
- H) Radiochemical: New Jersey Radium Method; or
- I) Radiochemical: Georgia Radium Method.

BOARD NOTE: USEPA added Standard Methods, 21st ed., Method 7500-Ra D as an approved alternative method on June 3, 2008 (at 73 Fed. Reg. 31616). USEPA added Standard Methods, 22nd ed., Method 7500-Ra D as an approved alternative method on June 21, 2013 (at 78 Fed. Reg. 37463). USEPA added Standard Methods, 22nd ed., Method 7500-Ra E as an approved alternative method on July 27, 2017 (at 82 Fed. Reg. 34861).

- 5) Uranium.
 - A) ~~Standard Methods, 17th, 18th, 19th, 20th, 21st, or 22nd ed.; Method 7500-U B or 7500-U C;~~
 - i) Radiochemical: Method 7500-U B; or

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- ii) Fluorometric: Method 7500-U C;
 - B) ICP-MS: Standard Methods, 20th or 21st ed., Method 3125;
 - C) ASTM Methods.
 - i) Fluorometric: Method D2907-97;
 - ii) Alpha spectrometry: Method D3972-97, D3972-02, or D3972-09;
 - iii) Laser spectrometry: Method D5174-97, D5174-02, or D5174-07;
 - iv) ICP-MS: Method D5673-03, Method D5673-05, or Method D5673-10; or
 - v) Alpha liquid scintillation spectrometry: Method D6239-09;
 - D) USEPA Radioactivity Methods; ~~Methods 908.0, 908.1;~~
 - i) Radiochemical: Method 908.0; or
 - ii) Fluorometric: Method 908.1;
 - E) ICP-MS: USEPA Environmental Metals Methods, Method 200.8 (rev. 5.3);
 - F) Alpha spectrometry: USEPA Radiochemical Analyses, pages 33-48;
 - G) Alpha spectrometry: USEPA Radiochemistry Procedures, Method 00-07;
 - H) EML Procedures Manual (27th or 28th ed.); ~~Method U-02 or U-04;~~
~~or~~
 - i) Alpha spectrometry: Method U-02; or
 - ii) Fluorometric: Method U-04; or
 - I) USGS Methods.

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- i) Fluorometric: USGS Method R-1180-76;
- ii) Fluorometric: USGS Method R-1181-76; or
- iii) Alpha spectrometry: USGS Method R-1182-76.

BOARD NOTE: If uranium (U) is determined by mass, a conversion factor of 0.67 pCi/μg of uranium must be used. This conversion factor is based on the 1:1 activity ratio of 234U and 238U that is characteristic of naturally occurring uranium.

BOARD NOTE: USEPA added Standard Methods, 21st ed., Method 7500-U B and Method 7500-U C and ASTM Method D5673-05 as approved alternative methods on June 3, 2008 (at 73 Fed. Reg. 31616). USEPA added ASTM Method D5174-07 as an approved alternative method on June 8, 2010 (at 75 Fed. Reg. 32295). USEPA added ASTM Method D3972-09 as an approved alternative method on June 24, 2011 (at 76 Fed. Reg. 37014). USEPA added Standard Methods, 21st ed., Method 3125 and ASTM Methods D5673-10 and D6329-09 as approved alternative methods on June 3, 2012 (at 77 Fed. Reg. 38523). USEPA added Standard Methods, 22nd ed., Methods 7500-U B and C as approved alternative methods on June 21, 2013 (at 78 Fed. Reg. 37463).

6) Radioactive Cesium.

A) ASTM Methods.

- i) Radiochemical: Method D2459-72; or
- ii) Gamma ray spectrometry: Method D3649-91, D3649-98a, or D3649-06;

B) Standard Methods.

- i) Gamma ray spectrometry: Method 7120, 19th, 20th, 21st, or 22nd ed.; or
- ii) Radiochemical: Method 7500-Cs B, 17th, 18th, 19th, 20th, 21st, or 22nd ed.;

C) Gamma ray spectrometry: EML Procedures Manual (27th or 28th ed.), Method Ga-01-R;

- 6468 D) Radiochemical: USEPA Interim Radiochemical Methods, pages 4-
- 6469 5;
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- 6471 E) USEPA Radioactivity Methods; ~~Methods 901.0, 901.1;~~
- 6472
- 6473 i) Radiochemical: Method 901.0; or
- 6474
- 6475 ii) Gamma ray spectrometry: Method 901.1;
- 6476
- 6477 F) Gamma ray spectrometry: USEPA Radiochemical Analyses,
- 6478 pages 92-95; or
- 6479
- 6480 G) USGS Methods.
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- 6482 i) Gamma ray spectrometry: USGS Method R-1110-76; or
- 6483
- 6484 ii) Radiochemical: USGS Method R-1111-76.
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BOARD NOTE: USEPA added Standard Methods, 21st ed., Methods 7120 and 7500-Cs B as approved alternative methods on June 3, 2008 (at 73 Fed. Reg. 31616). USEPA added ASTM Method D3649-06 as an approved alternative method on June 8, 2010 (at 75 Fed. Reg. 32295). USEPA added Standard Methods, 22nd ed., Methods 7120 and 7500-Cs B as approved alternative methods on June 21, 2013 (at 78 Fed. Reg. 37463).

