

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

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379 AUTHORITY: Implementing Sections 7.2, 17, and 17.5 and authorized by Section 27 of the
 380 Environmental Protection Act [415 ILCS 5/7.2, 17, 17.5, and 27].
 381

382 SOURCE: Adopted in R88-26 at 14 Ill. Reg. 16517, effective September 20, 1990; amended in
 383 R90-21 at 14 Ill. Reg. 20448, effective December 11, 1990; amended in R90-13 at 15 Ill. Reg.
 384 1562, effective January 22, 1991; amended in R91-3 at 16 Ill. Reg. 19010, effective December 1,
 385 1992; amended in R92-3 at 17 Ill. Reg. 7796, effective May 18, 1993; amended in R93-1 at 17
 386 Ill. Reg. 12650, effective July 23, 1993; amended in R94-4 at 18 Ill. Reg. 12291, effective July
 387 28, 1994; amended in R94-23 at 19 Ill. Reg. 8613, effective June 20, 1995; amended in R95-17

388 at 20 Ill. Reg. 14493, effective October 22, 1996; amended in R98-2 at 22 Ill. Reg. 5020,
389 effective March 5, 1998; amended in R99-6 at 23 Ill. Reg. 2756, effective February 17, 1999;
390 amended in R99-12 at 23 Ill. Reg. 10348, effective August 11, 1999; amended in R00-8 at 23 Ill.
391 Reg. 14715, effective December 8, 1999; amended in R00-10 at 24 Ill. Reg. 14226, effective
392 September 11, 2000; amended in R01-7 at 25 Ill. Reg. 1329, effective January 11, 2001;
393 amended in R01-20 at 25 Ill. Reg. 13611, effective October 9, 2001; amended in R02-5 at 26 Ill.
394 Reg. 3522, effective February 22, 2002; amended in R03-4 at 27 Ill. Reg. 1183, effective January
395 10, 2003; amended in R03-15 at 27 Ill. Reg. 16447, effective October 10, 2003; amended in
396 R04-3 at 28 Ill. Reg. 5269, effective March 10, 2004; amended in R04-13 at 28 Ill. Reg. 12666,
397 effective August 26, 2004; amended in R05-6 at 29 Ill. Reg. 2287, effective January 28, 2005;
398 amended in R06-15 at 30 Ill. Reg. 17004, effective October 13, 2006; amended in R07-2/R07-11
399 at 31 Ill. Reg. 11757, effective July 27, 2007; amended in R08-7/R08-13 at 33 Ill. Reg. 633,
400 effective December 30, 2008; amended in R10-1/R10-17/R11-6 at 35 Ill. Reg. _____, effective
401 _____.

402
403 SUBPART A: GENERAL
404

405 **Section 611.101 Definitions**
406

407 As used in this Part, the following terms have the given meanings:
408

409 "Act" means the Environmental Protection Act [415 ILCS 5].
410

411 "Agency" means the Illinois Environmental Protection Agency.

412 BOARD NOTE: The Department of Public Health (Public Health or DPH)
413 regulates non-community water supplies ("non-CWSs," including non-transient,
414 non-community water supplies ("NTNCWSs") and transient non-community
415 water supplies ("transient non-CWSs")). ~~For the purposes of regulation of~~
416 ~~supplies by Public Health by reference to this Part, "Agency" will mean the~~
417 Department of Public Health where implementation by Public Health occurs with
418 regard to non-CWS suppliers.
419

420 "Approved source of bottled water;" for the purposes of Section 611.130(d) (4),
421 means a source of water and the water therefrom, whether it be from a spring,
422 artesian well, drilled well, municipal water supply, or any other source, that has
423 been inspected and the water sampled, analyzed, and found to be a safe and
424 sanitary quality according to applicable laws and regulations of State and local
425 government agencies having jurisdiction, as evidenced by the presence in the
426 plant of current certificates or notations of approval from each government
427 agency or agencies having jurisdiction over the source, the water it bottles, and
428 the distribution of the water in commerce.

429 BOARD NOTE: Derived from 40 CFR 142.62(g)(2) and 21 CFR 129.3(a)
430 (2009)~~(2007)~~. The Board cannot compile an exhaustive listing of all federal,

431 State, and local laws to which bottled water and bottling water may be subjected.
 432 However, the statutes and regulations of which the Board is aware are the
 433 following: the Illinois Food, Drug and Cosmetic Act [410 ILCS 620], the Bottled
 434 Water Act [815 ILCS 310], the DPH Water Well Construction Code (77 Ill. Adm.
 435 Code 920), the DPH Water Well Pump Installation Code (77 Ill. Adm. Code 925),
 436 the federal bottled water quality standards (21 CFR 103.35), the federal drinking
 437 water processing and bottling standards (21 CFR 129), the federal Current Good
 438 Manufacturing Practice in Manufacturing, Packing, or Holding Human Food (21
 439 CFR 110), the federal Fair Packaging and Labeling Act (15 USC 1451 et seq.),
 440 and the federal Fair Packaging and Labeling regulations (21 CFR 201).

441
 442 "Bag filters" means pressure-driven separation devices that remove particulate
 443 matter larger than one micrometer using an engineered porous filtration media.
 444 They are typically constructed of a non-rigid, fabric filtration media housed in a
 445 pressure vessel in which the direction of flow is from the inside of the bag to
 446 outside.

447
 448 "Bank filtration" means a water treatment process that uses a well to recover
 449 surface water that has naturally infiltrated into groundwater through a river bed or
 450 banks. Infiltration is typically enhanced by the hydraulic gradient imposed by a
 451 nearby pumping water supply or other wells.

452
 453 "Best available technology" or "BAT" means the best technology, treatment
 454 techniques, or other means that USEPA has found are available for the
 455 contaminant in question. BAT is specified in Subpart F of this Part.

456
 457 "Bin classification" or "bin" means, for the purposes of Subpart Z of this Part, the
 458 appropriate of the four treatment categories (Bin 1, Bin 2, Bin 3, or Bin 4) that is
 459 assigned to a filtered system supplier pursuant to Section 611.1010 based on the
 460 results of the source water Cryptosporidium monitoring described in the previous
 461 section. This bin classification determines the degree of additional
 462 Cryptosporidium treatment, if any, the filtered PWS must provide.

463 BOARD NOTE: Derived from 40 CFR 141.710 and the preamble discussion at
 464 71 Fed. Reg. 654, 657 (Jan. 5, 2006).

465
 466 "Board" means the Illinois Pollution Control Board.

467
 468 "Cartridge filters" means pressure-driven separation devices that remove
 469 particulate matter larger than 1 micrometer using an engineered porous filtration
 470 media. They are typically constructed as rigid or semi-rigid, self-supporting filter
 471 elements housed in pressure vessels in which flow is from the outside of the
 472 cartridge to the inside.

473

474 "CAS No." means "Chemical Abstracts Services Number."
475

476 "CT" or "CT_{calc}" is the product of "residual disinfectant concentration" (RDC or
477 C) in mg/l determined before or at the first customer, and the corresponding
478 "disinfectant contact time" (T) in minutes. If a supplier applies disinfectants at
479 more than one point prior to the first customer, it must determine the CT of each
480 disinfectant sequence before or at the first customer to determine the total percent
481 inactivation or "total inactivation ratio." In determining the total inactivation
482 ratio, the supplier must determine the RDC of each disinfection sequence and
483 corresponding contact time before any subsequent disinfection application points.
484 (See "CT_{99.9}."
485

486 "CT_{99.9}" is the CT value required for 99.9 percent (3-log) inactivation of *Giardia*
487 *lamblia* cysts. CT_{99.9} for a variety of disinfectants and conditions appear in Tables
488 1.1-1.6, 2.1 and 3.1 of Appendix B of this Part. (See "Inactivation Ratio.")
489 BOARD NOTE: Derived from the definition of "CT" in 40 CFR 141.2
490 (2009)~~(2007)~~.
491

492 "Coagulation" means a process using coagulant chemicals and mixing by which
493 colloidal and suspended materials are destabilized and agglomerated into flocs.
494

495 "Combined distribution system" means the interconnected distribution system
496 consisting of the distribution systems of wholesale systems and of the consecutive
497 systems that receive finished water.
498

499 "Community water system" or "CWS" means a public water system (PWS) that
500 serves at least 15 service connections used by year-round residents or regularly
501 serves at least 25 year-round residents.
502 BOARD NOTE: This definition differs slightly from that of Section 3.05 of the
503 Act.
504

505 "Compliance cycle" means the nine-year calendar year cycle during which public
506 water systems (PWSs) must monitor. Each compliance cycle consists of three
507 three-year compliance periods. The first calendar cycle began January 1, 1993,
508 and ended December 31, 2001; the second began January 1, 2002, and ends
509 December 31, 2010; the third begins January 1, 2011, and ends December 31,
510 2019.
511

512 "Compliance period" means a three-year calendar year period within a
513 compliance cycle. Each compliance cycle has three three-year compliance
514 periods. Within the first compliance cycle, the first compliance period ran from
515 January 1, 1993 to December 31, 1995; the second from January 1, 1996 to
516 December 31, 1998; the third from January 1, 1999 to December 31, 2001.

517
518 "Comprehensive performance evaluation" or "CPE" is a thorough review and
519 analysis of a treatment plant's performance-based capabilities and associated
520 administrative, operation, and maintenance practices. It is conducted to identify
521 factors that may be adversely impacting a plant's capability to achieve compliance
522 and emphasizes approaches that can be implemented without significant capital
523 improvements.
524 BOARD NOTE: The final sentence of the definition of "comprehensive
525 performance evaluation" in 40 CFR 141.2 is codified as Section 611.160(a)(2),
526 since it contains substantive elements that are more appropriately codified in a
527 substantive provision.
528
529 "Confluent growth" means a continuous bacterial growth covering the entire
530 filtration area of a membrane filter or a portion thereof, in which bacterial
531 colonies are not discrete.
532
533 "Consecutive system" means a public water system that receives some or all of its
534 finished water from one or more wholesale systems. Delivery may be through a
535 direct connection or through the distribution system of one or more consecutive
536 systems.
537
538 "Contaminant" means any physical, chemical, biological, or radiological
539 substance or matter in water.
540
541 "Conventional filtration treatment" means a series of processes including
542 coagulation, flocculation, sedimentation, and filtration resulting in substantial
543 particulate removal.
544
545 "Diatomaceous earth filtration" means a process resulting in substantial
546 particulate removal in which the following occur:
547
548 A precoat cake of diatomaceous earth filter media is deposited on a
549 support membrane (septum); and
550
551 While the water is filtered by passing through the cake on the septum,
552 additional filter media known as body feed is continuously added to the
553 feed water to maintain the permeability of the filter cake.
554
555 "Direct filtration" means a series of processes including coagulation and filtration
556 but excluding sedimentation resulting in substantial particulate removal.
557
558 "Disinfectant" means any oxidant, including but not limited to chlorine, chlorine
559 dioxide, chloramines, and ozone added to water in any part of the treatment or

560 distribution process, that is intended to kill or inactivate pathogenic
561 microorganisms.

562
563 "Disinfectant contact time" or "T" means the time in minutes that it takes for
564 water to move from the point of disinfectant application or the previous point of
565 RDC measurement to a point before or at the point where RDC is measured.

566
567 Where only one RDC is measured, T is the time in minutes that it takes for
568 water to move from the point of disinfectant application to a point before
569 or at the point where RDC is measured.

570
571 Where more than one RDC is measured, T is as follows:

572
573 For the first measurement of RDC, the time in minutes that it takes
574 for water to move from the first or only point of disinfectant
575 application to a point before or at the point where the first RDC is
576 measured; and

577
578 For subsequent measurements of RDC, the time in minutes that it
579 takes for water to move from the previous RDC measurement
580 point to the RDC measurement point for which the particular T is
581 being calculated.

582
583 T in pipelines must be calculated based on "plug flow" by dividing the
584 internal volume of the pipe by the maximum hourly flow rate through that
585 pipe.

586
587 T within mixing basins and storage reservoirs must be determined by
588 tracer studies or an equivalent demonstration.

589
590 "Disinfection" means a process that inactivates pathogenic organisms in water by
591 chemical oxidants or equivalent agents.

592
593 "Disinfection byproduct" or "DBP" means a chemical byproduct that forms when
594 disinfectants used for microbial control react with naturally occurring compounds
595 already present in source water. DBPs include, but are not limited to,
596 bromodichloromethane, bromoform, chloroform, dichloroacetic acid, bromate,
597 chlorite, dibromochloromethane, and certain haloacetic acids.

598
599 "Disinfection profile" is a summary of daily Giardia lamblia inactivation through
600 the treatment plant. The procedure for developing a disinfection profile is
601 contained in Section 611.742.

602

603 "Distribution system" includes all points downstream of an "entry point" to the
604 point of consumer ownership.

605
606 "Domestic or other non-distribution system plumbing problem" means a coliform
607 contamination problem in a PWS with more than one service connection that is
608 limited to the specific service connection from which the coliform-positive
609 sample was taken.

610
611 "Dose equivalent" means the product of the absorbed dose from ionizing radiation
612 and such factors as account for differences in biological effectiveness due to the
613 type of radiation and its distribution in the body as specified by the International
614 Commission on Radiological Units and Measurements (ICRU).

615
616 "Dual sample set" means a set of two samples collected at the same time and
617 same location, with one sample analyzed for TTHM and the other sample
618 analyzed for HAA5. Dual sample sets are collected for the purposes of conducting
619 an IDSE under Subpart W of this Part and determining compliance with the
620 TTHM and HAA5 MCLs under Subpart Y of this Part.

621
622 "Enhanced coagulation" means the addition of sufficient coagulant for improved
623 removal of disinfection byproduct (DBP) precursors by conventional filtration
624 treatment.

625
626 "Enhanced softening" means the improved removal of disinfection byproduct
627 (DBP) precursors by precipitative softening.

628
629 "Entry point" means a point just downstream of the final treatment operation, but
630 upstream of the first user and upstream of any mixing with other water. If raw
631 water is used without treatment, the "entry point" is the raw water source. If a
632 PWS receives treated water from another PWS, the "entry point" is a point just
633 downstream of the other PWS, but upstream of the first user on the receiving
634 PWS, and upstream of any mixing with other water.

635
636 "Filter profile" is a graphical representation of individual filter performance,
637 based on continuous turbidity measurements or total particle counts versus time
638 for an entire filter run, from startup to backwash inclusively, that includes an
639 assessment of filter performance while another filter is being backwashed.

640
641 "Filtration" means a process for removing particulate matter from water by
642 passage through porous media.

643
644 "Finished water" means water that is introduced into the distribution system of a
645 public water system which is intended for distribution and consumption without

646 further treatment, except that treatment which is necessary to maintain water
647 quality in the distribution system (e.g., booster disinfection, addition of corrosion
648 control chemicals, etc.).
649

650 "Flocculation" means a process to enhance agglomeration or collection of smaller
651 floc particles into larger, more easily settleable particles through gentle stirring by
652 hydraulic or mechanical means.
653

654 "Flowing stream" means a course of running water flowing in a definite channel.
655

656 "40/30 certification" means the certification, submitted by the supplier to the
657 Agency pursuant to Section 611.923, that the supplier had no TTHM or HAA5
658 monitoring violations, and that no individual sample from its system exceeded
659 0.040 mg/ℓ TTHM or 0.030 mg/ℓ HAA5 during eight consecutive calendar
660 quarters.

661 BOARD NOTE: Derived from 40 CFR 141.603(a) (2009)(2007).
662

663 "GAC10" means granular activated carbon (GAC) filter beds with an empty-bed
664 contact time of 10 minutes based on average daily flow and a carbon reactivation
665 frequency of every 180 days, except that the reactivation frequency for GAC10
666 that is used as a best available technology for compliance with the MCLs set forth
667 in Subpart Y of this Part pursuant to Section 611.312(b)(2) is 120 days.
668

669 "GAC20" means granular activated carbon filter beds with an empty-bed contact
670 time of 20 minutes based on average daily flow and a carbon reactivation
671 frequency of every 240 days.
672

673 "GC" means "gas chromatography" or "gas-liquid phase chromatography."
674

675 "GC/MS" means gas chromatography (GC) followed by mass spectrometry (MS).
676

677 "Gross alpha particle activity" means the total radioactivity due to alpha particle
678 emission as inferred from measurements on a dry sample.
679

680 "Gross beta particle activity" means the total radioactivity due to beta particle
681 emission as inferred from measurements on a dry sample.
682

683 "Groundwater system" or "GWS" means a public water supply (PWS) that uses
684 only groundwater sources, including a consecutive system that receives finished
685 groundwater.
686

687 BOARD NOTE: Derived from 40 CFR 141.23(b)(2) and 141.24(f)(2) note and
688 40 CFR 141.400(b) (2009)(2007).

689 "Groundwater under the direct influence of surface water" means any water
 690 beneath the surface of the ground with significant occurrence of insects or other
 691 macroorganisms, algae, or large-diameter pathogens, such as Giardia lamblia or
 692 Cryptosporidium, or significant and relatively rapid shifts in water characteristics,
 693 such as turbidity, temperature, conductivity, or pH, that closely correlate to
 694 climatological or surface water conditions. "Groundwater under the direct
 695 influence of surface water" is as determined in Section 611.212.

696
 697 "Haloacetic acids (five)" or "HAA5" means the sum of the concentrations in
 698 milligrams per liter (mg/ℓ) of five haloacetic acid compounds (monochloroacetic
 699 acid, dichloroacetic acid, trichloroacetic acid, monobromoacetic acid, and
 700 dibromoacetic acid), rounded to two significant figures after addition.

701
 702 "Halogen" means one of the chemical elements chlorine, bromine, or iodine.

703
 704 "HPC" means "heterotrophic plate count," measured as specified in Section
 705 611.531(c).

706
 707 "Hydrogeologic sensitivity assessment," for the purposes of Subpart S of this Part,
 708 means a determination of whether a GWS supplier obtains water from a
 709 hydrogeologically sensitive setting.

710 BOARD NOTE: Derived from 40 CFR 141.400(c)(5) (2009)~~(2007)~~.

711
 712 "Inactivation ratio" or "Ai" means as follows:

713
 714
$$A_i = CT_{\text{calc}}/CT_{99.9}$$

715
 716 The sum of the inactivation ratios or "total inactivation ratio" (B), is
 717 calculated by adding together the inactivation ratio for each disinfection
 718 sequence as follows:

719
 720
$$B = \Sigma(A_i)$$

721
 722 A total inactivation ratio equal to or greater than 1.0 is assumed to provide
 723 a 3-log inactivation of Giardia lamblia cysts.

724
 725 BOARD NOTE: Derived from the definition of "CT" in 40 CFR 141.2
 726 (2009)~~(2007)~~.

727
 728 "Initial compliance period" means the three-year compliance period that begins
 729 January 1, 1993, except for the MCLs for dichloromethane, 1,2,4-
 730 trichlorobenzene, 1,1,2-trichloroethane, benzo(a)pyrene, dalapon, di(2-
 731 ethylhexyl)adipate, di(2-ethylhexyl)phthalate, dinoseb, diquat, endothall, endrin,

732 glyphosate, hexachlorobenzene, hexachlorocyclopentadiene, oxamyl, picloram,
733 simazine, 2,3,7,8-TCDD, antimony, beryllium, cyanide, nickel, and thallium, as
734 they apply to a supplier whose system has fewer than 150 service connections, for
735 which it means the three-year compliance period that began on January 1, 1996.
736

737 "Initial distribution system evaluation" or "IDSE" means the evaluation,
738 performed by the supplier pursuant to Section 611.921(c), to determine the
739 locations in a distribution system that are representative of high TTHM and
740 HAA5 concentrations throughout the distribution system. An IDSE is used in
741 conjunction with, but is distinct from, the compliance monitoring undertaken to
742 identify and select monitoring locations used to determine compliance with
743 Subpart I of this Part.

744 BOARD NOTE: Derived from 40 CFR 141.601(c) (2009)~~(2007)~~.
745

746 "Inorganic contaminants" or "IOCs" refers to that group of contaminants
747 designated as such in United States Environmental Protection Agency (USEPA)
748 regulatory discussions and guidance documents. IOCs include antimony, arsenic,
749 asbestos, barium, beryllium, cadmium, chromium, cyanide, mercury, nickel,
750 nitrate, nitrite, selenium, and thallium.

751 BOARD NOTE: The IOCs are derived from 40 CFR 141.23(a)(4) (2009)~~(2007)~~.
752

753 "ℓ" means "liter."
754

755 "Lake or reservoir" means a natural or man made basin or hollow on the Earth's
756 surface in which water collects or is stored that may or may not have a current or
757 single direction of flow.
758

759 "Legionella" means a genus of bacteria, some species of which have caused a type
760 of pneumonia called Legionnaires Disease.
761

762 "Locational running annual average" or "LRAA" means the average of sample
763 analytical results for samples taken at a particular monitoring location during the
764 previous four calendar quarters.
765

766 "Man-made beta particle and photon emitters" means all radionuclides emitting
767 beta particles or photons listed in "Maximum Permissible Body Burdens and
768 Maximum Permissible Concentrations of Radionuclides in Air and in Water for
769 Occupational Exposure," NCRP Report Number 22, incorporated by reference in
770 Section 611.102, except the daughter products of thorium-232, uranium-235 and
771 uranium-238.
772

773 "Maximum contaminant level" or "MCL" means the maximum permissible level
774 of a contaminant in water that is delivered to any user of a public water system.

775 (See Section 611.121.)

776
777 "Maximum contaminant level goal" or "MCLG" means the maximum level of a
778 contaminant in drinking water at which no known or anticipated adverse effect on
779 the health of persons would occur, and which allows an adequate margin of
780 safety. MCLGs are nonenforceable health goals.

781 BOARD NOTE: The Board has not routinely adopted the regulations relating to
782 the federal MCLGs because they are outside the scope of the Board's identical-in-
783 substance mandate under Section 17.5 of the Act [415 ILCS 5/17.5].

784
785 "Maximum residual disinfectant level" or "MRDL" means the maximum
786 permissible level of a disinfectant added for water treatment that may not be
787 exceeded at the consumer's tap without an unacceptable possibility of adverse
788 health effects. MRDLs are enforceable in the same manner as are MCLs. (See
789 Section 611.313 and Section 611.383.)

790
791 "Maximum residual disinfectant level goal" or "MRDLG" means the maximum
792 level of a disinfectant added for water treatment at which no known or anticipated
793 adverse effect on the health of persons would occur, and which allows an
794 adequate margin of safety. MRDLGs are nonenforceable health goals and do not
795 reflect the benefit of the addition of the chemical for control of waterborne
796 microbial contaminants.

797
798 "Maximum total trihalomethane potential" or "MTP" means the maximum
799 concentration of total trihalomethanes (TTHMs) produced in a given water
800 containing a disinfectant residual after seven days at a temperature of 25° C or
801 above.

802
803 "Membrane filtration" means a pressure or vacuum driven separation process in
804 which particulate matter larger than one micrometer is rejected by an engineered
805 barrier, primarily through a size exclusion mechanism, and which has a
806 measurable removal efficiency of a target organism that can be verified through
807 the application of a direct integrity test. This definition includes the common
808 membrane technologies of microfiltration, ultrafiltration, nanofiltration, and
809 reverse osmosis.

810
811 "MFL" means millions of fibers per liter larger than 10 micrometers.
812 BOARD NOTE: Derived from 40 CFR 141.23(a)(4)(i) (2009)~~(2007)~~.

813
814 "mg" means milligrams (1/1000 of a gram).

815
816 "mg/ℓ " means milligrams per liter.

817

818 "Mixed system" means a PWS that uses both groundwater and surface water
819 sources.

820 BOARD NOTE: Drawn from 40 CFR 141.23(b)(2) and 141.24(f)(2) note
821 (2009)~~(2007)~~.

822
823 "MUG" means 4-methyl-umbelliferyl-beta-d-glucuronide.

824
825 "Near the first service connection" means at one of the 20 percent of all service
826 connections in the entire system that are nearest the public water system (PWS)
827 treatment facility, as measured by water transport time within the distribution
828 system.

829
830 "nm" means nanometer (1/1,000,000,000 of a meter).

831
832 "Non-community water system" or "NCWS" or "non-CWS" means a public water
833 system (PWS) that is not a community water system (CWS). A non-community
834 water system is either a "transient non-community water system (TWS)" or a
835 "non-transient non-community water system (NTNCWS)."

836
837 "Non-transient, non-community water system" or "non-transient, non-CWS" or
838 "NTNCWS" means a public water system (PWS) that is not a community water
839 system (CWS) and that regularly serves at least 25 of the same persons over six
840 months per year.

841
842 "NPDWR" means "national primary drinking water regulation."

843
844 "NTU" means "nephelometric turbidity units."

845
846 "Old MCL" means one of the inorganic maximum contaminant levels (MCLs),
847 codified at Section 611.300, or organic MCLs, codified at Section 611.310,
848 including any marked as "additional State requirements."

849 BOARD NOTE: Old MCLs are those derived prior to the implementation of the
850 USEPA "Phase II" regulations. The Section 611.640 definition of this term,
851 which applies only to Subpart O of this Part, differs from this definition in that the
852 definition does not include the Section 611.300 inorganic MCLs.

853
854 "P-A Coliform Test" means "Presence-Absence Coliform Test."

855
856 "Paired sample" means two samples of water for Total Organic Carbon (TOC).
857 One sample is of raw water taken prior to any treatment. The other sample is
858 taken after the point of combined filter effluent and is representative of the treated
859 water. These samples are taken at the same time. (See Section 611.382.)
860

861 "Performance evaluation sample" or "PE sample" means a reference sample
862 provided to a laboratory for the purpose of demonstrating that the laboratory can
863 successfully analyze the sample within limits of performance specified by the
864 Agency; or, for bacteriological laboratories, Public Health; or, for radiological
865 laboratories, the Illinois Department of Nuclear Safety. The true value of the
866 concentration of the reference material is unknown to the laboratory at the time of
867 the analysis.

868
869 "Person" means an individual, corporation, company, association, partnership,
870 state, unit of local government, or federal agency.

871
872 "Phase I" refers to that group of chemical contaminants and the accompanying
873 regulations promulgated by USEPA on July 8, 1987, at 52 Fed. Reg. 25712.

874
875 "Phase II" refers to that group of chemical contaminants and the accompanying
876 regulations promulgated by USEPA on January 30, 1991, at 56 Fed. Reg. 3578.

877
878 "Phase IIB" refers to that group of chemical contaminants and the accompanying
879 regulations promulgated by USEPA on July 1, 1991, at 56 Fed. Reg. 30266.

880
881 "Phase V" refers to that group of chemical contaminants promulgated by USEPA
882 on July 17, 1992, at 57 Fed. Reg. 31776.

883
884 "Picocurie" or "pCi" means the quantity of radioactive material producing 2.22
885 nuclear transformations per minute.

886
887 "Plant intake" means the works or structures at the head of a conduit through
888 which water is diverted from a source (e.g., a river or lake) into the treatment
889 plant.