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- 6493 7) Radioactive Iodine.
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- 6495 A) ASTM Methods.
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- 6497 i) Radiochemical: D3649-91, D3649-98a, or D3649-06; or
- 6498
- 6499 ii) Gamma ray spectrometry: D4785-93, D4785-00a, or
- 6500 D4785-08;
- 6501
- 6502 B) Standard Methods.
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- 6504 i) Method 7120, 19th, 20th, 21st, or 22nd ed.;
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- 6506 ii) Radiochemical: Method 7500-I B, 17th, 18th, 19th, 20th, 21st,
- 6507 or 22nd ed.;
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- 6509 iii) Radiochemical: Method 7500-I C, 17th, 18th, 19th, 20th, 21st,
- 6510 or 22nd ed.; or

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- iv) Radiochemical: Method 7500-I D, 17th, 18th, 19th, 20th, 21st, or 22nd ed.;
 - C) Gamma ray spectrometry: EML Procedures Manual (27th or 28th ed.), Method Ga-01-R;
 - D) Radiochemical: USEPA Interim Radiochemical Methods, pages 6-8 or 9-12;
 - E) Gamma ray spectrometry: USEPA Radiochemical Analyses, pages 92-95; or
 - F) USEPA Radioactivity Methods; ~~Methods 901.1 or 902.0.~~
 - i) Gamma ray spectrometry: Method 901.1; or
 - ii) Radiochemical: Method 902.0.

BOARD NOTE: USEPA added Standard Methods, 21st ed., Methods 7120 and 7500-I B, C, and D as approved alternative methods on June 3, 2008 (at 73 Fed. Reg. 31616). USEPA added ASTM Methods D3649-06 and D4785-08 as approved alternative methods on June 8, 2010 (at 75 Fed. Reg. 32295). USEPA added Standard Methods, 22nd ed., Methods 7120 and 7500-I B, C, and D as approved alternative methods on June 21, 2013 (at 78 Fed. Reg. 37463).

- 8) Radioactive Strontium-89 and 90.
 - A) Standard Methods.
 - i) Radiochemical: Method 303, 13th ed.; or
 - ii) Radiochemical: Method 7500-Sr B, 17th, 18th, 19th, 20th, 21st, or 22nd ed.;
 - B) Radiochemical: EML Procedures Manual (27th or 28th ed.), Method Sr-01 or Sr-02.
 - C) Radiochemical: USEPA Interim Radiochemical Methods, pages 29-33;
 - D) Radiochemical: USEPA Radioactivity Methods, Method 905.0;

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- E) Radiochemical: USEPA Radiochemical Analyses, pages 65-73;
- F) Radiochemical: USEPA Radiochemistry Procedures, Method Sr-04; or
- G) Radiochemical: USGS Method R-1160-76.

BOARD NOTE: USEPA added Standard Methods, 21st ed., Method 7500-Sr B as an approved alternative method on June 3, 2008 (at 73 Fed. Reg. 31616). USEPA added Standard Methods, 22nd ed., Method 7500-Sr B as an approved alternative method on June 21, 2013 (at 78 Fed. Reg. 37463).

9) Tritium.

- A) Liquid scintillation: ASTM Methods: Method D4107-91, D4107-98, or D4107-08;
- B) Standard Methods.
 - i) Liquid scintillation: Method 306, 13th ed.; or
 - ii) Liquid scintillation: Method 7500-³H B, 17th, 18th, 19th, 20th, 21st, or 22nd ed.;
- C) Liquid scintillation: USEPA Interim Radiochemical Methods, pages 34-37;
- D) Liquid scintillation: USEPA Radioactivity Methods, Method 906.0;
- E) Liquid scintillation: USEPA Radiochemical Analyses, pages 87-91;
- F) Liquid scintillation: USEPA Radiochemistry Procedures, Method H-02; or
- G) Liquid scintillation: USGS Method R-1171-76.

BOARD NOTE: USEPA added Standard Methods, 21st ed., Method 7500-³H B as an approved alternative method on June 3, 2008 (at 73 Fed. Reg. 31616). USEPA added ASTM Method D4107-08 as an approved alternative method on June 8, 2010 (at 75 Fed. Reg. 32295). USEPA

6598 added Standard Methods, 22nd ed., Method 7500-³H B as an approved
6599 alternative method on June 21, 2013 (at 78 Fed. Reg. 37463).

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6601 10) Gamma Emitters.

6602
6603 A) ASTM Methods.

6604
6605 i) Gamma ray spectrometry: Method D3649-91, D3649-98a,
6606 or D3649-06; or

6607
6608 ii) Gamma ray spectrometry: Method D4785-93, D4785-00a,
6609 or D4785-08;

6610
6611 B) Standard Methods.

6612
6613 i) Gamma ray spectrometry: Method 7120, 19th, 20th, 21st, or
6614 22nd ed.;

6615
6616 ii) Gamma ray spectrometry: Method 7500-Cs B, 17th, 18th,
6617 19th, 20th, 21st, or 22nd ed.; or

6618
6619 iii) Gamma ray spectrometry: Method 7500-I B, 17th, 18th,
6620 19th, 20th, 21st, or 22nd ed.;

6621
6622 C) Gamma ray spectrometry: EML Procedures Manual (27th or 28th
6623 ed.), Method Ga-01-R;

6624
6625 D) Gamma ray spectrometry: USEPA Radioactivity Methods,
6626 Methods 901.0, 901.1, or 902.0;

6627
6628 E) Gamma ray spectrometry: USEPA Radiochemical Analyses,
6629 pages 92-95; or

6630
6631 F) Gamma ray spectrometry: USGS Method R-1110-76.

6632
6633 BOARD NOTE: USEPA added Standard Methods, 21st ed., Methods
6634 7120, 7500-Cs B, and 7500-I B as approved alternative methods on June
6635 3, 2008 (at 73 Fed. Reg. 31616). USEPA added ASTM Methods D3649-
6636 08 and D4785-08 as approved alternative methods on June 8, 2010 (at 75
6637 Fed. Reg. 32295). USEPA added Standard Methods, 22nd ed., Methods
6638 7120, 7500-Cs B, and 7500-I B as approved alternative methods on June
6639 21, 2013 (at 78 Fed. Reg. 37463).

6640

6641 b) When the identification and measurement of radionuclides other than those listed
 6642 in subsection (a) are required, the following methods, incorporated by reference in
 6643 Section 611.102, are to be used, except in cases where alternative methods have
 6644 been approved in accordance with Section 611.480:

- 6645 1) Aqueous Radiochemical Procedures.
- 6646
- 6647 2) EML Procedures Manual (27th or 28th ed.).
- 6648
- 6649

6650 c) For the purpose of monitoring radioactivity concentrations in drinking water, the
 6651 required sensitivity of the radioanalysis is defined in terms of a detection limit.
 6652 The detection limit must be that concentration which can be counted with a
 6653 precision of plus or minus 100 percent at the 95 percent confidence level (1.96σ ,
 6654 where σ is the standard deviation of the net counting rate of the sample).

- 6655 1) To determine compliance with Section 611.330(b), (c), and (e), the
 6656 detection limit must not exceed the concentrations set forth in the
 6657 following table:
- 6658
- 6659

Contaminant	Detection Limit
Gross alpha particle activity	3 pCi/ℓ
Radium-226	1 pCi/ℓ
Radium-228	1 pCi/ℓ
Uranium	1 µg/ℓ

6660 BOARD NOTE: Derived from 40 CFR 141.25(c) Table B (2017)(2013).

- 6661
- 6662 2) To determine compliance with Section 611.330(d), the detection limits
 6663 must not exceed the concentrations listed in the following table:
- 6664

Radionuclide	Detection Limit
Tritium	1,000 pCi/ℓ
Strontium-89	10 pCi/ℓ
Strontium-90	2 pCi/ℓ

Iodine-131	1 pCi/ℓ
Cesium-134	10 pCi/ℓ
Gross beta	4 pCi/ℓ
Other radionuclides	1/10 of applicable limit

6665 BOARD NOTE: Derived from 40 CFR 141.25(c) Table C (2017)(2013).

6666
6667 d) To judge compliance with the MCLs listed in Section 611.330, averages of data
6668 must be used and must be rounded to the same number of significant figures as
6669 the MCL for the substance in question.
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6671 BOARD NOTE: Derived from 40 CFR 141.25 and appendix A to subpart C of 40 CFR 141
6672 (2017)(2016).

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6674 (Source: Amended at 42 Ill. Reg. _____, effective _____)
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6676 SUBPART S: GROUNDWATER RULE

6677
6678 **Section 611.802 Groundwater Source Microbial Monitoring and Analytical Methods**
6679

6680 a) Triggered source water monitoring.

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6682 1) General requirements. A GWS supplier must conduct triggered source
6683 water monitoring if the following conditions exist.
6684

6685 A) The supplier does not provide at least 4-log treatment of viruses
6686 (using inactivation, removal, or an Agency-approved combination
6687 of 4-log virus inactivation and removal) before or at the first
6688 customer for each groundwater source.