890
891 "Point of disinfectant application" is the point at which the disinfectant is applied
892 and downstream of which water is not subject to recontamination by surface water
893 runoff.

894
895 "Point-of-entry treatment device" or "POE" is a treatment device applied to the
896 drinking water entering a house or building for the purpose of reducing
897 contaminants in the drinking water distributed throughout the house or building.

898
899 "Point-of-use treatment device" or "POU" is a treatment device applied to a single
900 tap used for the purpose of reducing contaminants in drinking water at that one
901 tap.

902

903 "Presedimentation" means a preliminary treatment process used to remove gravel,
904 sand, and other particulate material from the source water through settling before
905 the water enters the primary clarification and filtration processes in a treatment
906 plant.

907
908 "Public Health" or "DPH" means the Illinois Department of Public Health.
909 BOARD NOTE: See the definition of The Department of Public Health ("Public
910 Health") regulates non-community water supplies ("non-CWSs," including non-
911 transient, non-community water supplies ("NTNCWSs") and transient non-
912 community water supplies ("transient non-CWSs"). For the purposes of
913 regulation of supplies by Public Health by reference to this Part, "Agency" in this
914 Section must mean Public Health.

915
916 "Public water system" or "PWS" means a system for the provision to the public of
917 water for human consumption through pipes or other constructed conveyances, if
918 such system has at least 15 service connections or regularly serves an average of
919 at least 25 individuals daily at least 60 days out of the year. A PWS is either a
920 community water system (CWS) or a non-community water system (non-CWS).
921 A PWS does not include any facility defined as "special irrigation district." Such
922 term includes the following:

923
924 Any collection, treatment, storage, and distribution facilities under control
925 of the operator of such system and used primarily in connection with such
926 system; and

927
928 Any collection or pretreatment storage facilities not under such control
929 that are used primarily in connection with such system.

930
931 BOARD NOTE: Where used in Subpart F of this Part, "public water supply"
932 means the same as "public water system."

933
934 "Radioactive contaminants" refers to that group of contaminants designated
935 "radioactive contaminants" in USEPA regulatory discussions and guidance
936 documents. "Radioactive contaminants" include tritium, strontium-89, strontium-
937 90, iodine-131, cesium-134, gross beta emitters, and other nuclides.

938 BOARD NOTE: Derived from 40 CFR 141.25(c) Table B (2009)(2007). These
939 radioactive contaminants must be reported in Consumer Confidence Reports
940 under Subpart U of this Part when they are detected above the levels indicated in
941 Section 611.720(c)(3).

942
943 "Reliably and consistently" below a specified level for a contaminant means an
944 Agency determination based on analytical results following the initial detection of
945 a contaminant to determine the qualitative condition of water from an individual

946 sampling point or source. The Agency must base this determination on the
947 consistency of analytical results, the degree below the MCL, the susceptibility of
948 source water to variation, and other vulnerability factors pertinent to the
949 contaminant detected that may influence the quality of water.

950 BOARD NOTE: Derived from 40 CFR 141.23(b)(9), 141.24(f)(11)(ii), and
951 141.24(f)(11)(iii) (2009)~~(2007)~~.

952
953 "Rem" means the unit of dose equivalent from ionizing radiation to the total body
954 or any internal organ or organ system. A "millirem (mrem)" is 1/1000 of a rem.

955
956 "Repeat compliance period" means a compliance period that begins after the
957 initial compliance period.

958
959 "Representative" means that a sample must reflect the quality of water that is
960 delivered to consumers under conditions when all sources required to supply
961 water under normal conditions are in use and all treatment is properly operating.

962
963 "Residual disinfectant concentration" ("RDC" or "C" in CT calculations) means
964 the concentration of disinfectant measured in mg/l in a representative sample of
965 water. For purposes of the requirement of Section 611.241(d) of maintaining a
966 detectable RDC in the distribution system, "RDC" means a residual of free or
967 combined chlorine.

968
969 "Safe Drinking Water Act" or "SDWA" means the Public Health Service Act, as
970 amended by the Safe Drinking Water Act, Pub. L. 93-523, 42 USC 300f et seq.

971
972 "Sanitary survey" means an onsite review of the delineated WHPAs (identifying
973 sources of contamination within the WHPAs and evaluations or the hydrogeologic
974 sensitivity of the delineated WHPAs conducted under source water assessments or
975 utilizing other relevant information where available), facilities, equipment,
976 operation, maintenance, and monitoring compliance of a public water system
977 (PWS) to evaluate the adequacy of the system, its sources, and operations for the
978 production and distribution of safe drinking water.

979 BOARD NOTE: Derived from 40 CFR 141.2 and 40 CFR 142.16(o)(2)
980 (2009)~~(2007)~~.

981
982 "Sedimentation" means a process for removal of solids before filtration by gravity
983 or separation.

984
985 "SEP" means special exception permit (Section 611.110).

986
987 "Service connection," as used in the definition of public water system, does not
988 include a connection to a system that delivers water by a constructed conveyance

989 other than a pipe if any of the following is true:

990
991 The water is used exclusively for purposes other than residential use
992 (consisting of drinking, bathing, and cooking, or other similar uses);
993

994 The Agency determines by issuing a SEP that alternative water for
995 residential use or similar uses for drinking and cooking is provided to
996 achieve the equivalent level of public health protection provided by the
997 applicable national primary drinking water regulations; or
998

999 The Agency determines by issuing a SEP that the water provided for
1000 residential use or similar uses for drinking, cooking, and bathing is
1001 centrally treated or treated at the point of entry by the provider, a pass-
1002 through entity, or the user to achieve the equivalent level of protection
1003 provided by the applicable national primary drinking water regulations.
1004 BOARD NOTE: See sections 1401(4)(B)(i)(II) and (4)(B)(i)(III) of SDWA (42
1005 USC 300f(4)(B)(i)(II) and (4)(B)(i)(III) (2000)).
1006

1007 "Significant deficiency" means a deficiency identified by the Agency in a
1008 groundwater system pursuant to Section 611.803. A significant deficiency might
1009 include, but is not limited to, a defect in system design, operation, or maintenance
1010 or a failure or malfunction of the sources, treatment, storage, or distribution
1011 system that the Agency determines to be causing or have potential for causing the
1012 introduction of contamination into the water delivered to consumers.

1013 BOARD NOTE: Derived from 40 CFR 142.16(o)(2)(iv) (2009)(2007). The
1014 Agency must submit to USEPA a definition and description of at least one
1015 significant deficiency in each of the eight sanitary survey elements listed in
1016 Section 611.801(c) as part of the federal primacy requirements. The Board added
1017 the general description of what a significant deficiency might include in non-
1018 limiting terms, in order to provide this important definition within the body of the
1019 Illinois rules. No Agency submission to USEPA can provide definition within the
1020 context of Board regulations.
1021

1022 "Slow sand filtration" means a process involving passage of raw water through a
1023 bed of sand at low velocity (generally less than 0.4 meters per hour (m/h))
1024 resulting in substantial particulate removal by physical and biological
1025 mechanisms.
1026

1027 "SOC" or "Synthetic organic chemical contaminant" refers to that group of
1028 contaminants designated as "SOCs," or "synthetic organic chemicals" or
1029 "synthetic organic contaminants," in USEPA regulatory discussions and guidance
1030 documents. "SOCs" include alachlor, aldicarb, aldicarb sulfone, aldicarb
1031 sulfoxide, atrazine, benzo(a)pyrene, carbofuran, chlordane, dalapon,

1032 dibromoethylene (ethylene dibromide or EDB), dibromochloropropane (DBCP),
1033 di(2-ethylhexyl)adipate, di(2-ethylhexyl)phthalate, dinoseb, diquat, endothall,
1034 endrin, glyphosate, heptachlor, heptachlor epoxide, hexachlorobenzene,
1035 hexachlorocyclopentadiene, lindane, methoxychlor, oxamyl, pentachlorophenol,
1036 picloram, simazine, toxaphene, polychlorinated biphenyls (PCBs), 2,4-D, 2,3,7,8-
1037 TCDD, and 2,4,5-TP.

1038 BOARD NOTE: See the Board note appended to Section 611.311 for
1039 information relating to implementation of requirements relating to aldicarb,
1040 aldicarb sulfone, and aldicarb sulfoxide.

1041
1042 "Source" means a well, reservoir, or other source of raw water.

1043
1044 "Special irrigation district" means an irrigation district in existence prior to May
1045 18, 1994 that provides primarily agricultural service through a piped water system
1046 with only incidental residential use or similar use, where the system or the
1047 residential users or similar users of the system comply with either of the following
1048 exclusion conditions:

1049
1050 The Agency determines by issuing a SEP that alternative water is
1051 provided for residential use or similar uses for drinking or cooking to
1052 achieve the equivalent level of public health protection provided by the
1053 applicable national primary drinking water regulations; or

1054
1055 The Agency determines by issuing a SEP that the water provided for
1056 residential use or similar uses for drinking, cooking, and bathing is
1057 centrally treated or treated at the point of entry by the provider, a pass-
1058 through entity, or the user to achieve the equivalent level of protection
1059 provided by the applicable national primary drinking water regulations.

1060 BOARD NOTE: Derived from 40 CFR 141.2 ~~(2009)~~(2007) and sections
1061 1401(4)(B)(i)(II) and (4)(B)(i)(III) of SDWA (42 USC 300f(4)(B)(i)(II) and
1062 (4)(B)(i)(III) ~~(2006)~~(2007)).

1063
1064 "Standard monitoring" means the monitoring, performed by the supplier pursuant
1065 to Section 611.921(a) and (b), at various specified locations in a distribution
1066 system including near entry points, at points that represent the average residence
1067 time in the distribution system, and at points in the distribution system that are
1068 representative of high TTHM and HAA5 concentrations throughout the
1069 distribution system.

1070 BOARD NOTE: Derived from 40 CFR 141.601(a) and (b) ~~(2009)~~(2007).

1071
1072 "Standard sample" means the aliquot of finished drinking water that is examined
1073 for the presence of coliform bacteria.

1074

1075 "Subpart B system" means a public water system that uses surface water or
1076 groundwater under the direct influence of surface water as a source and which is
1077 subject to the requirements of Subpart B of this Part and the analytical and
1078 monitoring requirements of Sections 611.531, 611.532, 611.533, Appendix B of
1079 this Part, and Appendix C of this Part.
1080
1081 "Subpart I compliance monitoring" means monitoring required to demonstrate
1082 compliance with disinfectant residuals, disinfection byproducts, and disinfection
1083 byproduct precursors requirements of Subpart I of this Part.
1084
1085 "Subpart I system" means a public water system that uses surface water or
1086 groundwater as a source and which is subject to the disinfectant residuals,
1087 disinfection byproducts, and disinfection byproduct precursors requirements of
1088 Subpart I of this Part.
1089
1090 "Subpart Y compliance monitoring" means monitoring required to demonstrate
1091 compliance with Stage 2 disinfection byproducts requirements of Subpart Y of
1092 this Part.
1093
1094 "Supplier of water" or "supplier" means any person who owns or operates a public
1095 water system (PWS). This term includes the "official custodian."
1096
1097 "Surface water" means all water that is open to the atmosphere and subject to
1098 surface runoff.
1099
1100 "SUVA" means specific ultraviolet absorption at 254 nanometers (nm), which is
1101 an indicator of the humic content of water. It is a calculated parameter obtained
1102 by dividing a sample's ultraviolet absorption at a wavelength of 254 nm (UV_{254})
1103 (in m^{-1}) by its concentration of dissolved organic carbon (in mg/ℓ).
1104
1105 "SWS" means "surface water system," a public water supply (PWS) that uses only
1106 surface water sources, including "groundwater under the direct influence of
1107 surface water."
1108 BOARD NOTE: Derived from 40 CFR 141.23(b)(2) and 141.24(f)(2) note
1109 ~~(2009)~~(2007).
1110
1111 "System-specific study plan" means the plan, submitted by the supplier to the
1112 Agency pursuant to Section 611.922, for studying the occurrence of TTHM and
1113 HAA5 in a supplier's distribution system based on either monitoring results or
1114 modelling of the system.
1115 BOARD NOTE: Derived from 40 CFR 141.602 ~~(2009)~~(2007).
1116
1117 "System with a single service connection" means a system that supplies drinking

1118 water to consumers via a single service line.

1119
1120 "Too numerous to count" means that the total number of bacterial colonies
1121 exceeds 200 on a 47-mm diameter membrane filter used for coliform detection.

1122
1123 "Total organic carbon" or "TOC" means total organic carbon (in mg/ℓ) measured
1124 using heat, oxygen, ultraviolet irradiation, chemical oxidants, or combinations of
1125 these oxidants that convert organic carbon to carbon dioxide, rounded to two
1126 significant figures.

1127
1128 "Total trihalomethanes" or "TTHM" means the sum of the concentration of
1129 trihalomethanes (THMs), in milligrams per liter (mg/ℓ), rounded to two
1130 significant figures.

1131 BOARD NOTE: See the definition of " trihalomethanes" for a listing of the four
1132 compounds that USEPA considers TTHMs to comprise.

1133
1134 "Transient, non-community water system" or "transient non-CWS" means a non-
1135 CWS that does not regularly serve at least 25 of the same persons over six months
1136 of the year.

1137 BOARD NOTE: The federal regulations apply to all "public water systems,"
1138 which are defined as all systems that have at least 15 service connections or which
1139 regularly serve water to at least 25 persons. (See 42 USC 300f(4).) The Act
1140 mandates that the Board and the Agency regulate "public water supplies," which
1141 it defines as having at least 15 service connections or regularly serving 25 persons
1142 daily at least 60 days per year. (See Section 3.28 of the Act [415 ILCS 5/3.28].)
1143 The Department of Public Health regulates transient, non-community water
1144 systems.

1145
1146 "Treatment" means any process that changes the physical, chemical,
1147 microbiological, or radiological properties of water, is under the control of the
1148 supplier, and is not a point-of-use treatment device or a point-of-entry treatment
1149 device as defined in this Section. Treatment includes, but is not limited to,
1150 aeration, coagulation, sedimentation, filtration, activated carbon treatment,
1151 disinfection, and fluoridation.

1152
1153 "Trihalomethane" or "THM" means one of the family of organic compounds,
1154 named as derivatives of methane, in which three of the four hydrogen atoms in
1155 methane are each substituted by a halogen atom in the molecular structure. The
1156 THMs are the following compounds:

1157
1158 Trichloromethane (chloroform),
1159 Dibromochloromethane,
1160 Bromodichloromethane, and

1161 Tribromomethane (bromoform)

1162
1163 "Two-stage lime softening" means a process in which chemical addition and
1164 hardness precipitation occur in each of two distinct unit clarification processes in
1165 series prior to filtration.

1166
1167 "µg" means micrograms (1/1,000,000 of a gram).

1168
1169 "USEPA" means the U.S. Environmental Protection Agency.

1170
1171 "Uncovered finished water storage facility" is a tank, reservoir, or other facility
1172 that is used to store water which will undergo no further treatment to reduce
1173 microbial pathogens except residual disinfection and which is directly open to the
1174 atmosphere.

1175
1176 "Very small system waiver" means the conditional waiver from the requirements
1177 of Subpart W of this Part applicable to a supplier that serves fewer than 500
1178 persons and which has taken TTHM and HAA5 samples pursuant to Subpart I of
1179 this Part.

1180 BOARD NOTE: Derived from 40 CFR 141.604 (2009)~~(2007)~~.

1181
1182 "Virus" means a virus of fecal origin that is infectious to humans by waterborne
1183 transmission.

1184
1185 "VOC" or "volatile organic chemical contaminant" refers to that group of
1186 contaminants designated as "VOCs," "volatile organic chemicals," or "volatile
1187 organic contaminants," in USEPA regulatory discussions and guidance
1188 documents. "VOCs" include benzene, dichloromethane, tetrachloromethane
1189 (carbon tetrachloride), trichloroethylene, vinyl chloride, 1,1,1-trichloroethane
1190 (methyl chloroform), 1,1-dichloroethylene, 1,2-dichloroethane, cis-1,2-
1191 dichloroethylene, ethylbenzene, monochlorobenzene, o-dichlorobenzene, styrene,
1192 1,2,4-trichlorobenzene, 1,1,2-trichloroethane, tetrachloroethylene, toluene, trans-
1193 1,2-dichloroethylene, xylene, and 1,2-dichloropropane.

1194
1195 "Waterborne disease outbreak" means the significant occurrence of acute
1196 infectious illness, epidemiologically associated with the ingestion of water from a
1197 public water system (PWS) that is deficient in treatment, as determined by the
1198 appropriate local or State agency.

1199
1200 "Wellhead protection area" or "WHPA" means the surface and subsurface
1201 recharge area surrounding a community water supply well or well field,
1202 delineated outside of any applicable setback zones (pursuant to Section
1203 17.1 of the Act [415 ILCS 5/17.1]) pursuant to Illinois' Wellhead

1204 Protection Program, through which contaminants are reasonably likely to
1205 move toward such well or well field.

1206 BOARD NOTE: The Agency uses two guidance documents for
1207 identification of WHPAs:

1208
1209 "Guidance Document for Groundwater Protection Needs Assessments,"
1210 Illinois Environmental Protection Agency, Illinois State Water Survey,
1211 and Illinois State Geologic Survey joint report, January 1995; and
1212

1213 "The Illinois Wellhead Protection Program Pursuant to Section 1428 of
1214 the Federal Safe Drinking Water Act," Illinois Environmental Protection
1215 Agency, No. 22480, October 1992.

1216
1217 "Wellhead protection program" means the wellhead protection program for the
1218 State of Illinois, approved by USEPA under Section 1428 of the SDWA, 42 USC
1219 300h-7.

1220 BOARD NOTE: Derived from 40 CFR 141.71(b) ~~(2009)~~(2007). The wellhead
1221 protection program includes the "groundwater protection needs assessment" under
1222 Section 17.1 of the Act [415 ILCS 5/17.1] and 35 Ill. Adm. Code 615-617.

1223
1224 "Wholesale system" means a public water system that treats source water as
1225 necessary to produce finished water, which then delivers some or all of that
1226 finished water to another public water system. Delivery by a wholesale system
1227 may be through a direct connection or through the distribution system of one or
1228 more consecutive systems.

1229
1230 BOARD NOTE: Derived from 40 CFR 141.2 ~~(2009)~~(2007).

1231
1232 (Source: Amended at 35 Ill. Reg. _____, effective _____)

1233
1234 **Section 611.102 Incorporations by Reference**

1235
1236 a) Abbreviations and short-name listing of references. The following names and
1237 abbreviated names, presented in alphabetical order, are used in this Part to refer to
1238 materials incorporated by reference:

1239
1240 "AMI Turbiwell Method" means "Continuous Measurement of Turbidity
1241 Using a SWAN AMI Turbiwell Turbidimeter," available from NEMI or
1242 from SWAN Analytische Instrumente AG.

1243
1244 "ASTM Method" means a method published by and available from the
1245 American Society for Testing and Materials (ASTM).

1246

1247 "Colisure Test" means "Colisure Presence/Absence Test for Detection and
1248 Identification of Coliform Bacteria and Escherichia Coli in Drinking
1249 Water," available from Millipore Corporation, Technical Services
1250 Department.
1251

1252 "Colitag® Test" means "Colitag® Product as a Test for Detection and
1253 Identification of Coliforms and E. coli Bacteria in Drinking Water and
1254 Source Water as Required in National Primary Drinking Water
1255 Regulations," available from CPI International.
1256

1257 "Chromocult® Method" means "Chromocult® Coliform Agar
1258 Presence/Absence Membrane Filter Test Method for Detection and
1259 Identification of Coliform Bacteria and Escherichia coli in Finished
1260 Waters," available from EMD Chemicals Inc.
1261

1262 "Determination of Inorganic Oxyhalide" means "Determination of
1263 Inorganic Oxyhalide Disinfection By-Products in Drinking Water Using
1264 Ion Chromatography with the Addition of a Postcolumn Reagent for Trace
1265 Bromate Analysis," available from NTIS.
1266

1267 "Dioxin and Furan Method 1613" means "Tetra- through Octa-Chlorinated
1268 Dioxins and Furans by Isotope-Dilution HRGC/HRMS," available from
1269 NTIS.
1270

1271 "E*Colite Test" means "Charm E*Colite Presence/Absence Test for
1272 Detection and Identification of Coliform Bacteria and Escherichia coli in
1273 Drinking Water," available from Charm Sciences, Inc. and USEPA, Water
1274 Resource Center.
1275

1276 "EC-MUG" means "Method 9221 F: Multiple-Tube Fermentation
1277 Technique for Members of the Coliform Group, Escherichia coli
1278 Procedure (Proposed)," available from American Public Health
1279 Association and American Waterworks Association.
1280

1281 "EML Procedures Manual" means "EML Procedures Manual, HASL
1282 300," available from USDOE, EML.
1283

1284 "Enterolert" means "Evaluation of Enterolert for Enumeration of
1285 Enterococci in Recreational Waters," available from American Society for
1286 Microbiology.
1287

1288 "Georgia Radium Method" means "The Determination of Radium-226 and
1289 Radium-228 in Drinking Water by Gamma-ray Spectrometry Using HPGE

1290 or Ge(Li) Detectors," Revision 1.2, December 2004, available from the
1291 Georgia Tech Research Institute.
1292
1293 "GLI Method 2" means GLI Method 2, "Turbidity," Nov. 2, 1992,
1294 available from Great Lakes Instruments, Inc.
1295
1296 "Guidance Manual for Filtration and Disinfection" means "Guidance
1297 Manual for Compliance with the Filtration and Disinfection Requirements
1298 for Public Water Systems using Surface Water Sources," March 1991,
1299 available from USEPA, NSCEP.
1300
1301 "Hach FilterTrak Method 10133" means "Determination of Turbidity by
1302 Laser Nephelometry," available from Hach Co.
1303
1304 ~~"HACH Procedure Manual" means HACH Procedure Manual, HACH 300,~~
1305 ~~available from ERDA Health and Safety Laboratory.~~
1306
1307 "ITS Method D99-003" means Method D99-003, Revision 3.0, "Free
1308 Chlorine Species (HOCl and OCl⁻) by Test Strip," available from
1309 Industrial Test Systems, Inc.
1310
1311 "Kelada 01" means "Kelada Automated Test Methods for Total Cyanide,
1312 Acid Dissociable Cyanide, And Thiocyanate," Revision 1.2, ~~August 2001,~~
1313 ~~EPA 821/B-01/009,~~ available from ~~the National Technical Information~~
1314 ~~Service (NTIS).~~
1315
1316 "m-ColiBlue24 Test" means "Total Coliforms and E. coli Membrane
1317 Filtration Method with m-ColiBlue24® Broth," available from USEPA,
1318 Water Resource Center, and Hach Company and USEPA, Water Resource
1319 Center.
1320
1321 "Method ME355.01" means "Determination of Cyanide in Drinking Water
1322 by GC/MS Headspace Analysis," available from NEMI or from H&E
1323 Testing Laboratory.
1324
1325 "Mitchell Method M5271" means "Determination of Turbidity by Laser
1326 Nephelometry," available from NEMI and Leck Mitchell, PhD.
1327
1328 "Mitchell Method M5331" means "Determination of Turbidity by LED
1329 Nephelometry," available from NEMI and Leck Mitchell, PhD.
1330

1331 "Modified Colitag™ Method" means "Modified Colitag™ Test Method
1332 for Simultaneous Detection of E. coli and other Total Coliforms in Water,"
1333 available from NEMI and CPI International.
1334
1335 ~~"Membrane Filter Technique using Chromocult Coliform Agar" means~~
1336 ~~"Chromocult Coliform Agar Presence/Absence Membrane Filter Test~~
1337 ~~Method for Detection and Identification of Coliform Bacteria and~~
1338 ~~Escherichia coli in Finished Waters," available from EMD Chemicals Inc.~~
1339
1340 "NA-MUG" means "Method 9222 G: Membrane Filter Technique for
1341 Members of the Coliform Group, MF Partition Procedures," available
1342 from American Public Health Association and American Waterworks
1343 Association.
1344
1345 "NCRP Report Number 22" means "Maximum Permissible Body Burdens
1346 and Maximum Permissible Concentrations of Radionuclides in Air and in
1347 Water for Occupational Exposure," available from NCRP. "National
1348 Council on Radiation Protection."
1349
1350 ~~"NTIS" means "National Technical Information Service."~~
1351
1352 "New Jersey Radium Method" means "Determination of Radium 228 in
1353 Drinking Water," available from the New Jersey Department of
1354 Environmental Protection.
1355
1356 "New York Radium Method" means "Determination of Ra-226 and Ra-
1357 228 (Ra-02)," available from the New York Department of Public Health.
1358
1359 "OI Analytical Method OIA-1677" means "Method OIA-1677, DW
1360 Available Cyanide by Flow Injection, Ligand Exchange, and
1361 Amperometry," available from ALPKEM, Division of OI Analytical.
1362
1363 "ONPG-MUG Test" (meaning "minimal medium ortho-nitrophenyl-beta-
1364 d-galactopyranoside-4-methyl-umbelliferyl -beta-d-glucuronide test"),
1365 also called the "Autoanalysis Colilert System," is Method 9223, available
1366 in "Standard Methods for the Examination of Water and Wastewater,"
1367 18th, 19th, 20th, or 21st ed., from American Public Health Association and
1368 the American Water Works Association.
1369
1370 "Orion Method AQ4500" means "Determination of Turbidity by LED
1371 Nephelometry," available from Thermo Scientific.
1372

1373 "Palintest ChloroSense" means "Measurement of Free and Total Chlorine
1374 in Drinking Water by Palintest ChloroSense," available from NEMI or
1375 Palintest Ltd.
1376
1377 "Palintest Method 1001" means "Method Number 1001," available from
1378 Palintest, Ltd. or the Hach Company.
1379
1380 "QuikChem Method 10-204-00-1-X" means "Digestion and distillation of
1381 total cyanide in drinking and wastewaters using MICRO DIST and
1382 determination of cyanide by flow injection analysis," available from
1383 Lachat Instruments.
1384
1385 "Readycult® 2000-Coliforms 100-Presence/Absence-Test" means
1386 "Readycult Coliforms 100 Presence/Absence Test for Detection and
1387 Identification of Coliform Bacteria and Escherichia coli in Finished
1388 Waters," v. 1.0, available from EMD Chemicals Inc.
1389
1390 "Readycult® 2007" means "Readycult® Coliforms 100 Presence/Absence
1391 Test for Detection and Identification of Coliform Bacteria and Escherichia
1392 coli in Finished Waters," v. 1.1, available from EMD Chemicals Inc.
1393
1394 "SimPlate Method" means "IDEXX SimPlate™ HPC Test Method for
1395 Heterotrophs in Water," available from IDEXX Laboratories, Inc.
1396
1397 ~~"Radiochemical Methods" means "Interim Radiochemical Methodology~~
1398 ~~for Drinking Water," available from NTIS.~~
1399
1400 "Standard Methods" means "Standard Methods for the Examination of
1401 Water and Wastewater," available from the American Public Health
1402 Association or the American Waterworks Association.
1403
1404 "Standard Methods Online" means the website maintained by the Standard
1405 Methods Organization (at www.standardmethods.org) for purchase of the
1406 latest versions of methods in an electronic format.
1407
1408 "Syngenta AG-625" means "Atrazine in Drinking Water by
1409 Immunoassay," February 2001 is available from Syngenta Crop
1410 Protection, Inc.
1411
1412 "Systea Easy (1-Reagent)" means "Systea Easy (1-Reagent) Nitrate
1413 Method," available from NEMI or Systea Scientific LLC.
1414
1415 "Technical Bulletin 601" means "Technical Bulletin 601, Standard

1416 Method of Testing for Nitrate in Drinking Water," July 1994, available
 1417 from Analytical Technology, Inc.
 1418
 1419 ~~"Technical Notes on Drinking Water Methods" means the USEPA~~
 1420 ~~document by that title, October 1994, USEPA document number EPA~~
 1421 ~~600/R-94/173, available from NTIS.~~
 1422
 1423 "Technicon Methods" means "Fluoride in Water and Wastewater,"
 1424 available from Bran & Luebbe.
 1425
 1426 ~~"USDOE Manual" means "EML Procedures Manual," available from the~~
 1427 ~~United State Department of Energy.~~
 1428
 1429 "USEPA Asbestos ~~MethodMethods~~ 100.1" means Method 100.1,
 1430 "Analytical Method for Determination of Asbestos Fibers in Water,"
 1431 September 1983, available from NTIS.
 1432
 1433 "USEPA Asbestos ~~MethodMethods~~ 100.2" means Method 100.2,
 1434 "Determination of Asbestos Structures over 10-mm in Length in Drinking
 1435 Water," June 1994, available from NTIS.
 1436
 1437 "USEPA Environmental ~~InorganicInorganics~~ Methods" means "Methods
 1438 for the Determination of Inorganic Substances in Environmental
 1439 Samples," August 1993, available from NTIS.
 1440
 1441 "USEPA Environmental Metals Methods" means "Methods for the
 1442 Determination of Metals in Environmental Samples," available from
 1443 NTIS.
 1444
 1445 "USEPA Inorganic Methods" means "Methods for Chemical Analysis of
 1446 Water and Wastes," March 1983, available from NTIS.
 1447
 1448 "USEPA Interim Radiochemical Methods" means "Interim Radiochemical
 1449 Methodology for Drinking Water," EPA 600/4-75/008 (revised), March
 1450 1976. Available from NTIS.
 1451
 1452 "USEPA Method 1600" means "Method 1600: Enterococci in Water by
 1453 Membrane Filtration Using Membrane-Enterococcus Indoxyl-b-D-
 1454 Glucoside Agar (mEI)," available from USEPA, Water Resource Center.
 1455
 1456 "USEPA Method 1601" means "Method 1601: Male-specific (F⁺) and
 1457 Somatic Coliphage in Water by Two-step Enrichment Procedure,"
 1458 available from USEPA, Water Resource Center.