6689
6690 B) This subsection (a)(1)(B) corresponds with 40 CFR
6691 141.802(a)(1)(ii), which has no operative effect after a past
6692 implementation date. This statement maintains structural
6693 consistency with the federal regulations.
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6695 C) The system is notified that a sample collected under Sections
6696 611.1054 through 611.1057 is total coliform-positive and the
6697 sample is not invalidated under Section 611.1053(c).
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- 2) Sampling requirements. A GWS supplier must collect, within 24 hours after notification of the total coliform-positive sample, at least one groundwater source sample from each groundwater source in use at the time the total coliform-positive sample was collected pursuant to Sections 611.1054 through 611.1057, except as provided in subsection (a)(2)(B).
 - A) The Agency may, by a SEP issued pursuant to Section 611.110, extend the 24-hour time limit on a case-by-case basis if it determines that the supplier cannot collect the groundwater source water sample within 24 hours due to circumstances beyond the supplier's control. In the case of an extension, the Agency must specify how much time the supplier has to collect the sample.
 - B) If approved by the Agency, a supplier with more than one groundwater source may meet the requirements of this subsection (a)(2) by sampling a representative groundwater source or sources. If directed by the Agency by a SEP issued pursuant to Section 611.110, the supplier must submit for Agency approval a triggered source water monitoring plan that identifies one or more groundwater sources that are representative of each monitoring site in the system's sample siting plan pursuant to Section 611.521 and that the system intends to use for representative sampling pursuant to this subsection (a).
 - C) This subsection (a)(2)(C) corresponds with 40 CFR 141.802(a)(1)(ii), a now-obsolete implementing provision. This statement maintains structural consistency with the federal regulations.
 - D) A GWS supplier that serves 1,000 or fewer people may use a repeat sample collected from a groundwater source to meet both the requirements of Subpart AA and to satisfy the monitoring requirements of subsection (a)(2) for that groundwater source only if the Agency, by a SEP issued pursuant to Section 611.110, approves the use of E. coli as a fecal indicator for source water monitoring pursuant to this subsection (a) and approves the use of a single sample for meeting both the triggered source water monitoring requirements in this subsection (a) and the repeat monitoring requirements in Section 611.1058. If the repeat sample collected from the groundwater source is E. coli-positive, the system must comply with subsection (a)(3).
 - 3) Additional requirements. If the Agency does not require corrective action pursuant to Section 611.803(a)(2) for a fecal indicator-positive source

6743 water sample collected pursuant to subsection (a)(2) that is not invalidated
6744 pursuant to subsection (d), the system must collect five additional source
6745 water samples from the same source within 24 hours after being notified
6746 of the fecal indicator-positive sample.
6747

6748 4) Consecutive and wholesale systems.
6749

6750 A) In addition to the other requirements of this subsection (a), a
6751 consecutive GWS supplier that has a total coliform-positive sample
6752 collected pursuant to Sections 611.1054 through 611.1057, must
6753 notify the wholesale systems within 24 hours after being notified
6754 of the total coliform-positive sample.
6755

6756 B) In addition to the other requirements of this subsection (a), a
6757 wholesale GWS supplier must comply with the following
6758 requirements:
6759

6760 i) A wholesale GWS supplier that receives notice from a
6761 consecutive system it serves that a sample collected
6762 pursuant to Sections 611.1054 through 611.1057, is total
6763 coliform-positive must, within 24 hours after being
6764 notified, collect a sample from its groundwater sources
6765 pursuant to subsection (a)(2) and analyze it for a fecal
6766 indicator pursuant to subsection (c).
6767

6768 ii) If the sample collected pursuant to subsection (a)(4)(B)(i) is
6769 fecal indicator-positive, the wholesale GWS supplier must
6770 notify all consecutive systems served by that groundwater
6771 source of the fecal indicator source water positive within 24
6772 hours after being notified of the groundwater source sample
6773 monitoring result and must meet the requirements of
6774 subsection (a)(3).
6775

6776 5) Exceptions to the triggered source water monitoring requirements. A
6777 GWS supplier is not required to comply with the source water monitoring
6778 requirements of subsection (a) if either of the following conditions exists:
6779

6780 A) The Agency determines, and documents in writing, by a SEP
6781 issued pursuant to Section 611.110, that the total coliform-positive
6782 sample collected pursuant to Sections 611.1054 through 611.1057,
6783 is caused by a distribution system deficiency; or
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B) The total coliform-positive sample collected pursuant to Sections 611.1054 through 611.1057, is collected at a location that meets Agency criteria for distribution system conditions that will cause total coliform-positive samples.

b) Assessment source water monitoring. If directed by the Agency by a SEP issued pursuant to Section 611.110, a GWS supplier must conduct assessment source water monitoring that meets Agency-determined requirements for such monitoring. A GWS supplier conducting assessment source water monitoring may use a triggered source water sample collected pursuant to subsection (a)(2) to meet the requirements of subsection (b). Agency-determined assessment source water monitoring requirements may include the following:

- 1) Collection of a total of 12 groundwater source samples that represent each month the system provides groundwater to the public;
- 2) Collection of samples from each well, unless the system obtains written Agency approval to conduct monitoring at one or more wells within the GWS that are representative of multiple wells used by that system and which draw water from the same hydrogeologic setting;
- 3) Collection of a standard sample volume of at least 100 mL for fecal indicator analysis, regardless of the fecal indicator or analytical method used;
- 4) Analysis of all groundwater source samples using one of the analytical methods listed in subsection (c)(2) for the presence of E. coli, enterococci, or coliphage;
- 5) Collection of groundwater source samples at a location prior to any treatment of the groundwater source unless the Agency approves a sampling location after treatment; and
- 6) Collection of groundwater source samples at the well itself, unless the system's configuration does not allow for sampling at the well itself and the Agency approves an alternate sampling location by a SEP issued pursuant to Section 611.110 that is representative of the water quality of that well.

c) Analytical methods.

- 1) A GWS supplier subject to the source water monitoring requirements of subsection (a) must collect a standard sample volume of at least 100 mL

6828 for fecal indicator analysis, regardless of the fecal indicator or analytical
6829 method used.

6830
6831 2) A GWS supplier must analyze all groundwater source samples collected
6832 pursuant to subsection (a) using one of the analytical methods listed in
6833 subsections (c)(2)(A) through (c)(2)(C), each incorporated by reference in
6834 Section 611.102, or alternative methods approved by the Agency pursuant
6835 to Section 611.480, subject to the limitations of subsection (c)(2)(D), for
6836 the presence of E. coli, enterococci, or coliphage:

- 6837
6838 A) E. coli:
- 6839 i) Colilert[®] Test; Standard Methods, 20th, 21st, or 22nd ed.,
6840 Method 9223 B.
 - 6841 ii) Colisure[™] Test; Standard Methods, 20th, 21st, or 22nd ed.,
6842 Method 9223 B.
 - 6843 iii) Membrane Filter Method with MI Agar; USEPA Method
6844 1604.
 - 6845 iv) m-ColiBlue24 Test.
 - 6846 v) E*Colite Test.
 - 6847 vi) EC-MUG; Standard Methods, 20th or 22nd ed., Method
6848 9221 F.
 - 6849 vii) NA-MUG; Standard Methods, 20th ed., Method 9222 G.
 - 6850 viii) Colilert-18[®] Test; Standard Methods, 20th, 21st, or 22nd ed.,
6851 Method 9223 B.
 - 6852 ix) ReadyCult[®] 2007.
 - 6853 x) Modified Colitag[™] Test.
 - 6854 xi) Chromocult[®] Method.
 - 6855 xii) Tecta EC/TC P-A Test, ver. 1.0 or 2.0.

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BOARD NOTE: EC-MUG (Standard Methods, Method 9221 F)
or NA-MUG (Standard Methods, Method 9222 G) can be used for

6871 E. coli testing step, as described in Section 611.526(f)(1) or (f)(2)
 6872 after use of Standard Methods, 20th ed., Method 9221 B, 9221 D,
 6873 9222 B, or 9222 C. USEPA added Standard Methods, 21st ed.,
 6874 Method 9223 B as an approved alternative method on June 3, 2008
 6875 (at 73 Fed. Reg. 31616). USEPA added Readycult® 2007,
 6876 Modified Colitag™ Test, and Chromocult® Method as approved
 6877 alternative methods on June 8, 2010 (at 75 Fed. Reg. 32295).
 6878 USEPA added Standard Methods, 22nd ed., Methods 9221 F and
 6879 9223 B as approved alternative methods on May 31, 2013 (at 78
 6880 Fed. Reg. 32558). USEPA added Standard Methods Online,
 6881 Method 9221 F-06 and 9223 B-04 and Tecta EC/TC P-A Test, ver
 6882 1.0 as approved alternative methods on June 19, 2014 (at 79 Fed.
 6883 Reg. 35081). USEPA added Tecta EC/TC P-A Test, ver. 2.0 as
 6884 an approved alternative method on July 27, 2017 (at 82 Fed. Reg.
 6885 34861). Because Standard Methods, 22nd ed., Methods 9223 B and
 6886 9221 F are the same versions as Standard Methods Online,
 6887 Methods 9223 B-04 and 9221 F-06, the Board has not listed the
 6888 Standard Methods Online versions separately.
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6890 B) Enterococci:

- 6891
- 6892 i) Multiple-Tube Technique; Standard Methods, 20th ed.,
 6893 Method 9230 B or Standard Methods Online, Method 9230
 6894 B-04.
 - 6895
 - 6896 ii) Membrane Filter Technique; Standard Methods, 20th ed.,
 6897 Method 9230 C, and USEPA Method 1600.

6898

6899 BOARD NOTE: The holding time and temperature for
 6900 groundwater samples are specified in subsection (c)(2)(D),
 6901 rather than as specified in Section 8 of USEPA Method
 6902 1600.

- 6903
- 6904 iii) Enterolert.

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6906 BOARD NOTE: Medium is available through IDEXX
 6907 Laboratories, Inc., at the address set forth in Section
 6908 611.102(b). Preparation and use of the medium must be as
 6909 set forth in the article that embodies the method as
 6910 incorporated by reference in Section 611.102(b).
 6911

6912 BOARD NOTE: USEPA added Standard Methods Online,
6913 Method 9230 B-04 as an approved alternative method on June 3,
6914 2008 (at 73 Fed. Reg. 31616).
6915

6916 C) Coliphage:

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6918 i) Two-Step Enrichment Presence-Absence Procedure;
6919 USEPA Method 1601 or Charm Fast Phage.
6920

6921 ii) Single Agar Layer Procedure;
6922 USEPA Method 1602.