1459
 1460 "USEPA Method 1602" means "Method 1602: Male-specific (F⁺) and
 1461 Somatic Coliphage in Water by Single Agar Layer (SAL) Procedure,"
 1462 available from USEPA, Water Resource Center.
 1463
 1464 "USEPA Method 1604" means "Method 1604: Total Coliforms and
 1465 Escherichia coli in Water by Membrane Filtration Using a Simultaneous
 1466 Detection Technique (MI Medium)," available from USEPA, Water
 1467 Resource Center.
 1468
 1469 "USEPA NERL Method 200.5 (rev. 4.2)" means Method 200.5, Revision
 1470 4.2, "Determination of Trace Elements in Drinking Water by Axially
 1471 Viewed Inductively Coupled Plasma – Atomic Emission Spectrometry,"
 1472 October 2003, EPA 600/R-06/115. Available from ~~the~~USEPA, Office of
 1473 Research and Development.
 1474
 1475 "USEPA NERL Method 415.3 (rev. 1.1)" means Method 415.3, Revision
 1476 1.1, "Determination of Total Organic Carbon and Specific UV Absorbance
 1477 at 254 nm in Source Water and Drinking Water," USEPA, February 2005,
 1478 EPA 600/R-05/055. Available from ~~the~~USEPA, Office of Research and
 1479 Development.
 1480
 1481 "USEPA NERL Method 415.3 (rev. 1.2)" means Method 415.3, Revision
 1482 1.2, "Determination of Total Organic Carbon and Specific UV Absorbance
 1483 at 254 nm in Source Water and Drinking Water," USEPA, August 2009,
 1484 EPA 600/R-09/122. Available from USEPA, Office of Research and
 1485 Development.
 1486
 1487 "USEPA NERL Method 549.2" means Method 549.2, Revision 1.0,
 1488 "Determination of Diquat and Paraquat in Drinking Water by Liquid-Solid
 1489 Extraction and High Performance Liquid Chromatography with
 1490 Ultraviolet Detection," June 1997. Available from USEPA, Office of
 1491 Research and Development.
 1492
 1493 "USEPA OGWDW Methods" means one of the methods listed as
 1494 available from the USEPA, Office of Ground Water and Drinking Water
 1495 (Methods 302.0, 317.0 (rev. 2.0), 326.0 (rev. 1.0), 327.0 (rev. 1.1), 334.0,
 1496 515.4 (rev. 1.0), 524.3 (rev. 1.0), 531.2 (rev. 1.0), 552.3 (rev. 1.0), 557,
 1497 1622 (99), 1622 (01), 1622 (05), 1623 (99), 1623 (01), and 1623 (05)).
 1498 Available from NTIS; USEPA, NSCEP; or USEPA, OGWDW.
 1499
 1500 "USEPA Organic Methods" means "Methods for the Determination of
 1501 Organic Compounds in Drinking Water," December 1988 (revised July

1502 1991), ~~for~~ (Methods ~~502.2, 505, 507, 508, 508A, (rev. 1.0) and 515.1, and~~
 1503 ~~531.1 (rev. 4.0)~~); "Methods for the Determination of Organic Compounds
 1504 in Drinking Water – Supplement I," July 1990, ~~for~~ (Methods ~~506, 547,~~
 1505 ~~550, and 550.1, and 551~~); "Methods for the Determination of Organic
 1506 Compounds in Drinking Water – Supplement II," August 1992, ~~for~~
 1507 (Methods ~~504.1, 508.1, 515.2, 524.2, 525.2, 548.1 (rev. 1.0), 549.1, 552.1~~
 1508 ~~(rev. 1.0), 552.2, and 555 (rev. 1.0)~~); and "Methods for the Determination
 1509 of Organic Compounds in Drinking Water – Supplement III," August
 1510 1995, ~~for~~ (Methods ~~502.2 (rev. 2.1), 504.1 (rev. 1.1), 505 (rev. 2.1), 506~~
 1511 ~~(rev. 1.1), 507 (rev. 2.1), 508 (rev. 3.1), 508.1 (rev. 2.0), 515.2 (rev. 1.1),~~
 1512 ~~524.2 (rev. 4.1), 525.2 (rev. 2.0), 531.1 (rev. 3.1), 551.1 (rev. 1.0), and~~
 1513 ~~552.2 (rev. 1.0)~~). Available from NTIS; USEPA, NSCEP; or USEPA,
 1514 EMSL.
 1515
 1516 "USEPA Organic and Inorganic Methods" means "Methods for the
 1517 Determination of Organic and Inorganic Compounds in Drinking Water,
 1518 Volume 1," EPA 815/R-00/014, PB2000-106981, August 2000. Available
 1519 from NTIS.
 1520
 1521 "USEPA Radioactivity Methods" means "Prescribed Procedures for
 1522 Measurement of Radioactivity in Drinking Water," EPA 600/4-80/032,
 1523 August 1980. Available from NTIS.
 1524
 1525 "USEPA Radiochemical Analyses" means "Radiochemical Analytical
 1526 Procedures for Analysis of Environmental Samples," March 1979.
 1527 Available from NTIS.
 1528
 1529 "USEPA Radiochemistry ~~Procedures~~ Methods" means "Radiochemistry
 1530 Procedures Manual," EPA 520/5-84/006, December 1987. Available from
 1531 NTIS.
 1532
 1533 "USEPA Technical Notes" means "Technical Notes on Drinking Water
 1534 Methods," available from NTIS and USEPA, NSCEP.
 1535
 1536 "USGS Methods" means "Methods of Analysis by the U.S. Geological
 1537 Survey National Water Quality Laboratory – Determination of Inorganic
 1538 and Organic Constituents in Water and Fluvial Sediments," available from
 1539 NTIS and USGS.
 1540
 1541 "Waters Method B-1011" means "Waters Test Method for the
 1542 Determination of Nitrite/Nitrate in Water Using Single Column Ion
 1543 Chromatography," available from Waters Corporation, Technical Services
 1544 Division.

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b) The Board incorporates the following publications by reference:

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

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

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

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

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

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

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

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

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

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

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

BOARD NOTE: At the table to 40 CFR 141.402(c)(2), USEPA approved the method as described in the above literature review. The method itself is embodied in the printed instructions to the proprietary kit available from IDEXX Laboratories, Inc. (accessible on-line and available by download from www.asm.org, as "Enterolert™ Procedure"). ASTM approved the method as "Standard Test Method for Enterococci in Water Using Enterolert™," which is available in two versions from ASTM: ASTM ~~Method D6503-99~~ ~~D-6503-99~~ (superceded) and ASTM ~~Method D6503-99~~ ~~D-6503-99~~. While it is more conventional to incorporate the method as presented in the kit instructions or as approved by ASTM by reference, the Board is constrained to incorporate the version that appears in the technical literature by reference, which is the version that USEPA has explicitly approved.

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

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

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

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

1631	Method 303, Total Radioactive Strontium and Strontium 90
1632	in Water, referenced in Section 611.720.
1633	
1634	Method 304, Radium in Water by Precipitation, referenced
1635	in Section 611.720.
1636	
1637	Method 305, Radium 226 by Radon in Water (Soluble,
1638	Suspended, and Total), referenced in Section 611.720.
1639	
1640	Method 306, Tritium in Water, referenced in Section
1641	611.720.
1642	
1643	"Standard Methods for the Examination of Water and
1644	Wastewater," 17 th Edition, 1989 (referred to as "Standard Methods,
1645	17 th ed.").
1646	
1647	Method 7110 B, Gross Alpha and Gross Beta Radioactivity
1648	in Water (Total, Suspended, and Dissolved), referenced in
1649	Section 611.720.
1650	
1651	Method 7500-Cs B, Radioactive Cesium, Precipitation
1652	Method, referenced in Section 611.720.
1653	
1654	Method 7500- ³ H B, Tritium in Water, referenced in Section
1655	611.720.
1656	
1657	Method 7500-I B, Radioactive Iodine, Precipitation
1658	Method, referenced in Section 611.720.
1659	
1660	Method 7500-I C, Radioactive Iodine, Ion-Exchange
1661	Method, referenced in Section 611.720.
1662	
1663	Method 7500-I D, Radioactive Iodine, Distillation Method,
1664	referenced in Section 611.720.
1665	
1666	Method 7500-Ra B, Radium in Water by Precipitation,
1667	referenced in Section 611.720.
1668	
1669	Method 7500-Ra C, Radium 226 by Radon in Water
1670	(Soluble, Suspended, and Total), referenced in Section
1671	611.720.
1672	
1673	Method 7500-Ra D, Radium, Sequential Precipitation

1674	Method (Proposed), referenced in Section 611.720.
1675	
1676	Method 7500-Sr B, Total Radioactive Strontium and
1677	Strontium 90 in Water, referenced in Section 611.720.
1678	
1679	Method 7500-U B, Uranium, Radiochemical Method
1680	(Proposed), referenced in Section 611.720.
1681	
1682	Method 7500-U C, Uranium, Isotopic Method (Proposed),
1683	referenced in Section 611.720.
1684	
1685	"Standard Methods for the Examination of Water and
1686	Wastewater," 18 th Edition, 1992 (referred to as "Standard Methods,
1687	18 th ed.").
1688	
1689	Method 2130 B, Turbidity, Nephelometric Method,
1690	referenced in Section 611.531.
1691	
1692	Method 2320 B, Alkalinity, Titration Method, referenced in
1693	Section 611.611.
1694	
1695	Method 2510 B, Conductivity, Laboratory Method,
1696	referenced in Section 611.611.
1697	
1698	Method 2550, Temperature, Laboratory and Field Methods,
1699	referenced in Section 611.611.
1700	
1701	Method 3111 B, Metals by Flame Atomic Absorption
1702	Spectrometry, Direct Air-Acetylene Flame Method,
1703	referenced in Sections 611.611 and 611.612.
1704	
1705	Method 3111 D, Metals by Flame Atomic Absorption
1706	Spectrometry, Direct Nitrous Oxide-Acetylene Flame
1707	Method, referenced in Section 611.611.
1708	
1709	Method 3112 B, Metals by Cold-Vapor Atomic Absorption
1710	Spectrometry, Cold-Vapor Atomic Absorption
1711	Spectrometric Method, referenced in Section 611.611.
1712	
1713	Method 3113 B, Metals by Electrothermal Atomic
1714	Absorption Spectrometry, Electrothermal Atomic
1715	Absorption Spectrometric Method, referenced in Sections
1716	611.611 and 611.612.

1717	
1718	Method 3114 B, Metals by Hydride Generation/Atomic
1719	Absorption Spectrometry, Manual Hydride
1720	Generation/Atomic Absorption Spectrometric Method,
1721	referenced in Section 611.611.
1722	
1723	Method 3120 B, Metals by Plasma Emission Spectroscopy,
1724	Inductively Coupled Plasma (ICP) Method, referenced in
1725	Sections 611.611 and 611.612.
1726	
1727	Method 3500-Ca D, Calcium, EDTA Titrimetric Method,
1728	referenced in Section 611.611.
1729	
1730	Method 3500-Mg E, Magnesium, Calculation Method,
1731	referenced in Section 611.611.
1732	
1733	Method 4110 B, Determination of Anions by Ion
1734	Chromatography, Ion Chromatography with Chemical
1735	Suppression of Eluent Conductivity, referenced in Section
1736	611.611.
1737	
1738	Method 4500-CN ⁻ C, Cyanide, Total Cyanide after
1739	Distillation, referenced in Section 611.611.
1740	
1741	Method 4500-CN ⁻ E, Cyanide, Colorimetric Method,
1742	referenced in Section 611.611.
1743	
1744	Method 4500-CN ⁻ F, Cyanide, Cyanide-Selective Electrode
1745	Method, referenced in Section 611.611.
1746	
1747	Method 4500-CN ⁻ G, Cyanide, Cyanides Amenable to
1748	Chlorination after Distillation, referenced in Section
1749	611.611.
1750	
1751	Method 4500-Cl D, Chlorine, Amperometric Titration
1752	Method, referenced in Section 611.531.
1753	
1754	Method 4500-Cl E, Chlorine, Low-Level Amperometric
1755	Titration Method, referenced in Section 611.531.
1756	
1757	Method 4500-Cl F, Chlorine, DPD Ferrous Titrimetric
1758	Method, referenced in Section 611.531.
1759	

1760	Method 4500-Cl G, Chlorine, DPD Colorimetric Method,
1761	referenced in Section 611.531.
1762	
1763	Method 4500-Cl H, Chlorine, Syringaldazine (FACTS)
1764	Method, referenced in Section 611.531.
1765	
1766	Method 4500-Cl I, Chlorine, Iodometric Electrode Method,
1767	referenced in Section 611.531.
1768	
1769	Method 4500-ClO ₂ C, Chlorine Dioxide, Amperometric
1770	Method I, referenced in Section 611.531.
1771	
1772	Method 4500-ClO ₂ D, Chlorine Dioxide, DPD Method,
1773	referenced in Section 611.531.
1774	
1775	Method 4500-ClO ₂ E, Chlorine Dioxide, Amperometric
1776	Method II (Proposed), referenced in Section 611.531.
1777	
1778	Method 4500-F ⁻ B, Fluoride, Preliminary Distillation Step,
1779	referenced in Section 611.611.
1780	
1781	Method 4500-F ⁻ C, Fluoride, Ion-Selective Electrode
1782	Method, referenced in Section 611.611.
1783	
1784	Method 4500-F ⁻ D, Fluoride, SPADNS Method, referenced
1785	in Section 611.611.
1786	
1787	Method 4500-F ⁻ E, Fluoride, Complexone Method,
1788	referenced in Section 611.611.
1789	
1790	Method 4500-H ⁺ B, pH Value, Electrometric Method,
1791	referenced in Section 611.611.
1792	
1793	Method 4500-NO ₂ ⁻ B, Nitrogen (Nitrite), Colorimetric
1794	Method, referenced in Section 611.611.
1795	
1796	Method 4500-NO ₃ ⁻ D, Nitrogen (Nitrate), Nitrate Electrode
1797	Method, referenced in Section 611.611.
1798	
1799	Method 4500-NO ₃ ⁻ E, Nitrogen (Nitrate), Cadmium
1800	Reduction Method, referenced in Section 611.611.
1801	
1802	Method 4500-NO ₃ ⁻ F, Nitrogen (Nitrate), Automated

1803	Cadmium Reduction Method, referenced in Section
1804	611.611.
1805	
1806	Method 4500-O ₃ B, Ozone (Residual) (Proposed), Indigo
1807	Colorimetric Method, referenced in Section 611.531.
1808	
1809	Method 4500-P E, Phosphorus, Ascorbic Acid Method,
1810	referenced in Section 611.611.
1811	
1812	Method 4500-P F, Phosphorus, Automated Ascorbic Acid
1813	Reduction Method, referenced in Section 611.611.
1814	
1815	Method 4500-Si D, Silica, Molybdosilicate Method,
1816	referenced in Section 611.611.
1817	
1818	Method 4500-Si E, Silica, Heteropoly Blue Method,
1819	referenced in Section 611.611.
1820	
1821	Method 4500-Si F, Silica, Automated Method for
1822	Molybdate-Reactive Silica, referenced in Section 611.611.
1823	
1824	Method 6651, Glyphosate Herbicide (Proposed), referenced
1825	in Section 611.645.
1826	
1827	Method 7110 B, Gross Alpha and Beta Radioactivity
1828	(Total, Suspended, and Dissolved), Evaporation Method for
1829	Gross Alpha-Beta, referenced in Section 611.720.
1830	
1831	Method 7110 C, Gross Alpha and Beta Radioactivity
1832	(Total, Suspended, and Dissolved), Coprecipitation Method
1833	for Gross Alpha Radioactivity in Drinking Water
1834	(Proposed), referenced in Section 611.720.
1835	
1836	Method 7500-Cs B, Radioactive Cesium, Precipitation
1837	Method, referenced in Section 611.720.
1838	
1839	Method 7500- ³ H B, Tritium, Liquid Scintillation
1840	Spectrometric Method, referenced in Section 611.720.
1841	
1842	Method 7500-I B, Radioactive Iodine, Precipitation
1843	Method, referenced in Section 611.720.
1844	
1845	Method 7500-I C, Radioactive Iodine, Ion-Exchange

1846	Method, referenced in Section 611.720.
1847	
1848	Method 7500-I D, Radioactive Iodine, Distillation Method,
1849	referenced in Section 611.720.
1850	
1851	Method 7500-Ra B, Radium, Precipitation Method,
1852	referenced in Section 611.720.
1853	
1854	Method 7500-Ra C, Radium, Emanation Method,
1855	referenced in Section 611.720.
1856	
1857	Method 7500-Ra D, Radium, Sequential Precipitation
1858	Method (Proposed), referenced in Section 611.720.
1859	
1860	Method 7500-Sr B, Total Radioactive Strontium and
1861	Strontium 90, Precipitation Method, referenced in Section
1862	611.720.
1863	
1864	Method 7500-U B, Uranium, Radiochemical Method
1865	(Proposed), referenced in Section 611.720.
1866	
1867	Method 7500-U C, Uranium, Isotopic Method (Proposed),
1868	referenced in Section 611.720.
1869	
1870	Method 9215 B, Heterotrophic Plate Count, Pour Plate
1871	Method, referenced in Section 611.531.
1872	
1873	Method 9221 A, Multiple-Tube Fermentation Technique
1874	for Members of the Coliform Group, Introduction,
1875	referenced in Sections 611.526 and 611.531.
1876	
1877	Method 9221 B, Multiple-Tube Fermentation Technique
1878	for Members of the Coliform Group, Standard Total
1879	Coliform Fermentation Technique, referenced in Sections
1880	611.526 and 611.531.
1881	
1882	Method 9221 C, Multiple-Tube Fermentation Technique
1883	for Members of the Coliform Group, Estimation of
1884	Bacterial Density, referenced in Sections 611.526 and
1885	611.531.
1886	
1887	Method 9221 D, Multiple-Tube Fermentation Technique
1888	for Members of the Coliform Group, Presence-Absence (P-

1889 A) Coliform Test, referenced in Section 611.526.
1890
1891 Method 9221 E, Multiple-Tube Fermentation Technique
1892 for Members of the Coliform Group, Fecal Coliform
1893 Procedure, referenced in Sections 611.526 and 611.531.
1894
1895 Method 9222 A, Membrane Filter Technique for Members
1896 of the Coliform Group, Introduction, referenced in Sections
1897 611.526 and 611.531.
1898
1899 Method 9222 B, Membrane Filter Technique for Members
1900 of the Coliform Group, Standard Total Coliform Membrane
1901 Filter Procedure, referenced in Sections 611.526 and
1902 611.531.
1903
1904 Method 9222 C, Membrane Filter Technique for Members
1905 of the Coliform Group, Delayed-Incubation Total Coliform
1906 Procedure, referenced in Sections 611.526 and 611.531.
1907
1908 Method 9222 D, Membrane Filter Technique for Members
1909 of the Coliform Group, Fecal Coliform Membrane Filter
1910 Procedure, referenced in Section 611.531.
1911
1912 Method 9223, Chromogenic Substrate Coliform Test
1913 (Proposed) (also referred to as the variations "Autoanalysis
1914 Colilert System" and "Colisure Test"), referenced in
1915 Sections 611.526, and 611.531.
1916
1917 Method 9223 B, Chromogenic Substrate Coliform Test
1918 (Proposed), referenced in Section 611.1004.
1919
1920 "Supplement to the 18th Edition of Standard Methods for the
1921 Examination of Water and Wastewater," American Public Health
1922 Association, 1994.
1923
1924 Method 6610, Carbamate Pesticide Method, referenced in
1925 Section 611.645.
1926
1927 "Standard Methods for the Examination of Water and
1928 Wastewater," 19th Edition, 1995 (referred to as "Standard Methods,
1929 19th ed.").
1930
1931 Method 2130 B, Turbidity, Nephelometric Method,

1932	referenced in Section 611.531.
1933	
1934	Method 2320 B, Alkalinity, Titration Method, referenced in
1935	Section 611.611.
1936	
1937	Method 2510 B, Conductivity, Laboratory Method,
1938	referenced in Section 611.611.
1939	
1940	Method 2550, Temperature, Laboratory, and Field
1941	Methods, referenced in Section 611.611.
1942	
1943	Method 3111 B, Metals by Flame Atomic Absorption
1944	Spectrometry, Direct Air-Acetylene Flame Method,
1945	referenced in Sections 611.611 and 611.612.
1946	
1947	Method 3111 D, Metals by Flame Atomic Absorption
1948	Spectrometry, Direct Nitrous Oxide-Acetylene Flame
1949	Method, referenced in Section 611.611.
1950	
1951	Method 3112 B, Metals by Cold-Vapor Atomic Absorption
1952	Spectrometry, Cold-Vapor Atomic Absorption
1953	Spectrometric Method, referenced in Section 611.611.
1954	
1955	Method 3113 B, Metals by Electrothermal Atomic
1956	Absorption Spectrometry, Electrothermal Atomic
1957	Absorption Spectrometric Method, referenced in Sections
1958	611.611 and 611.612.
1959	
1960	Method 3114 B, Metals by Hydride Generation/Atomic
1961	Absorption Spectrometry, Manual Hydride
1962	Generation/Atomic Absorption Spectrometric Method,
1963	referenced in Section 611.611.
1964	
1965	Method 3120 B, Metals by Plasma Emission Spectroscopy,
1966	Inductively Coupled Plasma (ICP) Method, referenced in
1967	Sections 611.611 and 611.612.
1968	
1969	Method 3500-Ca D, Calcium, EDTA Titrimetric Method,
1970	referenced in Section 611.611.
1971	
1972	Method 3500-Mg E, Magnesium, Calculation Method,
1973	referenced in Section 611.611.
1974	

1975	Method 4110 B, Determination of Anions by Ion Chromatography, Ion Chromatography with Chemical Suppression of Eluent Conductivity, referenced in Section 611.611.
1976	
1977	
1978	
1979	
1980	Method 4500-Cl D, Chlorine, Amperometric Titration Method, referenced in Sections 611.381 and 611.531.
1981	
1982	
1983	Method 4500-Cl E, Chlorine, Low-Level Amperometric Titration Method, referenced in Sections 611.381 and 611.531.
1984	
1985	
1986	
1987	Method 4500-Cl F, Chlorine, DPD Ferrous Titrimetric Method, referenced in Sections 611.381 and 611.531.
1988	
1989	
1990	Method 4500-Cl G, Chlorine, DPD Colorimetric Method, referenced in Sections 611.381 and 611.531.
1991	
1992	
1993	Method 4500-Cl H, Chlorine, Syringaldazine (FACTS) Method, referenced in Sections 611.381 and 611.531.
1994	
1995	
1996	Method 4500-Cl I, Chlorine, Iodometric Electrode Method, referenced in Sections 611.381 and 611.531.
1997	
1998	
1999	Method 4500-ClO ₂ C, Chlorine Dioxide, Amperometric Method I, referenced in Section 611.531.
2000	
2001	
2002	Method 4500-ClO ₂ D, Chlorine Dioxide, DPD Method, referenced in Sections 611.381 and 611.531.
2003	
2004	
2005	Method 4500-ClO ₂ E, Chlorine Dioxide, Amperometric Method II, referenced in Sections 611.381 and 611.531.
2006	
2007	
2008	Method 4500-CN ⁻ C, Cyanide, Total Cyanide after Distillation, referenced in Section 611.611.
2009	
2010	
2011	Method 4500-CN ⁻ E, Cyanide, Colorimetric Method, referenced in Section 611.611.
2012	
2013	
2014	Method 4500-CN ⁻ F, Cyanide, Cyanide-Selective Electrode Method, referenced in Section 611.611.
2015	
2016	
2017	Method 4500-CN ⁻ G, Cyanide, Cyanides Amenable to