6923 D) Limitation on methods use. The time from sample collection to
6924 initiation of analysis may not exceed 30 hours. The GWS supplier
6925 is encouraged but is not required to hold samples below 10°C
6926 during transit.
6927

6928 d) Invalidation of a fecal indicator-positive groundwater source sample.
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6930 1) A GWS supplier may obtain Agency invalidation of a fecal indicator-
6931 positive groundwater source sample collected pursuant to subsection (a)
6932 only under either of the following conditions:
6933

6934 A) The supplier provides the Agency with written notice from the
6935 laboratory that improper sample analysis occurred; or
6936

6937 B) The Agency determines and documents in writing by a SEP issued
6938 pursuant to Section 611.110 that there is substantial evidence that a
6939 fecal indicator-positive groundwater source sample is not related to
6940 source water quality.
6941

6942 2) If the Agency invalidates a fecal indicator-positive groundwater source
6943 sample, the GWS supplier must collect another source water sample
6944 pursuant to subsection (a) within 24 hours after being notified by the
6945 Agency of its invalidation decision, and the supplier must have it analyzed
6946 for the same fecal indicator using the analytical methods in subsection (c).
6947 The Agency may extend the 24-hour time limit on a case-by-case basis if
6948 the supplier cannot collect the source water sample within 24 hours due to
6949 circumstances beyond its control. In the case of an extension, the Agency
6950 must specify how much time the system has to collect the sample.
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6952 e) Sampling location.
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- 1) Any groundwater source sample required pursuant to subsection (a) must be collected at a location prior to any treatment of the groundwater source unless the Agency approves a sampling location after treatment.
 - 2) If the supplier's system configuration does not allow for sampling at the well itself, it may collect a sample at an Agency-approved location to meet the requirements of subsection (a) if the sample is representative of the water quality of that well.
- f) New sources. If directed by the Agency by a SEP issued pursuant to Section 611.110, a GWS supplier that places a new groundwater source into service must conduct assessment source water monitoring pursuant to subsection (b). If directed by the SEP, the system must begin monitoring before the groundwater source is used to provide water to the public.
- g) Public Notification. A GWS supplier with a groundwater source sample collected pursuant to subsection (a) or (b) that is fecal indicator-positive and which is not invalidated pursuant to subsection (d), including a consecutive system supplier served by the groundwater source, must conduct public notification pursuant to Section 611.902.
- h) Monitoring Violations. A failure to meet the requirements of subsections (a) through (f) is a monitoring violation that requires the GWS supplier to provide public notification pursuant to Section 611.904.

6979 BOARD NOTE: Derived from 40 CFR 141.402 and appendix A to subpart C of 40 CFR
6980 141 (2017)(2016).

6981 (Source: Amended at 42 Ill. Reg. _____, effective _____)

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6984 SUBPART AA: REVISED TOTAL COLIFORM RULE

6985
6986 **Section 611.1052 Analytical Methods and Laboratory Certification**

- 6987
6988 a) Analytical methodology.
- 6989 1) The standard sample volume required for analysis, regardless of analytical
6990 method used, is 100 mL.
 - 6991 2) A supplier needs only determine the presence or absence of total coliforms
6992 and E. coli; a determination of density is not required.
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- 6996 3) The time from sample collection to initiation of test medium incubation
6997 may not exceed 30 hours. Suppliers are encouraged but not required to
6998 hold samples below 10° C during transit.
- 6999
- 7000 4) If water having residual chlorine (measured as free, combined, or total
7001 chlorine) is to be analyzed, sufficient sodium thiosulfate (Na₂S₂O₃) must
7002 be added to the sample bottle before sterilization to neutralize any residual
7003 chlorine in the water sample. Dechlorination procedures are addressed in
7004 section 2 of Standard Methods, 20th or 21st ed., Method 9060 A, each
7005 incorporated by reference in Section 611.102.
- 7006
- 7007 5) The supplier must conduct total coliform and E. coli analyses in
7008 accordance with one of the following analytical methods, each
7009 incorporated by reference in Section 611.102:
- 7010

7011 BOARD NOTE: All monitoring and analyses must be done in accordance
7012 with the version of the approved method recited in this subsection (a) and
7013 incorporated by reference in Section 611.102. The methods listed are the
7014 only versions that may be used for compliance with this Subpart AA.
7015 Laboratories should be careful to use only the approved versions of the
7016 methods, as product package inserts may not be the same as the approved
7017 versions of the methods.

7018 A) Total coliforms, lactose fermentation methods:

- 7019
- 7020
- 7021 i) Standard total coliform fermentation technique: sections 1
7022 and 2 of Standard Methods, 20th, 21st, or 22nd ed., Method
7023 9221 B; or
- 7024

7025 BOARD NOTE: Lactose broth, as commercially available,
7026 may be used in lieu of lauryl tryptose broth, if the supplier
7027 conducts at least 25 parallel tests between lactose broth and
7028 lauryl tryptose broth using the water normally tested, and if
7029 the findings from this comparison demonstrate that the
7030 false-positive rate and false-negative rate for total
7031 coliforms, using lactose broth, is less than 10 percent.
7032 Because Standard Methods, 21st ed., Method 9221 B is the
7033 same version as Standard Methods Online 9221 B-99, the
7034 Board has not listed the Standard Methods Online version
7035 separately.