2018	Chlorination after Distillation, referenced in Section
2019	611.611.
2020	
2021	Method 4500-F ⁻ B, Fluoride, Preliminary Distillation Step,
2022	referenced in Section 611.611.
2023	
2024	Method 4500-F ⁻ C, Fluoride, Ion-Selective Electrode
2025	Method, referenced in Section 611.611.
2026	
2027	Method 4500-F ⁻ D, Fluoride, SPADNS Method, referenced
2028	in Section 611.611.
2029	
2030	Method 4500-F ⁻ E, Fluoride, Complexone Method,
2031	referenced in Section 611.611.
2032	
2033	Method 4500-H ⁺ B, pH Value, Electrometric Method,
2034	referenced in Section 611.611.
2035	
2036	Method 4500-NO ₂ ⁻ B, Nitrogen (Nitrite), Colorimetric
2037	Method, referenced in Section 611.611.
2038	
2039	Method 4500-NO ₃ ⁻ D, Nitrogen (Nitrate), Nitrate Electrode
2040	Method, referenced in Section 611.611.
2041	
2042	Method 4500-NO ₃ ⁻ E, Nitrogen (Nitrate), Cadmium
2043	Reduction Method, referenced in Section 611.611.
2044	
2045	Method 4500-NO ₃ ⁻ F, Nitrogen (Nitrate), Automated
2046	Cadmium Reduction Method, referenced in Section
2047	611.611.
2048	
2049	Method 4500-O ₃ B, Ozone (Residual) (Proposed), Indigo
2050	Colorimetric Method, referenced in Section 611.531.
2051	
2052	Method 4500-P E, Phosphorus, Ascorbic Acid Method,
2053	referenced in Section 611.611.
2054	
2055	Method 4500-P F, Phosphorus, Automated Ascorbic Acid
2056	Reduction Method, referenced in Section 611.611.
2057	
2058	Method 4500-Si D, Silica, Molybdosilicate Method,
2059	referenced in Section 611.611.
2060	

2061	Method 4500-Si E, Silica, Heteropoly Blue Method,
2062	referenced in Section 611.611.
2063	
2064	Method 4500-Si F, Silica, Automated Method for
2065	Molybdate-Reactive Silica, referenced in Section 611.611.
2066	
2067	<u>Method 5310 B, TOC, Combustion-Infrared Method,</u>
2068	<u>referenced in Section 611.381.</u>
2069	
2070	<u>Method 5310 C, TOC, Persulfate-Ultraviolet Oxidation</u>
2071	<u>Method, referenced in Section 611.381.</u>
2072	
2073	<u>Method 5310 D, TOC, Wet-Oxidation Method, referenced</u>
2074	<u>in Section 611.381.</u>
2075	
2076	Method 5910 B, UV Absorbing Organic Constituents,
2077	Ultraviolet Absorption Method, referenced in Section
2078	611.381.
2079	
2080	Method 6251 B, Disinfection Byproducts: Haloacetic
2081	Acids and Trichlorophenol, Micro Liquid-Liquid
2082	Extraction Gas Chromatographic Method, referenced in
2083	Section 611.381.
2084	
2085	Method 6610, Carbamate Pesticide Method, referenced in
2086	Section 611.645.
2087	
2088	Method 6651, Glyphosate Herbicide (Proposed), referenced
2089	in Section 611.645.
2090	
2091	Method 7110 B, Gross Alpha and Gross Beta
2092	Radioactivity, Evaporation Method for Gross Alpha-Beta,
2093	referenced in Section 611.720.
2094	
2095	Method 7110 C, Gross Alpha and Beta Radioactivity
2096	(Total, Suspended, and Dissolved), Coprecipitation Method
2097	for Gross Alpha Radioactivity in Drinking Water
2098	(Proposed), referenced in Section 611.720.
2099	
2100	Method 7120 B, Gamma-Emitting Radionuclides, Gamma
2101	Spectrometric Method, referenced in Section 611.720.
2102	
2103	Method 7500-Cs B, Radioactive Cesium, Precipitation

2104	Method, referenced in Section 611.720.
2105	
2106	Method 7500- ³ H B, Tritium, Liquid Scintillation
2107	Spectrometric Method, referenced in Section 611.720.
2108	
2109	Method 7500-I B, Radioactive Iodine, Precipitation
2110	Method, referenced in Section 611.720.
2111	
2112	Method 7500-I C, Radioactive Iodine, Ion-Exchange
2113	Method, referenced in Section 611.720.
2114	
2115	Method 7500-I D, Radioactive Iodine, Distillation Method,
2116	referenced in Section 611.720.
2117	
2118	Method 7500-Ra B, Radium, Precipitation Method,
2119	referenced in Section 611.720.
2120	
2121	Method 7500-Ra C, Radium, Emanation Method,
2122	referenced in Section 611.720.
2123	
2124	Method 7500-Ra D, Radium, Sequential Precipitation
2125	Method, referenced in Section 611.720.
2126	
2127	Method 7500-Sr B, Total Radiactive Strontium and
2128	Strontium 90, Precipitation Method, referenced in Section
2129	611.720.
2130	
2131	Method 7500-U B, Uranium, Radiochemical Method,
2132	referenced in Section 611.720.
2133	
2134	Method 7500-U C, Uranium, Isotopic Method, referenced
2135	in Section 611.720.
2136	
2137	Method 9215 B, Heterotrophic Plate Count, Pour Plate
2138	Method, referenced in Section 611.531.
2139	
2140	Method 9221 A, Multiple-Tube Fermentation Technique
2141	for Members of the Coliform Group, Introduction,
2142	referenced in Sections 611.526 and 611.531.
2143	
2144	Method 9221 B, Multiple-Tube Fermentation Technique
2145	for Members of the Coliform Group, Standard Total

2146	Coliform Fermentation Technique, referenced in Sections
2147	611.526 and 611.531.
2148	
2149	Method 9221 C, Multiple-Tube Fermentation Technique
2150	for Members of the Coliform Group, Estimation of
2151	Bacterial Density, referenced in Sections 611.526 and
2152	611.531.
2153	
2154	Method 9221 D, Multiple-Tube Fermentation Technique
2155	for Members of the Coliform Group, Presence-Absence (P-
2156	A) Coliform Test, referenced in Section 611.526.
2157	
2158	Method 9221 E, Multiple-Tube Fermentation Technique
2159	for Members of the Coliform Group, Fecal Coliform
2160	Procedure, referenced in Sections 611.526 and 611.531.
2161	
2162	Method 9222 A, Membrane Filter Technique for Members
2163	of the Coliform Group, Introduction, referenced in Sections
2164	611.526 and 611.531.
2165	
2166	Method 9222 B, Membrane Filter Technique for Members
2167	of the Coliform Group, Standard Total Coliform Membrane
2168	Filter Procedure, referenced in Sections 611.526 and
2169	611.531.
2170	
2171	Method 9222 C, Membrane Filter Technique for Members
2172	of the Coliform Group, Delayed-Incubation Total Coliform
2173	Procedure, referenced in Sections 611.526 and 611.531.
2174	
2175	Method 9222 D, Membrane Filter Technique for Members
2176	of the Coliform Group, Fecal Coliform Membrane Filter
2177	Procedure, referenced in Section 611.531.
2178	
2179	Method 9222 G, Membrane Filter Technique for Members
2180	of the Coliform Group, MF Partition Procedures,
2181	referenced in Section 611.526.
2182	
2183	Method 9223, Chromogenic Substrate Coliform Test (also
2184	referred to as the variations "Autoanalysis Colilert System"
2185	and "Colisure Test"), referenced in Sections 611.526, and
2186	611.531.
2187	

2188	Method 9223 B, Chromogenic Substrate Coliform Test
2189	(Proposed), referenced in Section 611.1004.
2190	
2191	"Supplement to the 19 th Edition of Standard Methods for the
2192	Examination of Water and Wastewater," American Public Health
2193	Association, 1996.
2194	
2195	Method 5310 B, TOC, Combustion-Infrared Method,
2196	referenced in Section 611.381.
2197	
2198	Method 5310 C, TOC, Persulfate-Ultraviolet Oxidation
2199	Method, referenced in Section 611.381.
2200	
2201	Method 5310 D, TOC, Wet-Oxidation Method, referenced
2202	in Section 611.381.
2203	
2204	"Standard Methods for the Examination of Water and
2205	Wastewater," 20 th Edition, 1998 (referred to as "Standard Methods,
2206	20 th ed.").
2207	
2208	Method 2130 B, Turbidity, Nephelometric Method,
2209	referenced in Section 611.531.
2210	
2211	Method 2320 B, Alkalinity, Titration Method, referenced in
2212	Section 611.611.
2213	
2214	Method 2510 B, Conductivity, Laboratory Method,
2215	referenced in Section 611.611.
2216	
2217	Method 2550, Temperature, Laboratory, and Field
2218	Methods, referenced in Section 611.611.
2219	
2220	Method 3120 B, Metals by Plasma Emission Spectroscopy,
2221	Inductively Coupled Plasma (ICP) Method, referenced in
2222	Sections 611.611 and 611.612.
2223	
2224	Method 3500-Ca B, Calcium, EDTA Titrimetric Method,
2225	referenced in Section 611.611.
2226	
2227	Method 3500-Mg B, Magnesium, EDTA Titrimetric
2228	Method, referenced in Section 611.611.
2229	

2230	Method 4110 B, Determination of Anions by Ion
2231	Chromatography, Ion Chromatography with Chemical
2232	Suppression of Eluent Conductivity, referenced in Section
2233	611.611.
2234	
2235	Method 4500-CN C, Cyanide, Total Cyanide after
2236	Distillation, referenced in Section 611.611.
2237	
2238	Method 4500-CN E, Cyanide, Colorimetric Method,
2239	referenced in Section 611.611.
2240	
2241	Method 4500-CN F, Cyanide, Cyanide-Selective Electrode
2242	Method, referenced in Section 611.611.
2243	
2244	Method 4500-CN G, Cyanide, Cyanides Amenable to
2245	Chlorination after Distillation, referenced in Section
2246	611.611.
2247	
2248	Method 4500-Cl D, Chlorine, Amperometric Titration
2249	Method, referenced in Section 611.531.
2250	
2251	Method 4500-Cl E, Chlorine, Low-Level Amperometric
2252	Titration Method, referenced in Section 611.531.
2253	
2254	Method 4500-Cl F, Chlorine, DPD Ferrous Titrimetric
2255	Method, referenced in Section 611.531.
2256	
2257	Method 4500-Cl G, Chlorine, DPD Colorimetric Method,
2258	referenced in Section 611.531.
2259	
2260	Method 4500-Cl H, Chlorine, Syringaldazine (FACTS)
2261	Method, referenced in Section 611.531.
2262	
2263	Method 4500-Cl I, Chlorine, Iodometric Electrode Method,
2264	referenced in Section 611.531.
2265	
2266	Method 4500-ClO ₂ C, Chlorine Dioxide, Amperometric
2267	Method I, referenced in Section 611.531.
2268	
2269	Method 4500-ClO ₂ D, Chlorine Dioxide, DPD Method,
2270	referenced in Section 611.531.
2271	

2272	Method 4500-ClO ₂ E, Chlorine Dioxide, Amperometric
2273	Method II (Proposed), referenced in Section 611.531.
2274	
2275	Method 4500-F ⁻ B, Fluoride, Preliminary Distillation Step,
2276	referenced in Section 611.611.
2277	
2278	Method 4500-F ⁻ C, Fluoride, Ion-Selective Electrode
2279	Method, referenced in Section 611.611.
2280	
2281	Method 4500-F ⁻ D, Fluoride, SPADNS Method, referenced
2282	in Section 611.611.
2283	
2284	Method 4500-F ⁻ E, Fluoride, Complexone Method,
2285	referenced in Section 611.611.
2286	
2287	Method 4500-H ⁺ B, pH Value, Electrometric Method,
2288	referenced in Section 611.611.
2289	
2290	Method 4500-NO ₂ ⁻ B, Nitrogen (Nitrite), Colorimetric
2291	Method, referenced in Section 611.611.
2292	
2293	Method 4500-NO ₃ ⁻ D, Nitrogen (Nitrate), Nitrate Electrode
2294	Method, referenced in Section 611.611.
2295	
2296	Method 4500-NO ₃ ⁻ E, Nitrogen (Nitrate), Cadmium
2297	Reduction Method, referenced in Section 611.611.
2298	
2299	Method 4500-NO ₃ ⁻ F, Nitrogen (Nitrate), Automated
2300	Cadmium Reduction Method, referenced in Section
2301	611.611.
2302	
2303	Method 4500-O ₃ B, Ozone (Residual) (Proposed), Indigo
2304	Colorimetric Method, referenced in Section 611.531.
2305	
2306	Method 4500-P E, Phosphorus, Ascorbic Acid Method,
2307	referenced in Section 611.611.
2308	
2309	Method 4500-P F, Phosphorus, Automated Ascorbic Acid
2310	Reduction Method, referenced in Section 611.611.
2311	
2312	Method 4500-Si C, Silica, Molybdosilicate Method,
2313	referenced in Section 611.611.
2314	

2315	Method 4500-Si D, Silica, Heteropoly Blue Method,
2316	referenced in Section 611.611.
2317	
2318	Method 4500-Si E, Silica, Automated Method for
2319	Molybdate-Reactive Silica, referenced in Section 611.611.
2320	
2321	<u>Method 5310 B, TOC, Combustion-Infrared Method,</u>
2322	<u>referenced in Section 611.381.</u>
2323	
2324	<u>Method 5310 C, TOC, Persulfate-Ultraviolet Oxidation</u>
2325	<u>Method, referenced in Section 611.381.</u>
2326	
2327	<u>Method 5310 D, TOC, Wet-Oxidation Method, referenced</u>
2328	<u>in Section 611.381.</u>
2329	
2330	Method 5910 B, UV-Absorbing Organic Constituents,
2331	Ultraviolet Absorption Method, referenced in Sections
2332	611.381 and 611.382.
2333	
2334	Method 6251, Disinfection By-Products: Haloacetic Acids
2335	and Trichlorophenol, referenced in Section 611.381.
2336	
2337	Method 6610, Carbamate Pesticide Method, referenced in
2338	Section 611.645.
2339	
2340	Method 6651, Glyphosate Herbicide (Proposed), referenced
2341	in Section 611.645.
2342	
2343	Method 7110 B, Gross Alpha and Gross Beta
2344	Radioactivity, Evaporation Method for Gross Alpha-Beta,
2345	referenced in Section 611.720.
2346	
2347	Method 7110 C, Gross Alpha and Beta Radioactivity
2348	(Total, Suspended, and Dissolved), Coprecipitation Method
2349	for Gross Alpha Radioactivity in Drinking Water
2350	(Proposed), referenced in Section 611.720.
2351	
2352	Method 7120, Gamma-Emitting Radionuclides, referenced
2353	in Section 611.720.
2354	
2355	Method 7500-Cs B, Radioactive Cesium, Precipitation
2356	Method, referenced in Section 611.720.
2357	

2358	Method 7500- ³ H B, Tritium, Liquid Scintillation
2359	Spectrometric Method, referenced in Section 611.720.
2360	
2361	Method 7500-I B, Radioactive Iodine, Precipitation
2362	Method, referenced in Section 611.720.
2363	
2364	Method 7500-I C, Radioactive Iodine, Ion-Exchange
2365	Method, referenced in Section 611.720.
2366	
2367	Method 7500-I D, Radioactive Iodine, Distillation Method,
2368	referenced in Section 611.720.
2369	
2370	Method 7500-Ra B, Radium, Precipitation Method,
2371	referenced in Section 611.720.
2372	
2373	Method 7500-Ra C, Radium, Emanation Method,
2374	referenced in Section 611.720.
2375	
2376	Method 7500-Ra D, Radium, Sequential Precipitation
2377	Method, referenced in Section 611.720.
2378	
2379	Method 7500-Sr B, Total Radioactive Strontium and
2380	Strontium 90, Precipitation Method, referenced in Section
2381	611.720.
2382	
2383	Method 7500-U B, Uranium, Radiochemical Method,
2384	referenced in Section 611.720.
2385	
2386	Method 7500-U C, Uranium, Isotopic Method, referenced
2387	in Section 611.720.
2388	
2389	Method 9215 B, Heterotrophic Plate Count, Pour Plate
2390	Method, referenced in Section 611.531.
2391	
2392	Method 9221 A, Multiple-Tube Fermentation Technique
2393	for Members of the Coliform Group, Introduction,
2394	referenced in Sections 611.526 and 611.531.
2395	
2396	Method 9221 B, Multiple-Tube Fermentation Technique
2397	for Members of the Coliform Group, Standard Total
2398	Coliform Fermentation Technique, referenced in Sections
2399	611.526 and 611.531.
2400	

2401	Method 9221 C, Multiple-Tube Fermentation Technique for Members of the Coliform Group, Estimation of Bacterial Density, referenced in Sections 611.526 and 611.531.
2402	
2403	
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2406	Method 9221 D, Multiple-Tube Fermentation Technique for Members of the Coliform Group, Presence-Absence (P-A) Coliform Test, referenced in Sections 611.526.
2407	
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2410	Method 9221 E, Multiple-Tube Fermentation Technique for Members of the Coliform Group, Fecal Coliform Procedure, referenced in Sections 611.526 and 611.531.
2411	
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2414	Method 9221 F, Multiple-Tube Fermentation Technique for Members of the Coliform Group, Escherichia Coli Procedure (Proposed), referenced in Section 611.802.
2415	
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2418	Method 9222 A, Membrane Filter Technique for Members of the Coliform Group, Introduction, referenced in Sections 611.526 and 611.531.
2419	
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2422	Method 9222 B, Membrane Filter Technique for Members of the Coliform Group, Standard Total Coliform Membrane Filter Procedure, referenced in Sections 611.526 and 611.531.
2423	
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2426	Method 9222 C, Membrane Filter Technique for Members of the Coliform Group, Delayed-Incubation Total Coliform Procedure, referenced in Sections 611.526 and 611.531.
2427	
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2430	Method 9222 D, Membrane Filter Technique for Members of the Coliform Group, Fecal Coliform Membrane Filter Procedure, referenced in Section 611.531.
2431	
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2434	Method 9222 G, Membrane Filter Technique for Members of the Coliform Group, MF Partition Procedures, referenced in Section 611.526.
2435	
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2438	Method 9223, Chromogenic Substrate Coliform Test (also referred to as the variations "Autoanalysis Colilert System" and "Colisure Test"), referenced in Sections 611.526 <u>and</u> , 611.531.
2439	
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2444	Method 9223 B, Chromogenic Substrate Coliform Test (also referred to as the variations "Autoanalysis Colilert System" and "Colisure Test"), referenced in Sections <u>611.526</u> , 611.802, and 611.1004.
2445	
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2449	Method 9230 B, Fecal Streptococcus and Enterococcus Groups, Multiple Tube Techniques, referenced in Section 611.802.
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2453	Method 9230 C, Fecal Streptococcus and Enterococcus Groups, Membrane Filter Techniques, referenced in Section 611.802.
2454	
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2461	Method 2130 B, Turbidity, Nephelometric Method, referenced in Section 611.531.
2462	
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2464	Method 2320 B, Alkalinity, Titration Method, referenced in Section 611.611.
2465	
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2467	Method 2510 B, Conductivity, Laboratory Method, referenced in Section 611.611.
2468	
2469	
2470	Method 2550, Temperature, Laboratory, and Field Methods, referenced in Section 611.611.
2471	
2472	
2473	Method 3111 B, Metals by Flame Atomic Absorption Spectrometry, Direct Air-Acetylene Flame Method, referenced in Sections 611.611 and 611.612.
2474	
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2477	Method 3111 D, Metals by Flame Atomic Absorption Spectrometry, Direct Nitrous Oxide-Acetylene Flame Method, referenced in Section 611.611.
2478	
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2480	Method 3112 B, Metals by Cold-Vapor Atomic Absorption Spectrometry, Cold-Vapor Atomic Absorption Spectrometric Method, referenced in Section 611.611.
2481	
2482	
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2485	Method 3113 B, Metals by Electrothermal Atomic Absorption Spectrometry, Electrothermal Atomic
2486	

2487	Absorption Spectrometric Method, referenced in Sections
2488	611.611 and 611.612.
2489	
2490	Method 3114 B, Metals by Hydride Generation/Atomic
2491	Absorption Spectrometry, Manual Hydride
2492	Generation/Atomic Absorption Spectrometric Method,
2493	referenced in Section 611.611.
2494	
2495	Method 3120 B, Metals by Plasma Emission Spectroscopy,
2496	Inductively Coupled Plasma (ICP) Method, referenced in
2497	Sections 611.611 and 611.612.
2498	
2499	Method 3500-Ca B, Calcium, EDTA Titrimetric Method,
2500	referenced in Section 611.611.
2501	
2502	Method 3500-Ca D, Calcium, EDTA Titrimetric Method,
2503	referenced in Section 611.611.
2504	
2505	Method 3500-Mg B, Magnesium, Calculation Method,
2506	referenced in Section 611.611.
2507	
2508	Method 4110 B, Determination of Anions by Ion
2509	Chromatography, Ion Chromatography with Chemical
2510	Suppression of Eluent Conductivity, referenced in Section
2511	611.611.
2512	
2513	Method 4500-Cl D, Chlorine, Amperometric Titration
2514	Method, referenced in Section 611.381.
2515	
2516	Method 4500-Cl E, Chlorine, Low-Level Amperometric
2517	Titration Method, referenced in Section 611.381.
2518	
2519	Method 4500-Cl F, Chlorine, DPD Ferrous Titrimetric
2520	Method, referenced in Section 611.381.
2521	
2522	Method 4500-Cl G, Chlorine, DPD Colorimetric Method,
2523	referenced in Section 611.381.
2524	
2525	Method 4500-Cl H, Chlorine, Syringaldazine (FACTS)
2526	Method, referenced in Section 611.381.
2527	
2528	Method 4500-Cl I, Chlorine, Iodometric Electrode Method,
2529	referenced in Section 611.381.

2530	
2531	Method 4500-ClO ₂ C, Chlorine Dioxide, Amperometric
2532	Method I, referenced in Section 611.531.
2533	
2534	Method 4500-ClO ₂ E, Chlorine Dioxide, Amperometric
2535	Method II (Proposed), referenced in Section 611.381.
2536	
2537	Method 4500-CN ⁻ E, Cyanide, Colorimetric Method,
2538	referenced in Section 611.611.
2539	
2540	Method 4500-CN ⁻ F, Cyanide, Cyanide-Selective Electrode
2541	Method, referenced in Section 611.611.
2542	
2543	Method 4500-CN ⁻ G, Cyanide, Cyanides Amenable to
2544	Chlorination after Distillation, referenced in Section
2545	611.611.
2546	
2547	Method 4500-F ⁻ B, Fluoride, Preliminary Distillation Step,
2548	referenced in Section 611.611.
2549	
2550	Method 4500-F ⁻ C, Fluoride, Ion-Selective Electrode
2551	Method, referenced in Section 611.611.
2552	
2553	Method 4500-F ⁻ D, Fluoride, SPADNS Method, referenced
2554	in Section 611.611.
2555	
2556	Method 4500-F ⁻ E, Fluoride, Complexone Method,
2557	referenced in Section 611.611.
2558	
2559	Method 4500-H ⁺ B, pH Value, Electrometric Method,
2560	referenced in Section 611.611.
2561	
2562	Method 4500-NO ₂ ⁻ B, Nitrogen (Nitrite), Colorimetric
2563	Method, referenced in Section 611.611.
2564	
2565	Method 4500-NO ₃ ⁻ D, Nitrogen (Nitrate), Nitrate Electrode
2566	Method, referenced in Section 611.611.
2567	
2568	Method 4500-NO ₃ ⁻ E, Nitrogen (Nitrate), Cadmium
2569	Reduction Method, referenced in Section 611.611.
2570	

2571	Method 4500-NO ₃ ⁻ F, Nitrogen (Nitrate), Automated
2572	Cadmium Reduction Method, referenced in Section
2573	611.611.
2574	
2575	Method 4500-O ₃ B, Ozone (Residual) (Proposed), Indigo
2576	Colorimetric Method, referenced in Section 611.531.
2577	
2578	Method 4500-P E, Phosphorus, Ascorbic Acid Method,
2579	referenced in Section 611.611.
2580	
2581	Method 4500-P F, Phosphorus, Automated Ascorbic Acid
2582	Reduction Method, referenced in Section 611.611.
2583	
2584	Method 4500-SiO ₂ C, Silica, Molybdosilicate Method,
2585	referenced in Section 611.611.
2586	
2587	Method 4500-SiO ₂ D, Silica, Heteropoly Blue Method,
2588	referenced in Section 611.611.
2589	
2590	Method 4500-SiO ₂ E, Silica, Automated Method for
2591	Molybdate-Reactive Silica, referenced in Section 611.611.
2592	
2593	Method 5310 B, TOC, Combustion-Infrared Method,
2594	referenced in Section 611.381.
2595	
2596	Method 5310 C, TOC, Persulfate-Ultraviolet Oxidation
2597	Method, referenced in Section 611.381.
2598	
2599	Method 5310 D, TOC, Wet-Oxidation Method, referenced
2600	in Section 611.381.
2601	
2602	Method 5910 B, UV-Absorbing Organic Constituents,
2603	Ultraviolet Absorption Method, referenced in Sections
2604	611.381 and 611.382.
2605	
2606	Method 6251, Disinfection By-Products: Haloacetic Acids
2607	and Trichlorophenol, referenced in Section 611.381.
2608	
2609	Method 6610, Carbamate Pesticide Method, referenced in
2610	Section 611.645.
2611	

2612	<u>Method 6640 B, Acid Herbicide Compounds, Micro</u>	
2613		<u>Liquid-Liquid Extraction Gas Chromatographic Method,</u>
2614		<u>referenced in Section 611.645.</u>
2615		
2616	Method 7110 B, Gross Alpha and Gross Beta	
2617		Radioactivity, Evaporation Method for Gross Alpha-Beta,
2618		referenced in Section 611.720.
2619		
2620	Method 7110 C, Gross Alpha and Beta Radioactivity	
2621		(Total, Suspended, and Dissolved), Coprecipitation Method
2622		for Gross Alpha Radioactivity in Drinking Water
2623		(Proposed), referenced in Section 611.720.
2624		
2625	Method 7120, Gamma-Emitting Radionuclides, referenced	
2626		in Section 611.720.
2627		
2628	Method 7500-Cs B, Radioactive Cesium, Precipitation	
2629		Method, referenced in Section 611.720.
2630		
2631	Method 7500- ³ H B, Tritium, Liquid Scintillation	
2632		Spectrometric Method, referenced in Section 611.720.
2633		
2634	Method 7500-I B, Radioactive Iodine, Precipitation	
2635		Method, referenced in Section 611.720.
2636		
2637	Method 7500-I C, Radioactive Iodine, Ion-Exchange	
2638		Method, referenced in Section 611.720.
2639		
2640	Method 7500-I D, Radioactive Iodine, Distillation Method,	
2641		referenced in Section 611.720.
2642		
2643	Method 7500-Ra B, Radium, Precipitation Method,	
2644		referenced in Section 611.720.
2645		
2646	Method 7500-Ra C, Radium, Emanation Method,	
2647		referenced in Section 611.720.
2648		
2649	Method 7500-Ra D, Radium, Sequential Precipitation	
2650		Method, referenced in Section 611.720.
2651		
2652	Method 7500-Sr B, Total Radioactive Strontium and	
2653		Strontium 90, Precipitation Method, referenced in Section
2654		611.720.