- 7036
- 7037 ii) Presence-absence (P-A) coliform test: sections 1 and 2 of
7038 Standard Methods, 20th or 21st, Method 9221 D.

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BOARD NOTE: A multiple tube enumerative format, as described in Standard Methods, 20th or 21st, Method 9221 D, is approved for this method for use in presence-absence determination under this Subpart AA. Because Standard Methods, 21st ed., Method 9221 D is the same version as Standard Methods Online 9221 D-99, the Board has not listed the Standard Methods Online version separately.

BOARD NOTE: USEPA added sections 1 and 2 of Standard Methods Online, Method 9221 B-06 as an approved alternative method on June 19, 2014 (at 79 Fed. Reg. 35081). Because Standard Methods, 22nd ed., Method 9221 B is the same version as Standard Methods Online, Method 9221 B-06, the Board has not listed the Standard Methods Online versions separately.

B) Total coliforms, membrane filtration methods:

- i) Standard total coliform membrane filter procedure: Standard Methods, 20th or 21st ed., Method 9222 B or C.

BOARD NOTE: Because Standard Methods, 20th ed., Methods 9222 B and C are the same version as Standard Methods Online 9222 B and C-97, the Board has not listed the Standard Methods Online version separately.

- ii) Membrane filtration using MI medium: USEPA Method 1604.
- iii) m-ColiBlue24[®] Test.

BOARD NOTE: All filtration series must begin with membrane filtration equipment that has been sterilized by autoclaving. Exposure of filtration equipment to UV light is not adequate to ensure sterilization. Subsequent to the initial autoclaving, exposure of the filtration equipment to UV light may be used to sanitize the funnels between filtrations within a filtration series. Alternatively, membrane filtration equipment that is pre-sterilized by the manufacturer (i.e., disposable funnel units) may be used.

- iv) Chromocult[®] Method.

BOARD NOTE: All filtration series must begin with membrane filtration equipment that has been sterilized by autoclaving. Exposure of filtration equipment to UV light is not adequate to ensure sterilization. Subsequent to the initial autoclaving, exposure of the filtration equipment to UV light may be used to sanitize the funnels between filtrations within a filtration series. Alternatively, membrane filtration equipment that is pre-sterilized by the manufacturer (i.e., disposable funnel units) may be used.

C) Total coliforms, enzyme substrate methods:

- i) Colilert® Test: Standard Methods, 20th, 21st, or 22nd ed., Method 9223 B;

BOARD NOTE: Multiple-tube and multi-well enumerative formats for this method are approved for use in presence-absence determination under this Subpart AA.

- ii) Colilert-18® Test: Standard Methods, 20th, 21st, or 22nd ed., Method 9223 B;

- iii) Colisure™ Test: Standard Methods, 20th, 21st, or 22nd ed., Method 9223 B;

BOARD NOTE: Multiple-tube and multi-well enumerative formats for this method are approved for use in presence-absence determination under this Subpart AA. Colisure™ Test results may be read after an incubation time of 24 hours. Because Standard Methods, 20th ed., Method 9223 B is the same version as Standard Methods Online 9223 B-97, the Board has not listed the Standard Methods Online version separately.

- iv) E*Colite® Test;

- v) ReadyCult® 2007 Test;

- vi) Modified Colitag™ Test; or

- vii) Tecta EC/TC P-A Test, ver. 1.0 or 2.0.

- 7124 BOARD NOTE: USEPA added Standard Methods Online,
 7125 Method 9223 B-04, Colilert-18[®] Test, and Tecta EC/TC P-A Test,
 7126 ver 1.0 as approved alternative methods on June 19, 2014 (at 79
 7127 Fed. Reg. 35081). USEPA added Tecta EC/TC P-A Test, ver. 2.0
 7128 as an approved alternative method on July 27, 2017 (at 82 Fed.
 7129 Reg. 34861). Because Standard Methods, 22nd ed., Method 9223 B
 7130 is the same version as Standard Methods Online, Method 9223 B-
 7131 04, the Board has not listed the Standard Methods Online versions
 7132 separately.
 7133
- 7134 D) E. coli (following lactose fermentation methods), EC-MUG
 7135 medium: section 1 of Standard Methods, 20th or 22nd ed., Method
 7136 9221 F.
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- 7138 BOARD NOTE: USEPA added section 1 of Standard Methods
 7139 Online, Method 9221 F-06 as an approved alternative method on
 7140 June 19, 2014 (at 79 Fed. Reg. 35081). Because Standard
 7141 Methods, 22nd ed., Method 9221 F is the same version as Standard
 7142 Methods Online, Method 9221 F-06, the Board has not listed the
 7143 Standard Methods Online versions separately.
 7144
- 7145 E) E. coli, partition method:
 7146
- 7147 i) EC broth with MUG (EC-MUG): section 1.c(2) of
 7148 Standard Methods, 20th or 21st ed., Method 9222 G; or
 7149
- 7150 BOARD NOTE: The following changes must be made to
 7151 the EC broth with MUG (EC-MUG) formulation:
 7152 potassium dihydrogen phosphate (KH₂PO₄) must be 1.5 g,
 7153 and 4-methylumbelliferyl-β-D-glucuronide must be 0.05 g.
 7154
- 7155 ii) NA-MUG medium: section 1.c(1) of Standard Methods,
 7156 20th or 21st ed., Method 9222 G.
 7157
- 7158 F) E. coli, membrane filtration methods:
 7159
- 7160 i) Membrane filtration using MI medium: USEPA Method
 7161 1604.
 7162
- 7163 ii) m-ColiBlue24[®] Test.
 7164
- 7165 BOARD NOTE: All filtration series must begin with
 7166 membrane filtration equipment that has been sterilized by