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2657	Method 7500-U B, Uranium, Radiochemical Method,
2658	referenced in Section 611.720.
2659	
2660	Method 7500-U C, Uranium, Isotopic Method, referenced
2661	in Section 611.720.
2662	
2663	Method 9221 A, Multiple-Tube Fermentation Technique
2664	for Members of the Coliform Group, Introduction,
2665	referenced in Sections 611.526 and 611.531.
2666	
2667	Method 9221 B, Multiple-Tube Fermentation Technique
2668	for Members of the Coliform Group, Standard Total
2669	Coliform Fermentation Technique, referenced in Sections
2670	611.526 and 611.531.
2671	
2672	Method 9221 C, Multiple-Tube Fermentation Technique
2673	for Members of the Coliform Group, Estimation of
2674	Bacterial Density, referenced in Sections 611.526 and
2675	611.531.
2676	
2677	Method 9221 D, Multiple-Tube Fermentation Technique
2678	for Members of the Coliform Group, Presence-Absence (P-
2679	A) Coliform Test, referenced in Section 611.526.
2680	
2681	Method 9221 E, Multiple-Tube Fermentation Technique
2682	for Members of the Coliform Group, Fecal Coliform
2683	Procedure, referenced in Sections 611.526 and 611.531.
2684	
2685	Method 9221 F, Multiple-Tube Fermentation Technique for
2686	Members of the Coliform Group, Escherichia Coli
2687	Procedure (Proposed), referenced in Section 611.802.
2688	
2689	Method 9222 A, Membrane Filter Technique for Members
2690	of the Coliform Group, Introduction, referenced in Sections
2691	611.526 and 611.531.
2692	
2693	Method 9222 B, Membrane Filter Technique for Members
2694	of the Coliform Group, Standard Total Coliform Membrane
2695	Filter Procedure, referenced in Sections 611.526 and
2696	611.531.

2697 Method 9222 C, Membrane Filter Technique for Members
2698 of the Coliform Group, Delayed-Incubation Total Coliform
2699 Procedure, referenced in Sections 611.526 and 611.531.
2700

2701 Method 9222 D, Membrane Filter Technique for Members
2702 of the Coliform Group, Fecal Coliform Membrane Filter
2703 Procedure, referenced in Section 611.531.
2704

2705 Method 9222 G, Membrane Filter Technique for Members
2706 of the Coliform Group, MF Partition Procedures,
2707 referenced in Section 611.526.
2708

2709 Method 9223, Chromogenic Substrate Coliform Test (also
2710 referred to as the variations "Autoanalysis Colilert System"
2711 and "Colisure Test"), referenced in Sections 611.526 and
2712 611.531.
2713

2714 Method 9223 B, Chromogenic Substrate Coliform Test
2715 (also referred to as the variations "Autoanalysis Colilert
2716 System" and "Colisure Test"), referenced in Sections
2717 611.526, 611.802, and 611.1004.
2718

2719 BOARD NOTE: See the Board Note appended to Standard
2720 Methods Online in this Section about methods that appear in
2721 Standard Methods, 21st ed., which USEPA has cited as available
2722 from Standard Methods Online.
2723

2724 BOARD NOTE: Individual Methods from Standard Methods are
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2726 www.standardmethods.org.
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2732 Drinking Water," July, 1994, PN 221890-001 (referred to as
2733 "Technical Bulletin 601"), referenced in Section 611.611.
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2736 Drive, West Conshohocken, PA 19428-2959 (610-832-9585).
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2739 Calcium and Magnesium in Water," "Test Method A –

2740 Complexometric Titration" & "Test Method B – Atomic
 2741 Absorption Spectrophotometric," approved 1993, referenced in
 2742 Section 611.611.
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 2744 ASTM Method D511-03 A and B, "Standard Test Methods for
 2745 Calcium and Magnesium in Water," "Test Method A –
 2746 Complexometric Titration" & "Test Method B – Atomic
 2747 Absorption Spectrophotometric," approved 2003, referenced in
 2748 Section 611.611.
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 2750 ASTM Method D511-09 A and B, "Standard Test Methods for
 2751 Calcium and Magnesium in Water," "Test Method A –
 2752 Complexometric Titration" & "Test Method B – Atomic
 2753 Absorption Spectrophotometric," approved 2009, referenced in
 2754 Section 611.611.
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 2756 ASTM Method D515-88 A, "Standard Test Methods for
 2757 Phosphorus in Water," "Test Method A= Colorimetric Ascorbic
 2758 Acid Reduction," approved August 19, 1988, referenced in Section
 2759 611.611.
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 2761 ASTM Method D859-94, "Standard Test Method for Silica in
 2762 Water," approved 1994, referenced in Section 611.611.
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 2765 Water," approved 2000, referenced in Section 611.611.
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 2767 ASTM Method D859-05, "Standard Test Method for Silica in
 2768 Water," approved 2005, referenced in Section 611.611.
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 2770 ASTM Method D1067-92 B, "Standard Test Methods for Acidity
 2771 or Alkalinity in Water," "Test Method B – Electrometric or Color-
 2772 Change Titration," approved May 15, 1992, referenced in Section
 2773 611.611.
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 2775 ASTM Method D1067-02 B, "Standard Test Methods for Acidity
 2776 or Alkalinity in Water," "Test Method B – Electrometric or Color-
 2777 Change Titration," approved in 2002, referenced in Section
 2778 611.611.
 2779
 2780 ASTM Method D1125-95 (1999) A, "Standard Test Methods for
 2781 Electrical Conductivity and Resistivity of Water," "Test Method A
 2782 – Field and Routine Laboratory Measurement of Static (Non-

2783 Flowing) Samples," approved 1995, reapproved 1999, referenced
2784 in Section 611.611.
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2787 in Water," "Test Method B – Ion Selective Electrode," approved
2788 1993, referenced in Section 611.611.
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2790 ASTM Method D1179-99 B, "Standard Test Methods for Fluoride
2791 in Water," "Test Method B – Ion Selective Electrode," approved
2792 1999, referenced in Section 611.611.
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2795 in Water," "Test Method B – Ion Selective Electrode," approved
2796 2004, referenced in Section 611.611.
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2799 Chlorine in Water," reapproved 1992, referenced in Section
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2803 Chlorine in Water," ~~approved~~reapproved 1996, referenced in
2804 Section 611.381.
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2807 Chlorine in Water," ~~approved~~reapproved 2003, referenced in
2808 Sections 611.381 and 611.531.
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2811 Chlorine in Water," approved 2008, referenced in Sections 611.381
2812 and 611.531.
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2814 ASTM Method D1293-95 A or B, "Standard Test Methods for pH
2815 of Water," "Test Method A – Precise Laboratory Measurement" &
2816 "Test Method B – Routine or Continuous Measurement," approved
2817 1995, referenced in Section 611.611.
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2819 ASTM Method D1293-99 A or B, "Standard Test Methods for pH
2820 of Water," "Test Method A – Precise Laboratory Measurement" &
2821 "Test Method B – Routine or Continuous Measurement," approved
2822 1999, referenced in Section 611.611.
2823
2824 ASTM Method D1688-95 A or C, "Standard Test Methods for
2825 Copper in Water," "Test Method A – Atomic Absorption, Direct"

2826 & "Test Method C –Atomic Absorption, Graphite Furnace,"
2827 approved 1995, referenced in Section 611.611.
2828
2829 ASTM Method D1688-02 A or C, "Standard Test Methods for
2830 Copper in Water," "Test Method A – Atomic Absorption, Direct"
2831 & "Test Method C – Atomic Absorption, Graphite Furnace,"
2832 approved 2002, referenced in Section 611.611.
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2834 ASTM Method D1688-07 A or C, "Standard Test Methods for
2835 Copper in Water," "Test Method A – Atomic Absorption, Direct"
2836 & "Test Method C – Atomic Absorption, Graphite Furnace,"
2837 approved 2007, referenced in Section 611.611.
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2840 Cyanide in Water," "Test Method A – Total Cyanides after
2841 Distillation" & "Test Method B – Cyanides Amenable to
2842 Chlorination by Difference," approved 1998, referenced in Section
2843 611.611.
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 3364 Furan Method 1613"), referenced in Section 611.645.
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 3366 USEPA Method 326.0, Revision 1.0, "Determination of Inorganic
 3367 Oxyhalide Disinfection By Products in Drinking Water Using Ion
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 3369 Acidified Postcolumn Reagent for Trace Bromate Analysis,"
 3370 USEPA, June 2002, EPA 815/R-03/007, Doc. No. PB2003-107402
 3371 (referred to as "OGWDW Methods, Method 326.0, rev. 1.0"),
 3372 referenced in Sections 611.381 and 611.382.
 3373 BOARD NOTE: Also available from United States Environmental
 3374 Protection Agency, Office of Ground Water and Drinking Water.
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 3376 USEPA Asbestos Method 100.1, "Analytical Method for
 3377 Determination of Asbestos Fibers in Water," EPA 600/4-83-043,
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 3389 121811, referenced in Sections 611.381, 611.531, and 611.611.
 3390 (Methods 180.1 (rev. 2.0), 300.0 (rev. 2.1), 335.4 (rev. 1.0), 353.2
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 3393 USEPA Environmental Metals Methods, "Methods for the
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 3395 I," May 1994, EPA 600/R-94-111, Doc. No. PB95-125472,
 3396 referenced in Sections 611.611, 611.612, and 611.720. (Methods
 3397 200.7 (rev. 4.4), 200.8 (rev. 5.3), 200.9 (rev. 2.2), and 245.1 (rev.
 3398 3.0) only.) See also USEPA, NSCEP.
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 3407 Doc. No. PB253258, March 1976, referenced in Section 611.720.
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 3412 Addition of a Suppressor Acidified Postcolumn Reagent for Trace
 3413 Bromate Analysis," June 2002, EPA 815/R-03/007, Doc. No.
 3414 PB2003-107402, referenced in Sections 611.381 and 611.382. See
 3415 also USEPA, NSCEP and USEPA, OGWDW.
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 3419 Water, Volume 1," August 2000, EPA 815/R-00/014, Doc. No.
 3420 PB2000-106981, referenced in Section 611.381. (For methods
 3421 300.1 (rev. 1.0) and 321.8 (rev. 1.0).) See also USEPA, NSCEP.
 3422
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 3424 Organic Compounds in Drinking Water," December 1988 (revised
 3425 July 1991), EPA 600/4-88/039, Doc. No. PB91-231480, referenced
 3426 in Sections 611.645 and 611.648 (Methods 508A (rev. 1.0) and
 3427 515.1 (rev. 4.0) only); "Methods for the Determination of Organic

3428 Compounds in Drinking Water – Supplement I," July 1990, EPA
 3429 600/4-90/020, Doc. No. PB91-146027, referenced in Section
 3430 611.645 (Methods 547, 550, and 550.1 only); "Methods for the
 3431 Determination of Organic Compounds in Drinking Water –
 3432 Supplement II," August 1992, EPA 600/R-92/129, Doc. No. PB92-
 3433 207703, referenced in Sections 611.381 and 611.645. (Methods
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 3436 Water – Supplement III," August 1995, EPA 600/R-95/131, Doc.
 3437 No. PB95-261616, referenced in Sections 611.381, 611.645, and
 3438 611.648 (Methods 502.2 (rev. 2.1), 504.1 (rev. 1.1), 505 (rev. 2.1),
 3439 506 (rev. 1.1), 507 (rev. 2.1), 508 (rev. 3.1), 508.1 (rev. 2.0), 515.2
 3440 (rev. 1.1), 524.2 (rev. 4.1), 525.2 (rev. 2.0), 531.1 (rev. 3.1), 551.1
 3441 (rev. 1.0), and 552.2 (rev. 1.0) only.) See also USEPA, EMSL and
 3442 USEPA, NSCEP.
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 3447 Section 611.720 (Methods 900.0, 901.0, 901.1, 902.0, 903.0,
 3448 903.1, 904.0, 905.0, 906.0, 908.0, 908.1). See also USEPA,
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 3451 USEPA Radiochemical Analyses, "Radiochemical Analytical
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 3453 Doc. No. EMSL LV 053917, referenced in Section 611.720.
 3454 (Pages 1-5, 19-32, 33-48, 65-73, 87-91, and 92-95 only.)
 3455
 3456 USEPA Radiochemistry Procedures, "Radiochemistry Procedures
 3457 Manual," EPA 520/5-84-006, August 1984, Doc. No. PB84-
 3458 215581 (referred to as ""), referenced in Section 611.720.
 3459 (Methods 00-01, 00-02, 00-07, H-02, Ra-03, Ra-04, Ra-05, Sr-04
 3460 only.)
 3461
 3462 USEPA Technical Notes, "Technical Notes on Drinking Water
 3463 Methods," EPA 600/R-94/173, October 1994, Doc. No. PB95-
 3464 104766, referenced in Sections 611.531, 611.611, and 611.645.
 3465 See also USEPA, NSCEP.
 3466
 3467 BOARD NOTE: USEPA made the following assertion with
 3468 regard to this reference at 40 CFR 141.23(k)(1) and 141.24(e) and
 3469 (n)(11) (2009): "This document contains other analytical test
 3470 procedures and approved analytical methods that remain available

3471 for compliance monitoring until July 1, 1996." Also available
3472 online at <http://nepis.epa.gov/EPA/html/Pubs/pubtitleORD.htm>
3473 under the document designation "600R94173".
3474

3475 New Jersey Department of Environment, Division of Environmental
3476 Quality, Bureau of Radiation and Inorganic Analytical Services, 9 Ewing
3477 Street, Trenton, NJ 08625.

3478
3479 "Determination of Radium 228 in Drinking Water," August 1990
3480 (referred to as "New Jersey Radium Method"), referenced in
3481 Section 611.720.
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3483 New York Department of Health, Radiological Sciences Institute, Center
3484 for Laboratories and Research, Empire State Plaza, Albany, NY 12201.

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3486 "Determination of Ra-226 and Ra-228 (Ra-02)," January 1980,
3487 Revised June 1982 (referred to as "New York Radium Method"),
3488 referenced in Section 611.720.
3489

3490 Palintest, Ltd., 21 Kenton Lands Road, P.O. Box 18395, Erlanger, KY
3491 (800-835-9629).

3492
3493 Palintest Method 1001, "Lead in Drinking Water by Differential
3494 Pulse Anodic Stripping Voltammetry," Method 1001, August 1999
3495 (referred to as "Palintest Method 1001"), referenced in Section
3496 611.611.
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3498 Palintest ChloroSense, "Measurement of Free and Total Chlorine
3499 in Drinking Water by Palintest ChloroSense," September 2009,
3500 referenced in Sections 611.381 and 611.531. See also NEMI.
3501

3502 Standard Methods Online, available online from the Standard Methods
3503 Organization at www.standardmethods.org.

3504
3505 Method 6610 B-04, Carbamate Pesticides, High-Performance
3506 Liquid Chromatographic Method, referenced in Section 611.645.

3507
3508 Method 9230 B-04, Fecal Streptococcus and Enterococcus Groups,
3509 Multiple Tube Techniques, referenced in Section 611.802.

3510
3511 BOARD NOTE: Where, in appendix A to subpart C of 40 CFR
3512 141, USEPA has authorized use of an approved alternative method
3513 from Standard Methods Online, and that version of the method

3514 appears also in Standard Methods, 21st ed., the Board cites only to
3515 Standard Methods, 21st ed. for that method. The methods that
3516 USEPA listed as available from Standard Methods Online, and
3517 which are listed above as in Standard Methods, 21st edition, are the
3518 following: 4500-P E-99, 4500-P F-99, 6640 B-01, and 9223 B-97.
3519 Since each method is the same version from both sources, the
3520 Board views a copy from Standard Methods Online as equivalent
3521 to a copy from Standard Methods Online, even though the Board
3522 does not also cite to Standard Methods Online. The Board intends
3523 that use of the method from either source is acceptable.

3524
3525 SWAN Analytische Instrumente AG, Studbachstrasse 13, CH-8340,
3526 Hinwil, Switzerland.

3527
3528 AMI Turbiwell Method, "Continuous Measurement of Turbidity
3529 Using a SWAN AMI Turbiwell Turbidimeter," August 2009,
3530 referenced in Section 611.531. See also NEMI.

3531
3532 Syngenta Crop Protection, Inc., 410 Swing Road, Post Office Box 18300,
3533 Greensboro, NC 27419 (336-632-6000).

3534
3535 "Atrazine in Drinking Water by Immunoassay," February 2001
3536 (referred to as "Syngenta AG-625"), referenced in Section
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3539 Systea Scientific LLC, 900 Jorie Blvd., Suite 35, Oak Brook, IL 60523.

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3541 Systea Easy (1-Reagent), "Systea Easy (1-Reagent) Nitrate
3542 Method," February 2009, referenced in Section 611.611. See also
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3545 Thermo Scientific, 166 Cummings Center, Beverly, MA 01915
3546 (www.thermo.com).

3547
3548 Orion Method AQ4500, "Determination of Turbidity by LED
3549 Nephelometry," May 2009, referenced in Section 611.531. See
3550 also NEMI.

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3552 USDOE, EML. United States Department of Energy, available at the
3553 Environmental Measurements Laboratory, U.S. Department of Energy,
3554 376 Hudson Street, New York, NY 10014-3621.

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3556 "EML Procedures Manual," HASL 300, 27th Edition, Volume 1,

3557 1990 (referred to as "EML Procedures~~USDOE~~ Manual (27th ed.)"),
3558 referenced in Section 611.720.

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3560 "EML Procedures Manual," HASL 300, 28th ed., 1997 (referred to
3561 as "EML Procedures Manual (28th ed.)"), referenced in Section
3562 611.720.

3563
3564 USEPA, EMSL. United States Environmental Protection Agency,
3565 Environmental Monitoring and Support Laboratory, Cincinnati, OH 45268
3566 (513-569-7586).

3567
3568 USEPA Interim Radiochemical Methods, "Interim Radiochemical
3569 Methodology for Drinking Water," EPA 600/4-75/008 (revised),
3570 March 1976, referenced in Section 611.720. See also NTIS.

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3572 USEPA Organic Methods, "Methods for the Determination of
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3574 July 1991), EPA 600/4-88/039, referenced in Sections 611.645 and
3575 611.648 (Methods 508A (rev. 1.0) and 515.1 (rev. 4.0) only);
3576 "Methods for the Determination of Organic Compounds in
3577 Drinking Water – Supplement I," July 1990, EPA 600/4-90/020,
3578 referenced in Sections 611.645 and 611.648 (Methods 547, 550,
3579 and 550.1 only); "Methods for the Determination of Organic
3580 Compounds in Drinking Water – Supplement II," August 1992,
3581 EPA 600/R-92/129, referenced in Sections 611.381 and 611.645
3582 (Methods 548.1 (rev. 1.0), 552.1 (rev. 1.0), and 555 (rev. 1.0)
3583 only); "Methods for the Determination of Organic Compounds in
3584 Drinking Water – Supplement III," August 1995, EPA 600/R-
3585 95/131, referenced in Sections 611.381, 611.645, and 611.648
3586 (Methods 502.2 (rev. 2.1), 504.1 (rev. 1.1), 505 (rev. 2.1), 506 (rev.
3587 1.1), 507 (rev. 2.1), 508 (rev. 3.1), 508.1 (rev. 2.0), 515.2 (rev.
3588 4.1), 524.2 (rev. 4.1), 525.2 (rev. 2.0), 551.1 (rev. 1.0), and 552.2
3589 (rev. 1.0) only). See also NTIS and USEPA, NSCEP.

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3591 "Procedures for Radiochemical Analysis of Nuclear Reactor
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3593 NTIS.

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3595 USEPA, NSCEP. United States Environmental Protection Agency,
3596 National Service Center for Environmental Publications, P.O. Box 42419,
3597 Cincinnati, OH 45242-0419 (accessible on-line and available by download
3598 from <http://www.epa.gov/nscep/>).
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3600 Dioxin and Furan Method 1613, Revision B, "Tetra- through Octa-
 3601 Chlorinated Dioxins and Furans by Isotope Dilution
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 3603 Section 611.645. See also NTIS.

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 3607 Requirements for Public Water Systems Using Surface Water
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 3613 600/4-83-043, referenced in Section 611.611. See also NTIS.

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 3616 Structures over 10-mm in Length in Drinking Water," June 1994,
 3617 EPA 600/R-94-134, referenced in Section 611.611. See also
 3618 NTIS.

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 3622 Samples," August 1993, EPA 600/R-93-100, referenced in Sections
 3623 611.381, 611.531, and 611.611. (Methods 180.1 (rev. 2.0), 300.0
 3624 (rev. 2.1), 335.4 (rev. 1.0), 353.2 (rev. 2.0), and 365.1 (rev. 2.0)
 3625 only.) See also NTIS.

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 3627 USEPA Environmental Metals Methods, "Methods for the
 3628 Determination of Metals in Environmental Samples – Supplement
 3629 I," May 1994, EPA 600/R-94-111, referenced in Sections 611.611,
 3630 611.612, and 611.720. (Methods 200.7 (rev. 4.4), 200.8 (rev. 5.3),
 3631 200.9 (rev. 2.2), and 245.1 (rev. 3.0) only.) See also NTIS.

3632
 3633 USEPA Inorganic Methods, "Methods for Chemical Analysis of
 3634 Water and Wastes," March 1983, EPA 600/4-79-020, referenced in
 3635 Section 611.611. (Methods 150.1, 150.2, and 245.2 only.) See
 3636 also NTIS.

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 3638 USEPA OGWDW Methods, Method 302.0, "Determination of
 3639 Bromate in Drinking Water Using Two-Dimensional Ion
 3640 Chromatography with Suppressed Conductivity Detection,"
 3641 September 2009, EPA 815/B-09/014, referenced in Sections
 3642 611.381 and 611.382. See also USEPA, OGWDW.

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 3645 "Determination of Inorganic Oxyhalide Disinfection By-Products
 3646 in Drinking Water Using Ion Chromatography with the Addition of
 3647 a Postcolumn Reagent for Trace Bromate Analysis," July 2001,
 3648 EPA 815/B-01/001, referenced in Sections 611.381 and 611.382.
 3649 See also USEPA, OGWDW.
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 3651 USEPA OGWDW Methods, Method 326.0, rev. 1.0,
 3652 "Determination of Inorganic Oxyhalide Disinfection By-Products
 3653 in Drinking Water Using Ion Chromatography Incorporating the
 3654 Addition of a Suppressor Acidified Postcolumn Reagent for Trace
 3655 Bromate Analysis," June 2002, EPA 815/R-03/007, referenced in
 3656 Sections 611.381 and 611.382. See also NTIS and USEPA,
 3657 OGWDW.
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 3659 USEPA OGWDW Methods, Method 327.0, rev. 1.1,
 3660 "Determination of Chlorine Dioxide and Chlorite Ion in Drinking
 3661 Water Using Lissamine Green B and Horseradish Peroxidase with
 3662 Detection by Visible Spectrophotometry," May 2005, EPA 815/R-
 3663 05/008, referenced in Sections 611.381 and 611.531. See also
 3664 USEPA, OGWDW.
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 3666 USEPA OGWDW Methods, Method 334.0, "Determination of
 3667 Residual in Drinking Water Using an On-line Chlorine Analyzer,"
 3668 August 2009, EPA 815/B-09/013, referenced in Section 611.531.
 3669 See also USEPA, OGWDW.
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 3671 USEPA OGWDW Methods, Method 531.2, rev. 1.0,
 3672 "Measurement of N-methylcarbamoyloximes and N-
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 3674 with Postcolumn Derivatization," September 2001, EPA 815/B-
 3675 01/002 (document file name "met531_2.pdf"), referenced in
 3676 Section 611.645. See also USEPA, OGWDW.
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 3678 USEPA OGWDW Methods, Method 552.3, rev. 1.0,
 3679 "Determination of Haloacetic Acids and Dalapon in Drinking
 3680 Water by Liquid-Liquid Microextraction, Derivatization, and Gas
 3681 Chromatography with Electron Capture Detection," July 2003,
 3682 EPA 815/B-03/002, referenced in Sections 611.381 and 611.645.
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 3684 USEPA OGWDW Methods, Method 557, "Determination of
 3685 Haloacetic Acids, Bromate, and Dalapon in Drinking Water by Ion

3686 Chromatography Electrospray Ionization Tandem Mass
 3687 Spectrometry," July 2003, EPA 815/B-03/002, referenced in
 3688 Sections 611.381, 611.382, and 611.645. See also USEPA,
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 3692 in Water by Filtration/IMS/FA," April 2001, EPA 821/R-01/026,
 3693 referenced in Section 611.1007. See also USEPA, OGWDW.

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 3695 USEPA Organic and Inorganic Methods, "Methods for the
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 3697 Water, Volume 1, "August 2000, EPA 815/R-00/014, referenced in
 3698 Section 611.381. (Methods 300.1 (rev. 1.0) and 321.8 (rev. 1.0)
 3699 only.) See also NTIS.

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 3701 USEPA Organic Methods, "Methods for the Determination of
 3702 Organic Compounds in Drinking Water," December 1988, revised
 3703 July 1991, EPA 600/4-88/039, referenced in Sections 611.645 and
 3704 611.648 (Methods 508A (rev. 1.0) and 515.1 (rev. 4.0) only);
 3705 "Methods for the Determination of Organic Compounds in
 3706 Drinking Water – Supplement I," July 1990, EPA 600/4-90/020,
 3707 referenced in Section 611.645 and 611.648 (Methods 547, 550, and
 3708 550.1 only); "Methods for the Determination of Organic
 3709 Compounds in Drinking Water – Supplement II," August 1992,
 3710 EPA 600/R-92/129, referenced in Sections 611.381 and 611.645
 3711 (Methods 548.1 (rev. 1.0), 552.1 (rev. 1.0), and 555 (rev. 1.0)
 3712 only); "Methods for the Determination of Organic Compounds in
 3713 Drinking Water – Supplement III," August 1995, EPA 600/R-
 3714 95/131, referenced in Sections 611.381, 611.645, and 611.648
 3715 (Methods 502.2 (rev. 2.1), 504.1 (rev. 1.1), 505 (rev. 2.1), 506 (rev.
 3716 1.1), 507 (rev. 2.1), 508 (rev. 3.1), 508.1 (rev. 2.0), 515.2 (rev.
 3717 4.1), 524.2 (rev. 4.1), 525.2 (rev. 2.0), 531.1 (rev. 3.1), 551.1 (rev.
 3718 1.0), and 552.2 (rev. 1.0) only). See also NTIS and USEPA,
 3719 EMSL.

3720
 3721 USEPA Radioactivity Methods, "Prescribed Procedures for
 3722 Measurement of Radioactivity in Drinking Water," August 1980,
 3723 EPA 600/4-80/032, referenced in Section 611.720. (For methods
 3724 900.0, 901, 901.1, 902, 903, 903.1, 904, 905, 906, 908, 908.1.)
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3728 Methods," October 1994, EPA 600/R-94/173, referenced in
3729 Sections 611.531, 611.611, and 611.645. See also NTIS.

3730
3731 BOARD NOTE: USEPA made the following assertion with
3732 regard to this reference at 40 CFR 141.23(k)(1) and 141.24(e) and
3733 (n)(11) (2007): "This document contains other analytical test
3734 procedures and approved analytical methods that remain available
3735 for compliance monitoring until July 1, 1996." Also available
3736 online at <http://nepis.epa.gov/EPA/html/Pubs/pubtitleORD.htm>
3737 under the document designation "600R94173".

3738
3739 USEPA OGWDW. United States Environmental Protection Agency,
3740 USEPA Office of Ground Water and Drinking Water (accessible on-line
3741 and available by download from
3742 <http://www.epa.gov/safewater/methods/>).

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3744 USEPA OGWDW Methods, Method 302.0, "Determination of
3745 Bromate in Drinking Water Using Two-Dimensional Ion
3746 Chromatography with Suppressed Conductivity Detection,"
3747 September 2009, EPA 815/B-09/014, referenced in Section
3748 611.381. See also USEPA, NSCEP.

3749
3750 USEPA OGWDW Methods, Method 317.0, ~~rev. Revision~~ 2.0,
3751 "Determination of Inorganic Oxyhalide Disinfection By-Products
3752 in Drinking Water Using Ion Chromatography with the Addition of
3753 a Postcolumn Reagent for Trace Bromate Analysis," USEPA, July
3754 2001, EPA 815/B-01/001 (~~referred to as "OGWDW Methods,~~
3755 Method 317.0, rev. 2.0"), referenced in ~~Section~~Sections 611.381
3756 and 611.382. See also USEPA, NSCEP.

3757
3758 USEPA OGWDW Methods, Method 326.0, ~~rev. Revision~~ 1.0,
3759 "Determination of Inorganic Oxyhalide Disinfection By-Products
3760 in Drinking Water Using Ion Chromatography Incorporating the
3761 Addition of a Suppressor Acidified Postcolumn Reagent for Trace
3762 Bromate Analysis," USEPA, June 2002, EPA 815/R-03/007
3763 (~~referred to as "OGWDW Methods, Method 326.0, rev. 1.0"~~),
3764 referenced in ~~Section~~Sections 611.381 and 611.382. See also
3765 NTIS and USEPA, NSCEP.

3766
3767 BOARD NOTE: ~~Also available from NTIS.~~
3768

3769 USEPA OGWDW Methods, Method 327.0, ~~rev. Revision~~ 1.1,
 3770 "Determination of Chlorine Dioxide and Chlorite Ion in Drinking
 3771 Water Using Lissamine Green B and Horseradish Peroxidase with
 3772 Detection by Visible Spectrophotometry," USEPA, May 2005,
 3773 EPA 815/R-05/008 (~~referred to as "OGWDW Methods, Method~~
 3774 ~~327.0, rev. 1.1"~~), referenced in Sections 611.381 and 611.531. See
 3775 also USEPA, NSCEP.

3776
 3777 USEPA OGWDW Methods, Method 334.0, "Determination of
 3778 Residual in Drinking Water Using an On-line Chlorine Analyzer,"
 3779 USEPA, August 2009, EPA 815/B-09/013, referenced in Section
 3780 611.531. See also USEPA, NSCEP.

3781
 3782 USEPA OGWDW Methods, Method 515.4, ~~rev. Revision~~ 1.0,
 3783 "Determination of Chlorinated Acids in Drinking Water by Liquid-
 3784 Liquid Microextraction, Derivatization and Fast Gas
 3785 Chromatography with Electron Capture Detection," April 2000,
 3786 EPA 815/B-00/001 (document file name "met515_4.pdf")
 3787 (~~referred to as "OGWDW Methods, Method 515.4, rev. 1.0"~~),
 3788 referenced in Section 611.645.

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 3790 USEPA OGWDW Methods, Method 524.3, rev. 1.0,
 3791 "Measurement of Purgeable Organic Compounds in Water by
 3792 Capillary Column Gas Chromatography/Mass Spectrometry," June
 3793 2009, EPA 815/B-09/009 (referred to as "Method 524.3 (rev.
 3794 1.0)"), referenced in Sections 611.381 and 611.645.

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 3796 USEPA OGWDW Methods, Method 531.2, ~~rev. Revision~~ 1.0,
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 3798 methylcarbamates in Water by Direct Aqueous Injection HPLC
 3799 with Postcolumn Derivatization," September 2001, EPA 815/B-
 3800 01/002 (document file name "met531_2.pdf") (~~referred to as~~
 3801 ~~"OGWDW Methods, Method 531.2, rev. 1.0"~~), referenced in
 3802 Section 611.645. See also USEPA, NSCEP.

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 3804 USEPA OGWDW Methods, Method 552.3, ~~rev. Revision~~ 1.0,
 3805 "Determination of Haloacetic Acids and Dalapon in Drinking
 3806 Water by Liquid-liquid Microextraction, Derivatization, and Gas
 3807 Chromatography with Electron Capture Detection," USEPA, July
 3808 2003, EPA 815/B-03/002 (~~referred to as "OGWDW Methods,~~
 3809 ~~Method 552.3, rev. 1.0"~~), referenced in Sections 611.381 and
 3810 611.645.

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3812 USEPA OGWDW Methods, Method 557, "Determination of
3813 Haloacetic Acids, Bromate, and Dalapon in Drinking Water by Ion
3814 Chromatography Electrospray Ionization Tandem Mass
3815 Spectrometry," July 2003, EPA 815/B-03/002, referenced in
3816 Sections 611.381 and 611.645. See also USEPA, NSCEP.

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3818 USEPA OGWDW Methods, Method 1622 (05), "Method 1622:
3819 Cryptosporidium in Water by Filtration/IMS/FA," December 2005,
3820 EPA 815/R-05/001 (~~referred to as "USEPA Method 1622 (05)"~~),
3821 referenced in Sections 611.1004 and 611.1007.

3822
3823 USEPA OGWDW Methods, Method 1622 (01), "Method 1622:
3824 Cryptosporidium in Water by Filtration/IMS/FA," April 2001,
3825 EPA 821/R-01/026, (~~referred to as "USEPA Method 1622 (01)"~~),
3826 referenced in Section 611.1007. See also USEPA, NSCEP.

3827
3828 USEPA OGWDW Methods, Method 1622 (99), "Method 1622:
3829 Cryptosporidium in Water by Filtration/IMS/FA," April 1999,
3830 EPA 821/R-99/001, (~~referred to as "USEPA Method 1622 (99)"~~),
3831 referenced in Section 611.1007.

3832
3833 USEPA OGWDW Methods, Method 1623 (05), "Method 1623:
3834 Cryptosporidium and Giardia in Water by Filtration/IMS/FA,"
3835 December 2005, EPA 815/R-05/002 (~~referred to as "USEPA~~
3836 ~~Method 1623 (05)"~~), referenced in Sections 611.1004 and
3837 611.1007.

3838
3839 USEPA OGWDW Methods, Method 1623 (01), "Method 1623:
3840 Cryptosporidium and Giardia in Water by Filtration/IMS/FA,"
3841 April 2001, EPA 821/R-01/025 (~~referred to as "USEPA Method~~
3842 ~~1623 (01)"~~), referenced in Section 611.1007.

3843
3844 USEPA OGWDW Methods, Method 1623 (99), "Method 1623:
3845 Cryptosporidium and Giardia in Water by Filtration/IMS/FA,"
3846 January 1999, EPA 821/R-99/006 (~~referred to as "USEPA Method~~
3847 ~~1623 (99)"~~), referenced in Sections 611.1007.

3848
3849 BOARD NOTE: Many of the above-listed documents available from the
3850 USEPA, Office of Ground Water and Drinking Water, are also listed as
3851 available from NTIS.

3852
3853 United States Environmental Protection Agency, EMSL, Cincinnati, OH
3854 45268 (513-569-7586).

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~~"Interim Radiochemical Methodology for Drinking Water," EPA 600/4-75/008 (revised), March 1976 (referred to as "USEPA Interim Radiochemical Methods"), referenced in Section 611.720. See NTIS.~~

~~"Methods for the Determination of Organic Compounds in Drinking Water," December 1988, revised July 1991, EPA 600/4-88/039 (referred to as "USEPA Organic Methods"), referenced in Sections 611.645 and 611.648. (For methods 504.1, 508.1, and 525.2 only.) See NTIS.~~

~~"Procedures for Radiochemical Analysis of Nuclear Reactor Aqueous Solutions," referenced in Section 611.720. See NTIS.~~

USEPA, ORD. USEPA, Office of Research and Development, National Exposure Research Laboratory, Microbiological & Chemical Exposure Assessment Research Division (accessible on-line and available by download from <http://www.epa.gov/nerlcwww/ordmeth.htm>).

USEPA NERL Method 200.5, rev. Revision 4.2, "Determination of Trace Elements in Drinking Water by Axially Viewed Inductively Coupled Plasma – Atomic Emission Spectrometry," October 2003, EPA 600/R-06/115 (referred to as "USEPA NERL Method 200.5"), referenced in Sections 611.611 and 611.612.

USEPA NERL Method 415.3, rev. Revision 1.1, "Determination of Total Organic Carbon and Specific UV Absorbance at 254 nm in Source Water and Drinking Water," February 2005, EPA 600/R-05/055 (referred to as "USEPA NERL Method 415.3 (rev. 1.1)"), referenced in Section 611.381.

USEPA NERL Method 415.3, rev. 1.2, "Determination of Total Organic Carbon and Specific UV Absorbance at 254 nm in Source Water and Drinking Water," February 2005, EPA 600/R-09/122, referenced in Section 611.381.

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

~~USEPA, Science and Technology Branch, Criteria and Standards~~

3898 Division, Office of Drinking Water, Washington, D.C. 20460.
3899
3900 "Guidance Manual for Compliance with the Filtration and
3901 Disinfection Requirements for Public Water Systems using Surface
3902 Water Sources," October 1989, referenced in Sections 611.111 and
3903 611.212.
3904
3905 USEPA Water Resource Center (RC-4100T), 1200 Pennsylvania Avenue,
3906 NW, Washington, DC 20460:
3907
3908 E*Colite Test, "Charm E*Colite Presence/Absence Test for
3909 Detection and Identification of Coliform Bacteria and Escherichia
3910 coli in Drinking Water," January 9, 1998 (referred to as "E*Colite
3911 Test"), referenced in Section 611.802. (See also available from
3912 Charm Sciences, Inc.).
3913
3914 m-ColiBlue24 Test, "Total Coliforms and E. coli Membrane
3915 Filtration Method with m-ColiBlue24® Broth," Method No.
3916 10029, rev. Revision 2, August 17, 1999 (referred to as "m-
3917 ColiBlue24 Test"), referenced in Section 611.802. See (also
3918 available from The Hach Company).
3919
3920 USEPA Method 1600, "EPA Method 1600: Enterococci in Water
3921 by Membrane Filtration Using Membrane-Enterococcus Indoxyl-
3922 b-D-Glucoside Agar (mEI)," September 2002, EPA 821/R-02/022
3923 (referred to as "USEPA Method 1600") is an approved variation of
3924 Standard Methods, Method 9230 C, "Fecal Streptococcus and
3925 Enterococcus Groups, Membrane Filter Techniques" (which has
3926 not itself been approved for use by USEPA) (accessible on-line
3927 and available by download from
3928 <http://www.epa.gov/nerlcwww/1600sp02.pdf>), referenced in
3929 Section 611.802.
3930
3931 USEPA Method 1601, "Method 1601: Male-specific (F⁺) and
3932 Somatic Coliphage in Water by Two-step Enrichment Procedure,"
3933 April 2001, EPA 821/R-01/030 (referred to as "USEPA Method
3934 1601") (accessible on-line and available by download from
3935 <http://www.epa.gov/nerlcwww/1601ap01.pdf>), referenced in
3936 Section 611.802.
3937
3938 USEPA Method 1602, "Method 1602: Male-specific (F⁺) and
3939 Somatic Coliphage in Water by Single Agar Layer (SAL)
3940 Procedure," April 2001, EPA 821/R-01/029 (referred to as

3941 "~~USEPA Method 1602~~") (accessible on-line and available by
3942 download from <http://www.epa.gov/nerlcwww/1602ap01.pdf>),
3943 referenced in Section 611.802.
3944

3945 USEPA Method 1604, "Method 1604: Total Coliforms and
3946 *Escherichia coli* in Water by Membrane Filtration Using a
3947 Simultaneous Detection Technique (MI Medium)," September
3948 2002, EPA 821/R-02/024 (~~referred to as "USEPA Method 1604"~~)
3949 (accessible on-line and available by download from
3950 <http://www.epa.gov/nerlcwww/1604sp02.pdf>), referenced in
3951 Section 611.802.
3952

3953 USGS. Books and Open-File Reports Section, United States Geological
3954 Survey, Federal Center, Box 25286, Denver, CO 80225-0425.
3955

3956 Methods available upon request by method number from "Methods
3957 for Analysis by the U.S. Geological Survey National Water
3958 Quality Laboratory – Determination of Inorganic and Organic
3959 Constituents in Water and Fluvial Sediments," Open File Report
3960 93-125, 1993, or Book 5, Chapter A-1, "Methods for
3961 Determination of Inorganic Substances in Water and Fluvial
3962 Sediments," 3rd ed., Open-File Report 85-495, 1989, as
3963 appropriate (referred to as "USGS Methods").
3964

3965 I-1030-85, referenced in Section 611.611.
3966

3967 I-1601-85, referenced in Section 611.611.
3968

3969 I-1700-85, referenced in Section 611.611.
3970

3971 I-2598-85, referenced in Section 611.611.
3972

3973 I-2601-90, referenced in Section 611.611.
3974

3975 I-2700-85, referenced in Section 611.611.
3976

3977 I-3300-85, referenced in Section 611.611.
3978

3979 Methods available upon request by method number from "Methods
3980 for Determination of Radioactive Substances in Water and Fluvial
3981 Sediments," Chapter A5 in Book 5 of "Techniques of Water-
3982 Resources Investigations of the United States Geological Survey,"
3983 1997.

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R-1110-76, referenced in Section 611.720.
R-1111-76, referenced in Section 611.720.
R-1120-76, referenced in Section 611.720.
R-1140-76, referenced in Section 611.720.
R-1141-76, referenced in Section 611.720.
R-1142-76, referenced in Section 611.720.
R-1160-76, referenced in Section 611.720.
R-1171-76, referenced in Section 611.720.
R-1180-76, referenced in Section 611.720.
R-1181-76, referenced in Section 611.720.
R-1182-76, referenced in Section 611.720.

Waters Corporation, Technical Services Division, 34 Maple St., Milford, MA 01757 (800-252-4752 or 508-482-2131, fax: 508-482-3625).

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

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

- 21 CFR 333 (2009) (Topical Anti-microbial Drug Products for Over-the-Counter Human Use), referenced in Section 611.1103.
- 40 CFR 3.2 (2009)(2007) (How Does This Part Provide for Electronic Reporting?), referenced in Section 611.105.
- 40 CFR 3.3 (2009)(2007) (What Definitions Are Applicable to This Part?), referenced in Section 611.105.

4026 40 CFR 3.10 ~~(2009)~~(2007) (What Are the Requirements for Electronic
4027 Reporting to EPA?), referenced in Section 611.105.

4028
4029 40 CFR 3.2000 ~~(2009)~~(2007) (What Are the Requirements Authorized
4030 State, Tribe, and Local Programs' Reporting Systems Must Meet?),
4031 referenced in Section 611.105.

4032
4033 40 CFR 136.3(a) ~~(2009)~~(2007), referenced in Section 611.1004.

4034
4035 Appendix B to 40 CFR 136 ~~(2009)~~(2007), referenced in Sections 611.359,
4036 611.609, and 611.646.

4037
4038 40 CFR 142.20(b)(1) (2009), referenced in Section 611.112.

4039
4040 d) This Part incorporates no later amendments or editions.

4041
4042 (Source: Amended at 35 Ill. Reg. _____, effective _____)

4043
4044 **Section 611.105 Electronic Reporting**

4045
4046 The submission of any document pursuant to any provision of this Part as an electronic
4047 document in lieu of a paper document is subject to this Section.

4048
4049 a) Scope and Applicability.

4050
4051 1) The USEPA, the Board, or the Agency may allow for the submission of
4052 electronic documents in lieu of paper documents. This Section does not
4053 require submission of electronic documents in lieu of paper documents.
4054 This Section sets forth the requirements for the optional electronic
4055 submission of any document that must be submitted to the appropriate of
4056 the following:

4057
4058 A) To USEPA directly under Title 40 of the Code of Federal
4059 Regulations; or

4060
4061 B) To the Board or the Agency pursuant to any provision of 35 Ill.
4062 Adm. Code 702 through 705, 720 through 728, 730, 733, 738, or
4063 739.

4064
4065 2) Electronic document submission under this Section can occur only as
4066 follows:

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- A) For submissions of documents to USEPA, submissions may occur only after USEPA had published a notice in the Federal Register announcing that USEPA is prepared to receive, in an electronic format, documents required or permitted by the identified part or subpart of Title 40 of the Code of Federal Regulations; or
 - B) For submissions of documents to the Sate, submissions may occur only under the following circumstances:
 - i) As to any existing electronic document receiving system (i.e., one in use or substantially developed on or before October 13, 2005) for which an electronic reporting application has not been submitted on behalf of the Board or the Agency to USEPA pursuant to 40 CFR 3.1000, the Board or the Agency may use that system until October 13, 2007, or until such later date as USEPA has approved in writing as the extended deadline for submitting the application;
 - ii) As to any existing electronic document receiving system (i.e., one in use or substantially developed on or before October 13, 2005) for which an electronic reporting application has been submitted on behalf of the Board or the Agency to USEPA pursuant to 40 CFR 3.1000 on or before October 13, 2007, or on or before such later date as USEPA has approved in writing as the extended deadline for submitting the application, the Board or the Agency may use that system until USEPA disapproves its use in writing; or
 - iii) The Board or the Agency may use any electronic document receiving system for which USEPA has granted approval pursuant to 40 CFR 3.1000, so long as the system complies with 40 CFR 3.2000, incorporated by reference in Section 611.102(c), and USEPA has not withdrawn its approval of the system in writing.
 - 3) This Section does not apply to any of the following documents, whether or not the document is a document submitted to satisfy the requirements cited in subsection (a)(1) of this Section:
 - A) Any document submitted via facsimile;

- 4111 B) Any document submitted via magnetic or optical media, such as
- 4112 diskette, compact disc, digital video disc, or tape; or
- 4113
- 4114 C) Any data transfer between USEPA, any state, or any local
- 4115 government and either the Board or the Agency as part of
- 4116 administrative arrangements between the parties to the transfer to
- 4117 share data.
- 4118
- 4119 4) Upon USEPA conferring written approval for the submission of any types
- 4120 of documents as electronic documents in lieu of paper documents, as
- 4121 described in subsection (a)(2)(B)(iii) of this Section, the Agency or the
- 4122 Board, as appropriate, must publish a Notice of Public Information in the
- 4123 Illinois Register that describes the documents approved for submission as
- 4124 electronic documents, the electronic document receiving system approved
- 4125 to receive them, the acceptable formats and procedures for their
- 4126 submission, and, as applicable, the date on which the Board or the Agency
- 4127 will begin to receive those submissions. In the event of written cessation
- 4128 of USEPA approval or receiving any type of document as an electronic
- 4129 document in lieu of paper documents, the Board or the Agency must
- 4130 similarly cause publication of a Notice of Public Information in the Illinois
- 4131 Register.
- 4132

4133 BOARD NOTE: Subsection (a) of this Section is derived from 40 CFR 3.1, 3.2,

4134 3.10, 3.20 and 3.1000 ~~(2009)-as added at 70 Fed. Reg. 59848 (Oct. 13, 2005)~~.

4135

- 4136 b) Definitions. For the purposes of this Section, terms will have the meaning
- 4137 attributed them in 40 CFR 3.3, incorporated by reference in 35 Ill. Adm. Code
- 4138 611.102(c).
- 4139
- 4140 c) Procedures for submission of electronic documents in lieu of paper documents to
- 4141 USEPA. Except as provided in subsection (a)(3) of this Section, any person who
- 4142 is required under Title 40 of the Code of Federal Regulations to create and submit
- 4143 or otherwise provide a document to USEPA may satisfy this requirement with an
- 4144 electronic document, in lieu of a paper document, provided the following
- 4145 conditions are met:
- 4146
- 4147 1) The person satisfies the requirements of 40 CFR 3.10, incorporated by
- 4148 reference in Section 611.102(c); and
- 4149
- 4150 2) USEPA has first published a notice in the Federal Register as described in
- 4151 subsection (a)(2)(A) of this Section.
- 4152

4153 BOARD NOTE: Subsection (c) of this Section is derived from 40 CFR 3.2(a)
4154 and subpart B of 40 CFR 3 (2009), as added at 70 Fed. Reg. 59848 (Oct. 13,
4155 2005).

- 4156
4157 d) Procedures for submission of electronic documents in lieu of paper documents to
4158 the Board or the Agency.
4159
4160 1) The Board or the Agency may, but is not required to, establish procedural
4161 rules for the electronic submission of documents. The Board or the
4162 Agency must establish any such procedural rules under the Administrative
4163 Procedure Act [5 ILCS 100/Art. 5].
4164
4165 2) The Board or the Agency may accept electronic documents under this
4166 Section only as provided in subsection (a)(2)(B) of this Section.
4167

4168 BOARD NOTE: Subsection (d) of this Section is derived from 40 CFR 3.2(b)
4169 and subpart D of 40 CFR 3 (2009), as added at 70 Fed. Reg. 59848 (Oct. 13,
4170 2005).

- 4171
4172 e) Effects of submission of an electronic document in lieu of paper documents.
4173
4174 1) If a person who submits a document as an electronic document fails to
4175 comply with the requirements of this Section, that person is subject to the
4176 penalties prescribed for failure to comply with the requirement that the
4177 electronic document was intended to satisfy.
4178
4179 2) Where a document submitted as an electronic document to satisfy a
4180 reporting requirement bears an electronic signature, the electronic
4181 signature legally binds, obligates, and makes the signer responsible to the
4182 same extent as the signer's handwritten signature would on a paper
4183 document submitted to satisfy the same reporting requirement.
4184
4185 3) Proof that a particular signature device was used to create an electronic
4186 signature will suffice to establish that the individual uniquely entitled to
4187 use the device did so with the intent to sign the electronic document and
4188 give it effect.
4189
4190 4) Nothing in this Section limits the use of electronic documents or
4191 information derived from electronic documents as evidence in
4192 enforcement or other proceedings.
4193

4194 BOARD NOTE: Subsection (e) of this Section is derived from 40 CFR 3.4 and
4195 3.2000(c) (2009), as added at 70 Fed. Reg. 59848 (Oct. 13, 2005).

- 4196
 4197 f) Public document subject to State laws. Any electronic document filed with the
 4198 Board is a public document. The document, its submission, its retention by the
 4199 Board, and its availability for public inspection and copying are subject to various
 4200 State laws, including, but not limited to, the following:
 4201
 4202 1) The Administrative Procedure Act [5 ILCS 100];
 4203
 4204 2) The Freedom of Information Act [5 ILCS 140];
 4205
 4206 3) The State Records Act [5 ILCS 160];
 4207
 4208 4) The Electronic Commerce Security Act [5 ILCS 175];
 4209
 4210 5) The Environmental Protection Act [415 ILCS 5];
 4211
 4212 6) Regulations relating to public access to Board records (2 Ill. Adm. Code
 4213 2175); and
 4214
 4215 7) Board procedural rules relating to protection of trade secrets and
 4216 confidential information (35 Ill. Adm. Code 130).
 4217
 4218 g) Nothing in this Section or in any provisions adopted pursuant to subsection (d)(1)
 4219 of this Section will create any right or privilege to submit any document as an
 4220 electronic document.
 4221

4222 BOARD NOTE: Subsection (g) of this Section is derived from 40 CFR 3.2(c)
 4223 (2009), as added at 70 Fed. Reg. 59848 (Oct. 13, 2005).
 4224

4225 BOARD NOTE: Derived from 40 CFR 3, as added, and 40 CFR 142.10(g) (2009)(2005), as
 4226 amended at 70 Fed. Reg. 59848 (Oct. 13, 2005).
 4227

4228 (Source: Amended at 35 Ill. Reg. _____, effective _____)
 4229

4230 **Section 611.111 Relief Equivalent to SDWA Section 1415(a) Variances**
 4231

4232 This Section is intended to describe how the Board grants State relief equivalent to that available
 4233 from USEPA under section 1415(a)(1)(A) and (a)(1)(B) of the SDWA (42 USC 300g-4(a)(1)(A)
 4234 and (a)(1)(B)). SDWA section 1415 variances do not require ultimate compliance within five
 4235 years in every situation. Variances under Sections 35 through 37-37 of the Act [415 ILCS 5/35-
 4236 37] do require compliance within five years in every case. Consequently, a PWS may have the
 4237 option of seeking State regulatory relief equivalent to a SDWA section 1415 variance through
 4238 one of three procedural mechanisms: a variance under Sections 35 through 37-37 of the Act

4239 [415 ILCS 5/35-37] and Subpart B of 35 Ill. Adm. Code 104; a site-specific rule under Sections
4240 27 and 28-28 of the Act [415 ILCS 5/27-28] and 35 Ill. Adm. Code 102; or an adjusted standard
4241 under Section 28.1 of the Act [415 ILCS 5/28.1] and Subpart D of 35 Ill. Adm. Code 104.
4242

- 4243 a) The Board will grant a PWS a variance, a site-specific rule, or an adjusted
4244 standard from an MCL or a treatment technique pursuant to this Section.
4245
 - 4246 1) The PWS must file a petition pursuant to 35 Ill. Adm. Code 102 or 104,
4247 as applicable.
4248
 - 4249 2) If a State requirement does not have a federal counterpart, the Board may
4250 grant relief from the State requirements without following this Section.
4251
- 4252 b) Relief from an MCL.
4253
 - 4254 1) As part of the justification for relief from an MCL under this Section, the
4255 PWS must demonstrate the following:
4256
 - 4257 A) Because of characteristics of the raw water sources and alternative
4258 sources that are reasonably available to the system, the PWS
4259 cannot meet the MCL; and
4260
 - 4261 B) The PWS will install or has installed the best available technology
4262 (BAT) (as identified in Subpart F of this Part), treatment technique,
4263 or other means that the Agency finds available. BAT may vary
4264 depending on the following:
4265
 - 4266 i) The number of persons served by the system;
4267
 - 4268 ii) Physical conditions related to engineering feasibility; and
4269
 - 4270 iii) Costs of compliance; and
4271
 - 4272 C) The variance will not result in an unreasonable risk to health.
4273
 - 4274 2) In any order granting relief under this subsection, the Board will prescribe
4275 a schedule for the following:
4276
 - 4277 A) Compliance, including increments of progress, by the PWS, with
4278 each MCL with respect to which the relief was granted; and
4279
 - 4280 B) Implementation by the PWS of each additional control measure for
4281 each MCL with respect to which the relief is granted, during the

4282 period ending on the date compliance with such requirement is
4283 required.