7167 autoclaving. Exposure of filtration equipment to UV light is
7168 not adequate to ensure sterilization. Subsequent to the
7169 initial autoclaving, exposure of the filtration equipment to
7170 UV light may be used to sanitize the funnels between
7171 filtrations within a filtration series. Alternatively,
7172 membrane filtration equipment that is pre-sterilized by the
7173 manufacturer (i.e., disposable funnel units) may be used.

7174
7175 iii) Chromocult® Method.

7176
7177 BOARD NOTE: All filtration series must begin with
7178 membrane filtration equipment that has been sterilized by
7179 autoclaving. Exposure of filtration equipment to UV light is
7180 not adequate to ensure sterilization. Subsequent to the
7181 initial autoclaving, exposure of the filtration equipment to
7182 UV light may be used to sanitize the funnels between
7183 filtrations within a filtration series. Alternatively,
7184 membrane filtration equipment that is pre-sterilized by the
7185 manufacturer (i.e., disposable funnel units) may be used.

7186
7187 G) E. coli, enzyme substrate methods:

7188
7189 i) Colilert® Test: Standard Methods, 20th, 21st, or 22nd ed.,
7190 Method 9223 B;

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7192 BOARD NOTE: Multiple-tube and multi-well enumerative
7193 formats for this method are approved for use in presence-
7194 absence determination under this Subpart AA. Because
7195 Standard Methods, 20th ed., Method 9223 B is the same
7196 version as Standard Methods Online 9223 B-97, the Board
7197 has not listed the Standard Methods Online version
7198 separately.

7199
7200 ii) Colilert-18® Test: Standard Methods, 20th, 21st, or 22nd ed.,
7201 Method 9223 B;

7202
7203 iii) Colisure™: Standard Methods, 20th, 21st, or 22nd ed.,
7204 Method 9223 B;

7205
7206 BOARD NOTE: Multiple-tube and multi-well enumerative
7207 formats for this method are approved for use in presence-
7208 absence determination under this Subpart AA. Colisure™
7209 results may be read after an incubation time of 24 hours.

7210 Because Standard Methods, 20th ed., Method 9223 B is the
7211 same version as Standard Methods Online 9223 B-97, the
7212 Board has not listed the Standard Methods Online version
7213 separately.

- 7214
- 7215 iv) E*Colite[®] Test;
- 7216
- 7217 v) ReadyCult[®] 2007 Test;
- 7218
- 7219 vi) Modified Colitag[™] Test; or
- 7220
- 7221 vii) Tecta EC/TC P-A Test, ver. 1.0 or 2.0.
- 7222

7223 BOARD NOTE: USEPA added Standard Methods, 22nd ed.,
7224 Method 9223 B as an approved alternative method on June 21,
7225 2013 (at 78 Fed. Reg. 37463). USEPA added Standard Methods
7226 Online, Method 9223 B-04, Colilert-18[®] Test, and Tecta EC/TC P-
7227 A Test, ver. 1.0 as approved alternative methods on June 19, 2014
7228 (at 79 Fed. Reg. 35081). USEPA added Tecta EC/TC P-A Test,
7229 ver. 2.0 as an approved alternative method on July 27, 2017 (at 82
7230 Fed. Reg. 34861). Because Standard Methods, 22nd ed., Method
7231 9223 B is the same version as Standard Methods Online, Method
7232 9223 B-04, the Board has not listed the Standard Methods Online
7233 versions separately.

7234

7235 b) Laboratory certification. A supplier must have all compliance samples required
7236 by this Subpart AA analyzed by a certified laboratory in one of the categories
7237 listed in Section 611.490(a). The laboratory used by the supplier must be certified
7238 for each method (and associated contaminants) that is used for compliance
7239 monitoring analyses under this Subpart AA.

7240

7241 c) This subsection (c) corresponds with 40 CFR 141.1052(c), which is a centralized
7242 listing of incorporations by reference for the purposes of subpart Y to 40 CFR
7243 141. The Board has centrally located all incorporations by reference in Section
7244 611.102. This statement maintains structural consistency with the federal rules.

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7246 BOARD NOTE: Derived from 40 CFR 141.852 and appendix A to subpart C of 40 CFR
7247 141 (2017)(2016).

7248

7249 (Source: Amended at 42 Ill. Reg. _____, effective _____)