4284
4285 3) Schedule of compliance for relief from an MCL.
4286

4287 A) A schedule of compliance will require compliance with each MCL
4288 with respect to which the relief was granted as expeditiously as
4289 practicable.
4290

4291 B) If the Board prescribes a schedule requiring compliance with an
4292 MCL for which the relief is granted later than five years from the
4293 date of issuance of the relief, the Board will do the following:
4294

4295 i) Document its rationale for the extended compliance
4296 schedule;
4297

4298 ii) Discuss the rationale for the extended compliance schedule
4299 in the required public notice and opportunity for public
4300 hearing; and
4301

4302 iii) Provide the shortest practicable time schedule feasible
4303 under the circumstances.
4304

4305 c) Relief from a treatment technique requirement.
4306

4307 1) As part of the justification for relief from a treatment technique
4308 requirement under this Section, the PWS must demonstrate that the
4309 treatment technique is not necessary to protect the health of persons served
4310 because of the nature of the raw water source.
4311

4312 2) The Board may prescribe monitoring and other requirements as a
4313 condition for relief from a treatment technique requirement.
4314

4315 d) The Board will hold at least one public hearing. In addition the Board will accept
4316 comments as appropriate pursuant to 35 Ill. Adm. Code 102 or 104.
4317

4318 e) The Board will not grant relief from any of the following:
4319

4320 1) From the MCL for total coliforms. However, the Board may grant a
4321 variance from the total coliform MCL of Section 611.325 for PWSs that
4322 prove that the violation of the total coliform MCL is due to persistent
4323 growth of total coliform in the distribution system, rather than from fecal
4324 or pathogenic contamination, from a treatment lapse or deficiency, or from

4325 a problem in the operation or maintenance of the distribution system.

4326
4327 2) From any of the treatment technique requirements of Subpart B of this
4328 Part.

4329
4330 3) From the residual disinfectant concentration (RDC) requirements of
4331 Sections 611.241(c) and 611.242(b).

4332
4333 f) The Agency must promptly send USEPA the opinion and order of the Board
4334 granting relief pursuant to this Section. The Board may reconsider and modify a
4335 grant of relief, or relief conditions, if USEPA notifies the Board of a finding
4336 pursuant to section 1415 of the SDWA (42 USC 300g-4).

4337
4338 g) In addition to the requirements of this Section, the provisions of Section 611.130
4339 or 611.131 may apply to relief granted pursuant to this Section.

4340
4341 BOARD NOTE: Derived from 40 CFR 141.4 (2009)(2005), from section 1415(a)(1)(A) and
4342 (a)(1)(B) of the SDWA (42 USC 300g-4(a)(1)(A) and (a)(1)(B)) and from the "Guidance Manual
4343 for Compliance with the Filtration and Disinfection Requirements for Public Water Systems
4344 using Surface Water Sources," incorporated by reference in Section 611.102 and available from
4345 USEPA, NSCEP. USEPA has established a procedure at 40 CFR 142.23 (2009) reserved the
4346 discretion to review and potentially modify or nullify state Board determinations granting relief
4347 from NPDWRs where USEPA finds that the state has abused its discretion or failed to prescribe
4348 required schedules for compliance in a substantial number of instances made pursuant to this
4349 Section at 40 CFR 142.23 (2005).

4350
4351 (Source: Amended at 35 Ill. Reg. _____, effective _____)
4352

4353 **Section 611.112 Relief Equivalent to SDWA Section 1416 Exemptions**
4354

4355 This Section is intended to describe how the Board grants State relief equivalent to that available
4356 from USEPA under section 1416 of the SDWA (42 USC 300g-5). SDWA section 1416
4357 exemptions do not require ultimate compliance within five years in every situation. Variances
4358 under Sections 35 through 37-37 of the Act [415 ILCS 5/35-37] do require compliance within
4359 five years in every case. Consequently, a PWS may have the option of seeking State regulatory
4360 relief equivalent to a SDWA section 1416 exemption through one of three procedural
4361 mechanisms: a variance under Sections 35 through 37-37 of the Act [415 ILCS 5/35-37] and
4362 Subpart B of 35 Ill. Adm. Code 104; a site-specific rule under Sections 27 and 28-28 of the Act
4363 [415 ILCS 5/27-28] and 35 Ill. Adm. Code 102; or an adjusted standard under Section 28.1 of the
4364 Act [415 ILCS 5/28.1] and Subpart D of 35 Ill. Adm. 104.

4365
4366 a) The Board will grant a PWS a variance, a site-specific rule, or an adjusted
4367 standard from an MCL or treatment technique requirement, or from both,

4368 pursuant to this Section.

4369
4370 1) The PWS must file a petition pursuant to 35 Ill. Adm. Code 102 or 104,
4371 as applicable.

4372
4373 2) If a State requirement does not have a federal counterpart, the Board may
4374 grant relief from the State requirements without following this Section.

4375
4376 b) As part of the justification for relief under this Section, the PWS must
4377 demonstrate the following:

4378
4379 1) Due to compelling factors (which may include economic factors), the
4380 PWS is unable to comply with the MCL or treatment technique
4381 requirement, or to implement measures to develop an alternative source of
4382 water supply;

4383
4384 2) The PWS was either of the following:

4385
4386 A) In operation on the effective date of the MCL or treatment
4387 technique requirement; or

4388
4389 B) Not in operation on the effective date of the MCL or treatment
4390 technique requirement and no reasonable alternative source of
4391 drinking water is available to the PWS;

4392
4393 3) The relief will not result in an unreasonable risk to health; and

4394
4395 4) Management or restructuring changes cannot reasonably be made that will
4396 result in compliance with the NPDWR or, if compliance cannot be
4397 achieved, improve the quality of the drinking water.

4398
4399 BOARD NOTE: In determining that management or restructuring
4400 changes cannot reasonably be made that will result in compliance with the
4401 NPDWR, the Board will consider the factors required by USEPA under 40
4402 CFR 142.20(b)(1), incorporated by reference in Section 611.102(c).

4403
4404 c) In any order granting relief under this Section, the Board will prescribe a schedule
4405 for the following:

4406
4407 1) Compliance, including increments of progress, by the PWS, with each
4408 MCL and treatment technique requirement with respect to which the relief
4409 was granted; and

4410

4411 2) Implementation by the PWS, of each additional control measure for each
4412 contaminant subject to the MCL or treatment technique requirement, with
4413 respect to which relief is granted.
4414

4415 d) Schedule of compliance.
4416

4417 A schedule of compliance will require compliance with each MCL or treatment
4418 technique requirement with respect to which relief was granted as expeditiously
4419 as practicable, but not later than three years after the otherwise applicable
4420 compliance date established in section 1412(b)(10) of the SDWA (42 USC 300g-
4421 1(b)(10)), except as follows:
4422

4423 1) No relief may be granted unless the PWS establishes that it is taking all
4424 practicable steps to meet the NPDWR; and
4425

4426 A) The PWS cannot meet the NPDWR without capital improvements
4427 that cannot be completed within 12 months;
4428

4429 B) In the case of a PWS that needs financial assistance for the
4430 necessary improvements, the PWS has entered into an agreement
4431 to obtain such financial assistance; or
4432

4433 C) The PWS has entered into an enforceable agreement to become a
4434 part of a regional PWS.
4435

4436 2) In the case of a PWS that serves 3,300 or fewer persons that needs
4437 financial assistance for the necessary improvements, relief may be
4438 renewed for one or more additional two year periods, not to exceed a total
4439 of six years, if the PWS establishes that it is taking all practicable steps to
4440 meet the final date for compliance.
4441

4442 3) A PWS may not receive relief under this Section if the PWS was granted
4443 relief under Section 611.111 or 611.131.
4444

4445 e) The Board will hold at least one public hearing. In addition the Board will accept
4446 comments as appropriate pursuant to 35 Ill. Adm. Code 102 or 104.
4447

4448 f) The Agency must promptly send USEPA the Opinion and Order of the Board
4449 granting relief pursuant to this Section. The Board may reconsider and modify a
4450 grant of relief, or relief conditions, if USEPA notifies the Board of a finding
4451 pursuant to section 1416 of the SDWA (42 USC 300g-5).
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4453 BOARD NOTE: Derived from section 1416 of the SDWA (42 USC 300g-5).

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- g) The Board will not grant relief from any of the following:
 - 1) From the MCL for total coliforms. However, the Board may grant relief from the total coliform MCL of Section 611.325 for PWSs that prove that the violation of the total coliform MCL is due to persistent growth of total coliforms in the distribution system, rather than from fecal or pathogenic contamination, from a treatment lapse or deficiency, or from a problem in the operation or maintenance of the distribution system.
 - 2) From any of the treatment technique requirements of Subpart B of this Part.
 - 3) From the residual disinfectant concentration (RDC) requirements of Sections 611.241(c) and 611.242(b).
- h) In addition to the requirements of this Section, the provisions of Section 611.130 or 611.131 may apply to relief granted pursuant to this Section.

BOARD NOTE: Derived from 40 CFR 141.4 (2009)(2002). USEPA has established a procedure at 40 CFR 142.23 (2009) reserved the discretion to review and potentially modify or nullify state Board determinations granting relief from NPDWRs where USEPA finds that the state has abused its discretion or failed to prescribe required schedules for compliance in a substantial number of instances made pursuant to this Section at 40 CFR 142.23 (2002).

(Source: Amended at 35 Ill. Reg. _____, effective _____)

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

Section 611.381 Analytical Requirements

- a) A supplier must use only the analytical methods specified in this Section or alternative methods approved by the Agency pursuant to Section 611.480 to demonstrate compliance with the requirements of this Subpart I and with the requirements of Subparts W and Y of this Part.
- b) Disinfection byproducts (DBPs).
 - 1) A supplier must measure disinfection byproducts (DBPs) by the appropriate of the following methods:
 - A) TTHM:

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- i) By purge and trap, gas chromatography, electrolytic conductivity detector, and photoionization detector: USEPA Organic Methods, Method 502.2 (rev. 2.1). If TTHMs are the only analytes being measured in the sample, then a photoionization detector is not required.
- ii) By purge and trap, gas chromatography, mass spectrometer: USEPA Organic Methods, Method 524.2 (rev. 4.1).
- iii) By liquid-liquid extraction, gas chromatography, electron capture detector: USEPA Organic Methods, Method 551.1 (rev. 1.0).
- iv) By purge and trap, gas chromatography, mass spectrometry: USEPA OGWDW Methods, Method 524.3 (rev. 1.0).

BOARD NOTE: USEPA added USEPA OGWDW Methods, Method 524.3 (rev. 1.0) as an approved alternative method for TTHM in appendix A to subpart C of 40 CFR 141 on August 3, 2009 (at 74 Fed. Reg. 38348).

B) HAA5:

- i) By liquid-liquid extraction (diazomethane), gas chromatography, electron capture detector: Standard Methods, 19th or 21st ed., Method 6251 B.

~~BOARD NOTE: On January 4, 2006 (at 71 Fed. Reg. 388), USEPA amended the entry for HAA5 by liquid-liquid extraction (diazomethane), gas chromatography, electron capture detector, in the table at corresponding 40 CFR 141.131(b)(1) to allow the use of Standard Methods Online (at www.standardmethods.org), Method 6251 B (as approved in 1994). The Board has instead cited to the 21st edition of Standard Methods for the Examination of Water and Wastewater (the printed version of Standard Methods), since the version of Method 6251 that appears in that printed volume is that cited by USEPA as acceptable for use. USEPA later added Method 6251 B from the 21st edition of Standard Methods as an approved alternative~~

4540 method in appendix A to subpart C of 40 CFR 141, added
 4541 on June 3, 2008 (at 73 Fed. Reg. 31616).

- 4542
- 4543 ii) By solid phase extractor (acidic methanol), gas
- 4544 chromatography, electron capture detector: USEPA
- 4545 Organic Methods, Method 552.1 (rev. 1.0).
- 4546
- 4547 iii) By liquid-liquid extraction (acidic methanol), gas
- 4548 chromatography, electron capture detector: USEPA
- 4549 Organic Methods, Method 552.2 (rev. 1.0) or USEPA
- 4550 OGWDW Methods, Method 552.3 (rev. 1.0).
- 4551
- 4552 iv) By ion chromatography, electrospray ionization, tandem
- 4553 mass spectrometry: USEPA OGWDW Methods, Method
- 4554 557.
- 4555

4556 BOARD NOTE: USEPA added Standard Methods, 21st ed.,
 4557 Method 6251 B as an approved alternative method for HAA5 in
 4558 appendix A to subpart C of 40 CFR 141 on June 3, 2008 (at 73
 4559 Fed. Reg. 31616). USEPA added USEPA OGWDW Methods,
 4560 Method 557 as approved alternative methods for HAA5 in
 4561 appendix A to subpart C of 40 CFR 141 on November 10, 2009 (at
 4562 74 Fed. Reg. 57908).

4563

4564 C) Bromate:

- 4565
- 4566 i) By ion chromatography: USEPA Organic and Inorganic
- 4567 Methods, Method 300.1 (rev. 1.0).
- 4568
- 4569 ii) By ion chromatography and post-column reaction: USEPA
- 4570 OGWDW Methods, Method 317.0; (rev 2.0), or 326.0;
- 4571 (rev. 1.0).
- 4572
- 4573 iii) By inductively coupled plasma/mass spectrometer:
- 4574 USEPA Organic and Inorganic Methods, Method 321.8
- 4575 (rev. 1.0).
- 4576
- 4577 iv) By two-dimensional ion chromatography: USEPA
- 4578 OGWDW Methods, Method 302.0.
- 4579
- 4580 v) By ion chromatography, electrospray ionization, tandem
- 4581 mass spectrometry: USEPA OGWDW Methods, Method
- 4582 557.

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- vi) By chemically suppressed chromatography: ASTM Method D6581-08 A.
- vii) By electrolytically suppressed chromatography: ASTM Method D6581-08 B.

BOARD NOTE: Ion chromatography and post column reaction or inductively coupled plasma/mass spectrometry must be used for monitoring of bromate for purposes of demonstrating eligibility of reduced monitoring, as prescribed in Section 611.382(b)(3)(B). For inductively-coupled plasma – mass spectrometry, samples must be preserved at the time of sampling with 50 mg ethylenediamine (EDA) per liter of sample, and the samples must be analyzed within 28 days.

BOARD NOTE: USEPA added USEPA OGWDW Methods, Methods 302.0 and 557 and ASTM Methods D6581-08 A and B as approved alternative methods for bromate in appendix A to subpart C of 40 CFR 141 on November 10, 2009 (at 74 Fed. Reg. 57908).

D) Chlorite:

- i) By amperometric titration: Standard Methods, 19th or 21st ed., Method 4500-ClO₂ E.

~~BOARD NOTE: On January 4, 2006 (at 71 Fed. Reg. 388), USEPA amended the entry for chlorite by amperometric titration, in the table at corresponding 40 CFR 141.23(k)(1) to allow the use of Standard Methods Online (at www.standardmethods.org), Method 4500-ClO₂ E (as approved in 2000). The Board has instead cited to the 21st edition of Standard Methods for the Examination of Water and Wastewater (the printed version of Standard Methods), since the version of Method 4500-ClO₂ that appears in that printed volume is that cited by USEPA as acceptable for use. USEPA later added Method 4500-ClO₂ E from the 21st edition of Standard Methods as an approved alternative method in appendix A to subpart C of 40 CFR 141, added on June 3, 2008 (at 73 Fed. Reg. 31616).~~

- ii) By spectrophotometry: USEPA OGWDW Methods, Method 327.0; (rev. 1.1).

- 4627 iii) By ion chromatography: USEPA Environmental Inorganic
4628 Methods, Method 300.0 (rev. 2.1); USEPA Organic and
4629 Inorganic Methods, Method 300.1 (rev. 1.0); USEPA
4630 OGWDW Methods, Method 317.0; (rev. 2.0), or 326.0;
4631 (rev. 1.0); or ASTM Method D6581-00.
- 4632
- 4633 iv) By chemically suppressed chromatography: ASTM
4634 Method D6581-08 A.
- 4635
- 4636 v) By electrolytically suppressed chromatography: ASTM
4637 Method D6581-08 B.
- 4638

4639 BOARD NOTE: USEPA added Standard Methods, 21st ed.,
4640 Method 4500-ClO₂ E as an approved alternative method for daily
4641 chlorite in appendix A to subpart C of 40 CFR 141 on June 3, 2008
4642 (at 73 Fed. Reg. 31616). USEPA added ASTM Methods D6581-
4643 08 A and B as approved alternative methods for chlorite in
4644 appendix A to subpart C of 40 CFR 141 on November 10, 2009 (at
4645 74 Fed. Reg. 57908).

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4647 BOARD NOTE: Amperometric titration or spectrophotometry
4648 may be used for routine daily monitoring of chlorite at the entrance
4649 to the distribution system, as prescribed in Section
4650 611.382(b)(2)(A)(i). Ion chromatography must be used for routine
4651 monthly monitoring of chlorite and additional monitoring of
4652 chlorite in the distribution system, as prescribed in Section
4653 611.382(b)(2)(A)(ii) and (b)(2)(B).

- 4654
- 4655 2) Analyses under this Section for DBPs must be conducted by laboratories
4656 that have received certification by USEPA or the Agency except as
4657 specified under subsection (b)(3) of this Section. To receive certification
4658 to conduct analyses for the DBP contaminants listed in Sections 611.312
4659 and 611.381 and Subparts W and Y of this Part, the laboratory must fulfill
4660 the requirements of subsections (b)(2)(A), (b)(2)(C), and (b)(2)(D) of this
4661 Section.
- 4662
- 4663 A) The laboratory must analyze performance evaluation (PE) samples
4664 that are acceptable to USEPA or the Agency at least once during
4665 each consecutive 12-month period by each method for which the
4666 laboratory desires certification.
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- B) This subsection corresponds with 40 CFR 141.131(b)(2)(ii), which has expired by its own terms. This statement maintains structural consistency with the corresponding federal rule.

 - C) The laboratory must achieve quantitative results on the PE sample analyses that are within the acceptance limits set forth in subsections (b)(2)(C)(i) through (b)(2)(B)(xi) of this Section, subject to the conditions of subsections (b)(2)(C)(xii) and (b)(2)(C)(xiii) of this Section:
 - i) Chloroform (a THM): $\pm 20\%$ of true value;
 - ii) Bromodichloromethane (a THM): $\pm 20\%$ of true value;
 - iii) Dibromochloromethane (a THM): $\pm 20\%$ of true value;
 - iv) Bromoform (a THM): $\pm 20\%$ of true value;
 - v) Monochloroacetic Acid (an HAA5): $\pm 40\%$ of true value;
 - vi) Dichloroacetic Acid (an HAA5): $\pm 40\%$ of true value;
 - vii) Trichloroacetic Acid (an HAA5): $\pm 40\%$ of true value;
 - viii) Monobromoacetic Acid (an HAA5): $\pm 40\%$ of true value;
 - ix) Dibromoacetic Acid (an HAA5): $\pm 40\%$ of true value;
 - x) Chlorite: $\pm 30\%$ of true value; and
 - xi) Bromate: $\pm 30\%$ of true value.
 - xii) The laboratory must meet all four of the individual THM acceptance limits set forth in subsections (b)(2)(B)(i) through (b)(2)(B)(iv) of this Section in order to successfully pass a PE sample for TTHM.
 - xiii) The laboratory must meet the acceptance limits for four out of the five HAA5 compounds set forth in subsections (b)(2)(B)(v) through (b)(2)(B)(ix) of this Section in order to successfully pass a PE sample for HAA5.

- 4710 D) The laboratory must report quantitative data for concentrations at
 4711 least as low as the minimum reporting levels (MRLs) listed in
 4712 subsections (b)(2)(D)(i) through (b)(2)(D)(xi) of this Section,
 4713 subject to the limitations of subsections (b)(2)(D)(xii) and
 4714 (b)(2)(D)(xiii) of this Section, for all DBP samples analyzed for
 4715 compliance with Sections 611.312 and 611.385 and Subparts W
 4716 and Y of this Part:
 4717
 4718 i) Chloroform (a THM): 0.0010 mg/l;
 4719
 4720 ii) Bromodichloromethane (a THM): 0.0010 mg/l;
 4721
 4722 iii) Dibromochloromethane (a THM): 0.0010 mg/l;
 4723
 4724 iv) Bromoform (a THM): 0.0010 mg/l;
 4725
 4726 v) Monochloroacetic Acid (an HAA5): 0.0020 mg/l;
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 4728 vi) Dichloroacetic Acid (an HAA5): 0.0010 mg/l;
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 4730 vii) Trichloroacetic Acid (an HAA5): 0.0010 mg/l;
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 4732 viii) Monobromoacetic Acid (an HAA5): 0.0010 mg/l;
 4733
 4734 ix) Dibromoacetic Acid (an HAA5): 0.0010 mg/l;
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 4736 x) Chlorite: 0.020 mg/l, applicable to monitoring as required
 4737 by Section 611.382(b)(2)(A)(ii) and (b)(2)(B); and
 4738
 4739 xi) Bromate: 0.0050, or 0.0010 mg/l if the laboratory uses
 4740 USEPA OGWDW Methods, Method 317.0, ~~rev. 2.0~~, or
 4741 326.0 or USEPA Organic and Inorganic Methods, Method
 4742 321.8.
 4743
 4744 xii) The calibration curve must encompass the regulatory MRL
 4745 concentration. Data may be reported for concentrations
 4746 lower than the regulatory MRL as long as the precision and
 4747 accuracy criteria are met by analyzing an MRL check
 4748 standard at the lowest reporting limit chosen by the
 4749 laboratory. The laboratory must verify the accuracy of the
 4750 calibration curve at the MRL concentration by analyzing an
 4751 MRL check standard with a concentration less than or
 4752 equal to 110% of the MRL with each batch of samples.

- 4753 The measured concentration for the MRL check standard
4754 must be $\pm 50\%$ of the expected value, if any field sample in
4755 the batch has a concentration less than five times the
4756 regulatory MRL. Method requirements to analyze higher
4757 concentration check standards and meet tighter acceptance
4758 criteria for them must be met in addition to the MRL check
4759 standard requirement.
4760
- 4761 xiii) When adding the individual trihalomethane or haloacetic
4762 acid concentrations, for the compounds listed in
4763 subsections (b)(2)(D)(v) through (b)(2)(D)(ix) of this
4764 Section, to calculate the TTHM or HAA5 concentrations,
4765 respectively, a zero is used for any analytical result that is
4766 less than the MRL concentration for that DBP, unless
4767 otherwise specified by the Agency.
4768
- 4769 3) A party approved by USEPA or the Agency must measure daily chlorite
4770 samples at the entrance to the distribution system.
4771
- 4772 c) Disinfectant residuals.
4773
- 4774 1) A supplier must measure residual disinfectant concentrations for free
4775 chlorine, combined chlorine (chloramines), and chlorine dioxide by the
4776 appropriate of the methods listed in subsections (c)(1)(A) through (c)(1)(D)
4777 of this Section, subject to the provisions of subsection (c)(1)(E) of this
4778 Section:
4779
- 4780 A) Free Chlorine:
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- 4782 i) Amperometric titration: ~~using~~ Standard Methods, 19th, 20th,
4783 or 21st ed., Method 4500-Cl D, or ASTM Method D1253-
4784 861253-86, D1253-961253-96, D1253-03, or D1253-08~~er~~
4785 ~~1253-03~~;
4786
- 4787 ii) DPD ferrous titration: ~~using~~ Standard Methods, 19th, 20th,
4788 or 21st ed., Method 4500-Cl F;
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- 4790 iii) DPD colorimetric: ~~using~~ Standard Methods, 19th, 20th, or
4791 21st ed., Method 4500-Cl G; or
4792
- 4793 iv) Syringaldazine (FACTS): ~~using~~ Standard Methods, 19th,
4794 20th, or 21st ed., Method 4500-Cl H.
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v) Test strips: ITS Method D99-003 if approved by the Agency pursuant to subsection (c)(2) of this Section.

v) Amperometric sensor: Palintest ChloroSense.

vi) On-line chlorine analyzer: USEPA OGWDW Methods, Method 334.0.

BOARD NOTE: USEPA added Standard Methods, 21st ed., Methods 4500-Cl D, F, G, and H as approved alternative methods for free chlorine in appendix A to subpart C of 40 CFR 141 on June 3, 2008 (at 73 Fed. Reg. 31616). USEPA added ASTM Method D1253-08, USEPA OGWDW Methods, Method 334.0, and Palintest ChloroSense as approved alternative methods for free chlorine in appendix A to subpart C of 40 CFR 141 on November 10, 2009 (at 74 Fed. Reg. 57908).

B) Combined Chlorine:

i) ~~Amperometric titration; using~~ Standard Methods, 19th, 20th, or 21st ed., Method 4500-Cl D, or ASTM Method ~~D1253-86, D1253-96, or D1253-03, or D1253-08~~ D1253-03;

ii) ~~DPD ferrous titration; using~~ Standard Methods, 19th, 20th, or 21st ed., Method 4500-Cl F; or

iii) ~~DPD colorimetric; using~~ Standard Methods, 19th, 20th, or 21st ed., Method 4500-Cl G.

BOARD NOTE: USEPA added Standard Methods, Methods 4500-Cl D, F, and G as approved alternative methods for free chlorine in appendix A to subpart C of 40 CFR 141 on June 3, 2008 (at 73 Fed. Reg. 31616). USEPA added ASTM Method D1253-08 as an approved alternative method for combined chlorine in appendix A to subpart C of 40 CFR 141 on November 10, 2009 (at 74 Fed. Reg. 57908).

C) Total Chlorine:

i) Amperometric titration using Standard Methods, 19th, 20th, or 21st ed., Method 4500-Cl D, or ASTM Method D1253-

- 4838 861253-86, D1253-961253-96, or D1253-03, or D1253-
4839 081253-03;
4840
4841 ii) Low-level amperometric titration; ~~using~~ Standard Methods,
4842 19th, 20th, or 21st ed., Method 4500-CI E;
4843
4844 iii) DPD ferrous titration; ~~using~~ Standard Methods, 19th, 20th,
4845 or 21st ed., Method 4500-CI F;
4846
4847 iv) DPD colorimetric; ~~using~~ Standard Methods, 19th, 20th, or
4848 21st ed., Method 4500-CI G; or
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4850 v) Iodometric electrode; ~~using~~ Standard Methods, 19th, 20th, or
4851 21st ed., Method 4500-CI I.
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4853 vi) Amperometric sensor: Palintest ChloroSense.
4854
4855 vii) On-line chlorine analyzer: USEPA OGWDW Methods,
4856 Method 334.0.
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4858 BOARD NOTE: USEPA added Standard Methods, Methods
4859 4500-CI D, E, F, G, and I as approved alternative methods for free
4860 chlorine in appendix A to subpart C of 40 CFR 141 on June 3,
4861 2008 (at 73 Fed. Reg. 31616). USEPA added ASTM Method
4862 D1253-08, USEPA OGWDW Methods, Method 334.0, and
4863 Palintest ChloroSense as approved alternative methods for total
4864 chlorine in appendix A to subpart C of 40 CFR 141 on November
4865 10, 2009 (at 74 Fed. Reg. 57908).
4866

4867 D) Chlorine Dioxide:

- 4868
4869 i) DPD; ~~using~~ Standard Methods, 19th, 20th, or 21st ed.,
4870 Method 4500-CIO₂ D;
4871
4872 ii) Amperometric Method II; ~~using~~ Standard Methods, 19th,
4873 20th, or 21st ed., Method 4500-CIO₂ E; or
4874
4875 iii) Lissamine Green spectrophotometric; ~~using~~ USEPA
4876 OGWDW Method 327.0 (rev. 1.1).
4877

4878 BOARD NOTE: USEPA added Standard Methods, 21st ed.,
4879 Methods 4500-CIO₂ D and E as approved alternative methods for

4880 chlorine dioxide in appendix A to subpart C of 40 CFR 141 on
4881 June 3, 2008 (at 73 Fed. Reg. 31616).

4882
4883 E) The methods listed are approved for measuring the specified
4884 disinfectant residual. The supplier may measure free chlorine or
4885 total chlorine for demonstrating compliance with the chlorine
4886 MRDL and combined chlorine, or total chlorine may be measured
4887 for demonstrating compliance with the chloramine MRDL.
4888

4889 ~~BOARD NOTE: On January 4, 2006 (at 71 Fed. Reg. 388), USEPA~~
4890 ~~amended the entries for free chlorine, combined chlorine, and chlorine~~
4891 ~~dioxide in the table at corresponding 40 CFR 141.23(k)(1) to allow the use~~
4892 ~~of Standard Methods Online (at www.standardmethods.org), Method~~
4893 ~~4500-Cl-D, E, F, G, H, or I or Method 4500-ClO₂-E (as approved in 2000).~~
4894 ~~The Board has instead cited to the 21st edition of Standard Methods for the~~
4895 ~~Examination of Water and Wastewater (the printed version of Standard~~
4896 ~~Methods), since the versions of Method 4500-Cl and Method 4500-ClO₂~~
4897 ~~that appear in that printed volume is that cited by USEPA as acceptable~~
4898 ~~for use. USEPA later added Method 4500-Cl-D, E, F, G, H, or I or~~
4899 ~~Method 4500-ClO₂-E from the 21st edition of Standard Methods as an~~
4900 ~~approved alternative method in appendix A to subpart C of 40 CFR 141,~~
4901 ~~added on June 3, 2008 (at 73 Fed. Reg. 31616).~~
4902

4903 2) Alternative methods available only upon specific approval by the
4904 Agency Test strips.

4905 A) Test strips: ITS Method D99-003.

4906 BOARD NOTE: USEPA added ITS Method D99-003 as an
4907 approved alternative method for free chlorine in appendix A to
4908 subpart C of 40 CFR 141, added on June 3, 2008 (at 73 Fed. Reg.
4909 31616), contingent upon specific state approval. The Board has
4910 opted to provide that the Agency can grant such approvals on a
4911 case-by-case basis using the SEP mechanism.
4912

4913 B) If approved by the Agency, by an SEP issued pursuant to Section
4914 611.110, a supplier may also measure residual disinfectant
4915 concentrations for chlorine, chloramines, and chlorine dioxide by
4916 using DPD colorimetric test kits.
4917

4918 3) A party approved by USEPA or the Agency must measure residual
4919 disinfectant concentration.
4920
4921
4922

- 4923 d) A supplier required to analyze parameters not included in subsections (b) and (c) of
 4924 this Section must use the methods listed below. A party approved by USEPA or
 4925 the Agency must measure the following parameters:
 4926
- 4927 1) Alkalinity. All methods allowed in Section 611.611(a)(21) for measuring
 4928 alkalinity.
 - 4929
 - 4930 2) Bromide:
 - 4931
 - 4932 A) USEPA Inorganic Methods, Method 300.0 (rev. 2.1);
 - 4933
 - 4934 B) USEPA Organic and Inorganic Methods, Method 300.1 (rev. 1.0);
 - 4935
 - 4936 C) USEPA OGWDW Methods, Method 317.0 (rev. 2.0) or Method
 4937 326.0 (rev. 1.0); or
 - 4938
 - 4939 D) ASTM Method D6581-00.
 - 4940
 - 4941 3) Total Organic Carbon (TOC), by any of the methods listed in subsection
 4942 (d)(3)(A)(i), (d)(3)(A)(ii), (d)(3)(A)(iii), or (d)(3)(B) of this Section, subject
 4943 to the limitations of subsection (d)(3)(C) of this Section:
 4944
 - 4945 A) ~~High-temperature combustion~~Standard Methods, 19th, 20th, or 21st
 4946 ed., using one of the following methods:
 - 4947
 - 4948 i) ~~Standard Methods, 19th, 20th, or 21st ed., Method 5310 B~~
 4949 ~~(High Temperature Combustion Method); or~~
 - 4950
 - 4951 ii) ~~USEPA NERL Method 415.3 (rev. 1.2).~~Method 5310 C
 4952 ~~(Persulfate Ultraviolet or Heated Persulfate Oxidation~~
 4953 ~~Method); or~~
 - 4954
 - 4955 iii) ~~Method 5310 D (Wet Oxidation Method).~~
 - 4956
 - 4957 ~~BOARD NOTE: On January 4, 2006 (at 71 Fed. Reg. 388),~~
 4958 ~~USEPA amended the entries for total organic carbon, high-~~
 4959 ~~temperature combustion, persulfate ultraviolet or heated persulfate,~~
 4960 ~~and wet oxidation at corresponding 40 CFR 141.131(d)(3) to allow~~
 4961 ~~the use of Standard Methods Online (at~~
 4962 ~~www.standardmethods.org), Method 5310 B, C, or D (as approved~~
 4963 ~~in 2000). The Board has instead cited to the 21st edition of~~
 4964 ~~Standard Methods for the Examination of Water and Wastewater~~
 4965 ~~(the printed version of Standard Methods), since the version of~~

Method 5310 B, C, or D that appears in that printed volume is that cited by USEPA as acceptable for use. USEPA later added Method 5310 B, C, or D from the 21st edition of Standard Methods as an approved alternative method in appendix A to subpart C of 40 CFR 141, added on June 3, 2008 (at 73 Fed. Reg. 31616).

- B) Persulfate-ultraviolet or heated – persulfate oxidation:
 - i) Standard Methods, 19th, 20th, or 21st ed., Method 5310 C; or
 - ii) USEPA NERL Method 415.3 (rev. 1.2).
- C) Wet Oxidation Method:
 - i) Standard Methods, 19th, 20th, or 21st ed., Method 5310 D; or
 - ii) USEPA NERL Method 415.3 (rev. 1.2).

~~DB)~~ Specific UV₂₅₄ absorbance: USEPA NERL Method 415.3 (rev. 1.1) or 415.3 (rev. 1.2).

~~EC)~~ Inorganic carbon must be removed from the samples prior to analysis. TOC samples may not be filtered prior to analysis. TOC samples must be acidified at the time of sample collection to achieve pH less than or equal to 2 with minimal addition of the acid specified in the method or by the instrument manufacturer. Acidified TOC samples must be analyzed within 28 days.

BOARD NOTE: USEPA added Standard Methods, 21st ed., Methods 5310 B, C, and D as approved alternative methods for total organic carbon in appendix A to subpart C of 40 CFR 141 on June 3, 2008 (at 73 Fed. Reg. 31616). USEPA added USEPA NERL Method 415.3 (rev. 1.2) as an approved alternative method for total organic carbon in appendix A to subpart C of 40 CFR 141 on November 10, 2009 (at 74 Fed. Reg. 57908).

- 4) Specific Ultraviolet Absorbance (SUVA). SUVA is equal to the UV absorption at 254 nm (UV₂₅₄) (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 UV₂₅₄ and DOC. When determining SUVA, a supplier must use the methods stipulated in subsection (d)(4)(A) of this Section to measure DOC and the method stipulated in subsection (d)(4)(B) of this Section to measure UV₂₅₄. SUVA

5009 must be determined on water prior to the addition of disinfectants/oxidants
 5010 by the supplier. DOC and UV₂₅₄ samples used to determine a SUVA value
 5011 must be taken at the same time and at the same location.
 5012

5013 A) Dissolved Organic Carbon (DOC). ~~Standard Methods, 19th ed., 20th~~
 5014 ~~ed., or 21st ed., Method 5310 B (High Temperature Combustion~~
 5015 ~~Method), Method 5310 C (Persulfate Ultraviolet or Heated-~~
 5016 ~~Persulfate Oxidation Method), or Method 5310 D (Wet Oxidation~~
 5017 ~~Method) or USEPA NERL Method 415.3 (rev. 1.1).~~ Prior to
 5018 analysis, DOC samples must be filtered through the 0.45 µm
 5019 pore-diameter filter as soon as practical after sampling, not to
 5020 exceed 48 hours. After filtration, DOC samples must be acidified
 5021 to achieve pH less than or equal to 2 with minimal addition of the
 5022 acid specified in the method or by the instrument manufacturer.
 5023 Acidified DOC samples must be analyzed within 28 days after
 5024 sample collection. Inorganic carbon must be removed from the
 5025 samples prior to analysis. Water passed through the filter prior to
 5026 filtration of the sample must serve as the filtered blank. This filtered
 5027 blank must be analyzed using procedures identical to those used for
 5028 analysis of the samples and must meet the following standards:
 5029 DOC less than 0.5 mg/ℓ; and
 5030

5031 i) High-Temperature Combustion Method: Standard
 5032 Methods, 19th ed., 20th ed., or 21st ed., Method 5310 B or
 5033 USEPA NERL Methods 415.3 (rev. 1.1) or 415.3 (rev. 1.2).
 5034

5035 ii) Persulfate-Ultraviolet or Heated-Persulfate Oxidation
 5036 Method, Method 5310 C or USEPA NERL Methods 415.3
 5037 (rev. 1.1) or 415.3 (rev. 1.2).
 5038

5039 iii) Wet-Oxidation Method: Standard Methods, 19th ed., 20th
 5040 ed., or 21st ed., Method 5310 D or USEPA NERL Methods
 5041 415.3 (rev. 1.1) or 415.3 (rev. 1.2).
 5042

5043 BOARD NOTE: On January 4, 2006 (at 71 Fed. Reg. 388),
 5044 USEPA amended the entries for specific ultraviolet absorbance-
 5045 dissolved organic carbon at corresponding 40 CFR
 5046 141.131(d)(4)(i) to allow the use of Standard Methods Online (at
 5047 www.standardmethods.org), Method 5310 B, C, or D (as approved
 5048 in 2000). The Board has instead cited to the 21st edition of
 5049 Standard Methods for the Examination of Water and Wastewater
 5050 (the printed version of Standard Methods), since the version of
 5051 Method 5310 B, C, or D that appears in that printed volume is that

5052 eited by USEPA as acceptable for use. USEPA later added
 5053 Method 5310 B, C, or D from the 21st edition of Standard Methods
 5054 USEPA added Standard Methods, Methods 5310 B, C, and D as an
 5055 approved alternative methods for dissolved organic carbon
 5056 in appendix A to subpart C of 40 CFR 141, added on June 3, 2008
 5057 (at 73 Fed. Reg. 31616). USEPA added USEPA NERL Method
 5058 415.3 (rev. 1.2) as an approved alternative method for dissolved
 5059 organic carbon in appendix A to subpart C of 40 CFR 141 on
 5060 November 10, 2009 (at 74 Fed. Reg. 57908).

- 5061
- 5062 B) Ultraviolet Absorption at 254 nm (UV₂₅₄): by spectrometry:
 5063 Standard Methods, 19th, 20th, or 21st ed., Method 5910 B
 5064 (Ultraviolet Absorption Method) or USEPA NERL Method 415.3
 5065 (rev. 1.1) or 415.3 (rev. 1.2). UV absorption must be measured at
 5066 253.7 nm (may be rounded off to 254 nm). Prior to analysis, UV₂₅₄
 5067 samples must be filtered through a 0.45 µm pore-diameter filter.
 5068 The pH of UV₂₅₄ samples may not be adjusted. Samples must be
 5069 analyzed as soon as practical after sampling, not to exceed 48 hours;
 5070 and

5071

5072 BOARD NOTE: ~~On January 4, 2006 (at 71 Fed. Reg. 388),~~
 5073 ~~USEPA amended the entries for specific ultraviolet absorbance-~~
 5074 ~~ultraviolet absorption at 254 nm at corresponding 40 CFR~~
 5075 ~~141.131(d)(4)(ii) to allow the use of Standard Methods Online (at~~
 5076 ~~www.standardmethods.org), Method 5910 B (as approved in~~
 5077 ~~2000). The Board has instead cited to the 21st edition of Standard~~
 5078 ~~Methods for the Examination of Water and Wastewater (the~~
 5079 ~~printed version of Standard Methods), since the version of Method~~
 5080 ~~5910 B that appears in that printed volume is that cited by USEPA~~
 5081 ~~as acceptable for use. USEPA later added Method 5910 B from~~
 5082 ~~the 21st edition of Standard Methods~~ USEPA added Standard
 5083 Methods, 21st ed., Method 5910 B as an approved alternative
 5084 method for ultraviolet absorbtion in appendix A to subpart C of 40
 5085 CFR 141, added on June 3, 2008 (at 73 Fed. Reg. 31616). USEPA
 5086 added USEPA NERL Method 415.3 (rev. 1.2) as an approved
 5087 alternative method for ultraviolet absorbance in appendix A to
 5088 subpart C of 40 CFR 141 on November 10, 2009 (at 74 Fed. Reg.
 5089 57908).

- 5090
- 5091 5) pH. All methods allowed in Section 611.611(a)(17) for measuring pH.
- 5092
- 5093 6) Magnesium. All methods allowed in Section 611.611(a) for measuring
- 5094 magnesium.
- 5095

5096 BOARD NOTE: Derived from 40 CFR 141.131-(2007) and appendix A to 40 CFR 141
5097 (2009), as added at 73 Fed. Reg. 31616 (June 3, 2008).
5098

5099 (Source: Amended at 35 Ill. Reg. _____, effective _____)
5100

5101 **Section 611.382 Monitoring Requirements**
5102

5103 a) General requirements.
5104

5105 1) A supplier must take all samples during normal operating conditions.
5106

5107 2) A supplier may consider multiple wells drawing water from a single
5108 aquifer as one treatment plant for determining the minimum number of
5109 TTHM and HAA5 samples required with Agency approval.
5110

5111 3) Failure to monitor in accordance with the monitoring plan required under
5112 subsection (f) of this Section is a monitoring violation.
5113

5114 4) Where compliance is based on a running annual average of monthly or
5115 quarterly samples or averages and the supplier's failure to monitor makes
5116 it impossible to determine compliance with MCLs or MRDLs, this failure
5117 to monitor will be treated as a violation for the entire period covered by
5118 the annual average.
5119

5120 5) A supplier must use only data collected under the provisions of this
5121 Subpart I to qualify for reduced monitoring.
5122

5123 b) Monitoring requirements for disinfection byproducts (DBPs).
5124

5125 1) TTHMs and HAA5.
5126

5127 A) Routine monitoring. A supplier must monitor at the following
5128 frequency:
5129

5130 i) A Subpart B system supplier that serves 10,000 or more
5131 persons must collect four water samples per quarter per
5132 treatment plant. At least 25 percent of all samples collected
5133 each quarter must be collected at locations representing
5134 maximum residence time. The remaining samples may be
5135 taken at locations representative of at least average
5136 residence time in the distribution system and representing
5137 the entire distribution system, taking into account the

- 5138 number of persons served, the different sources of water,
5139 and the different treatment methods.
5140
- 5141 ii) A Subpart B system supplier that serves from 500 to 9,999
5142 persons must collect one water sample per quarter per
5143 treatment plant. The samples must be collected from
5144 locations representing maximum residence time.
5145
- 5146 iii) A Subpart B system supplier that serves fewer than 500
5147 persons must collect one sample per year per treatment
5148 plant during month of warmest water temperature. The
5149 samples must be collected from locations representing
5150 maximum residence time. If the sample (or average of
5151 annual samples, if more than one sample is taken) exceeds
5152 the MCL, the supplier must increase the monitoring
5153 frequency to one sample per treatment plant per quarter,
5154 taken at a point reflecting the maximum residence time in
5155 the distribution system, until the supplier meets the
5156 standards in subsection (b)(1)(D) of this Section.
5157
- 5158 iv) A supplier that uses only groundwater not under direct
5159 influence of surface water, which uses chemical
5160 disinfectant, and which serves 10,000 or more persons must
5161 collect one water sample per quarter per treatment plant.
5162 The samples must be collected from locations representing
5163 maximum residence time.
5164
- 5165 v) A supplier that uses only groundwater not under direct
5166 influence of surface water, which uses chemical
5167 disinfectant, and which serves fewer than 10,000 persons
5168 must collect one sample per year per treatment plant during
5169 month of warmest water temperature. The samples must be
5170 collected from locations representing maximum residence
5171 time. If the sample (or average of annual samples, if more
5172 than one sample is taken) exceeds MCL, the supplier must
5173 increase monitoring to one sample per treatment plant per
5174 quarter, taken at a point reflecting the maximum residence
5175 time in the distribution system, until the supplier meets
5176 standards in subsection (b)(1)(D) of this Section.
5177

5178 BOARD NOTE: If a supplier elects to sample more frequently
5179 than the minimum required, at least 25 percent of all samples
5180 collected each quarter (including those taken in excess of the

5181 required frequency) must be taken at locations that represent the
5182 maximum residence time of the water in the distribution system.
5183 The remaining samples must be taken at locations representative of
5184 at least average residence time in the distribution system. For a
5185 supplier using groundwater not under the direct influence of
5186 surface water, multiple wells drawing water from a single aquifer
5187 may be considered one treatment plant for determining the
5188 minimum number of samples required, with Agency approval.
5189

5190 B) A supplier may reduce monitoring, except as otherwise provided,
5191 in accordance with the following:
5192

5193 i) A Subpart B system supplier that serves 10,000 or more
5194 persons and which has a source water annual average TOC
5195 level, before any treatment, of less than or equal to 4.0
5196 mg/l may reduce monitoring if it has monitored for at least
5197 one year and its TTHM annual average is less than or equal
5198 to 0.040 mg/l and HAA5 annual average is less than or
5199 equal to 0.030 mg/l. The reduced monitoring allowed is a
5200 minimum of one sample per treatment plant per quarter at a
5201 distribution system location reflecting maximum residence
5202 time.
5203

5204 ii) A Subpart B system supplier that serves from 500 to 9,999
5205 persons and which has a source water annual average TOC
5206 level, before any treatment, of less than or equal to 4.0
5207 mg/l may reduce monitoring if it has monitored at least one
5208 year and its TTHM annual average is less than or equal to
5209 0.040 mg/l and HAA5 annual average is less than or equal
5210 to 0.030 mg/l. The reduced monitoring allowed is a
5211 minimum of one sample per treatment plant per year at a
5212 distribution system location reflecting maximum residence
5213 time during month of warmest water temperature.
5214

5215 BOARD NOTE: Any Subpart B system supplier that
5216 serves fewer than 500 persons may not reduce its
5217 monitoring to less than one sample per treatment plant per
5218 year.
5219

5220 iii) A supplier using only groundwater not under direct
5221 influence of surface water using chemical disinfectant and
5222 that serves 10,000 or more persons may reduce monitoring
5223 if it has monitored at least one year and its TTHM annual

5224 average is less than or equal to 0.040 mg/ℓ and HAA5
5225 annual average is less than or equal to 0.030 mg/ℓ. The
5226 reduced monitoring allowed is a minimum of one sample
5227 per treatment plant per year at a distribution system
5228 location reflecting maximum residence time during month
5229 of warmest water temperature.
5230

5231 iv) A supplier using only groundwater not under direct
5232 influence of surface water that uses chemical disinfectant
5233 and which serves fewer than 10,000 persons may reduce
5234 monitoring if it has monitored at least one year and its
5235 TTHM annual average is less than or equal to 0.040 mg/ℓ
5236 and HAA5 annual average is less than or equal to 0.030
5237 mg/ℓ for two consecutive years or TTHM annual average is
5238 less than or equal to 0.020 mg/ℓ and HAA5 annual average
5239 is less than or equal to 0.015 mg/ℓ for one year. The
5240 reduced monitoring allowed is a minimum of one sample
5241 per treatment plant per three year monitoring cycle at a
5242 distribution system location reflecting maximum residence
5243 time during month of warmest water temperature, with the
5244 three-year cycle beginning on January 1 following the
5245 quarter in which the supplier qualifies for reduced
5246 monitoring.
5247

5248 C) Monitoring requirements for source water TOC. In order to
5249 qualify for reduced monitoring for TTHM and HAA5 under
5250 subsection (b)(1)(B) of this Section, a Subpart B system supplier
5251 not monitoring under the provisions of subsection (d) of this
5252 Section must take monthly TOC samples every 30 days at a
5253 location prior to any treatment, beginning no later than April 1,
5254 2008. In addition to meeting other criteria for reduced monitoring
5255 in subsection (b)(1)(B) of this Section, the source water TOC
5256 running annual average must be ≤ 4.0 mg/ℓ (based on the most
5257 recent four quarters of monitoring) on a continuing basis at each
5258 treatment plant to reduce or remain on reduced monitoring for
5259 TTHM and HAA5. Once qualified for reduced monitoring for
5260 TTHM and HAA5 under subsection (b)(1)(B) of this Section, a
5261 system may reduce source water TOC monitoring to quarterly
5262 TOC samples taken every 90 days at a location prior to any
5263 treatment.
5264

5265 D) A Subpart B system supplier on a reduced monitoring schedule
5266 may remain on that reduced schedule as long as the average of all

5267 samples taken in the year (for a supplier that must monitor
 5268 quarterly) or the result of the sample (for a supplier that must
 5269 monitor no more frequently than annually) is no more than 0.060
 5270 mg/ℓ and 0.045 mg/ℓ for TTHMs and HAA5, respectively. A
 5271 supplier that does not meet these levels must resume monitoring at
 5272 the frequency identified in subsection (b)(1)(A) of this Section in
 5273 the quarter immediately following the monitoring period in which
 5274 the supplier exceeds 0.060 mg/ℓ for TTHMs or 0.045 mg/ℓ for
 5275 HAA5. For a supplier that uses only groundwater not under the
 5276 direct influence of surface water and which serves fewer than
 5277 10,000 persons, if either the TTHM annual average is greater than
 5278 0.080 mg/ℓ or the HAA5 annual average is greater than 0.060
 5279 mg/ℓ, the supplier must go to increased monitoring identified in
 5280 subsection (b)(1)(A) of this Section in the quarter immediately
 5281 following the monitoring period in which the supplier exceeds
 5282 0.080 mg/ℓ for TTHMs or 0.060 mg/ℓ for HAA5.
 5283

5284 E) The Agency may return a supplier to routine monitoring.
 5285

5286 2) Chlorite. A CWS or NTNCWS supplier using chlorine dioxide, for
 5287 disinfection or oxidation, must conduct monitoring for chlorite.
 5288

5289 A) Routine monitoring.
 5290

5291 i) Daily monitoring. A supplier must take daily samples at
 5292 the entrance to the distribution system. For any daily
 5293 sample that exceeds the chlorite MCL, the supplier must
 5294 take additional samples in the distribution system the
 5295 following day at the locations required by subsection
 5296 (b)(2)(B) of this Section, in addition to the sample required
 5297 at the entrance to the distribution system.
 5298

5299 ii) Monthly monitoring. A supplier must take a three-sample
 5300 set each month in the distribution system. The supplier
 5301 must take one sample at each of the following locations:
 5302 near the first customer, at a location representative of
 5303 average residence time, and at a location reflecting
 5304 maximum residence time in the distribution system. Any
 5305 additional routine sampling must be conducted in the same
 5306 manner (as three-sample sets, at the specified locations).
 5307 The supplier may use the results of additional monitoring
 5308 conducted under subsection (b)(2)(B) of this Section to
 5309 meet the requirement for monitoring in this subsection

- 5310 (b)(2)(A)(ii).
5311
5312 B) Additional monitoring. On each day following a routine sample
5313 monitoring result that exceeds the chlorite MCL at the entrance to
5314 the distribution system, the supplier must take three chlorite
5315 distribution system samples at the following locations: as close to
5316 the first customer as possible, in a location representative of
5317 average residence time, and as close to the end of the distribution
5318 system as possible (reflecting maximum residence time in the
5319 distribution system).
5320
5321 C) Reduced monitoring.
5322
5323 i) Chlorite monitoring at the entrance to the distribution
5324 system required by subsection (b)(2)(A)(i) of this Section
5325 may not be reduced.
5326
5327 ii) Chlorite monitoring in the distribution system required by
5328 subsection (b)(2)(A)(ii) of this Section may be reduced to
5329 one three-sample set per quarter after one year of
5330 monitoring where no individual chlorite sample taken in the
5331 distribution system under subsection (b)(2)(A)(ii) of this
5332 Section has exceeded the chlorite MCL and the supplier has
5333 not been required to conduct monitoring under subsection
5334 (b)(2)(B) of this Section. The supplier may remain on the
5335 reduced monitoring schedule until either any of the three
5336 individual chlorite samples taken quarterly in the
5337 distribution system under subsection (b)(2)(A)(ii) of this
5338 Section exceeds the chlorite MCL or the supplier is
5339 required to conduct monitoring under subsection (b)(2)(B)
5340 of this Section, at which time the supplier must revert to
5341 routine monitoring.
5342
5343 3) Bromate.
5344
5345 A) Routine monitoring. A CWS or NTNCWS supplier using ozone,
5346 for disinfection or oxidation, must take one sample per month for
5347 each treatment plant in the system using ozone. A supplier must
5348 take samples monthly at the entrance to the distribution system
5349 while the ozonation system is operating under normal conditions.
5350
5351 B) Reduced monitoring.
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- i) Until March 31, 2009, a supplier required to analyze for bromate may reduce monitoring from monthly to quarterly, if the supplier demonstrates that the average source water bromide concentration is less than 0.05 mg/ℓ based on representative monthly bromide measurements for one year. The supplier may remain on reduced bromate monitoring until the running annual average source water bromide concentration, computed quarterly, is equal to or greater than 0.05 mg/ℓ based on representative monthly measurements. If the running annual average source water bromide concentration is equal to or greater than 0.05 mg/ℓ, the supplier must resume routine monitoring required by subsection (b)(3)(A) of this Section in the following month.

 - ii) Beginning April 1, 2009, a Subpart B system supplier may no longer use the provisions of subsection (b)(3)(B)(i) of this Section to qualify for reduced monitoring. A supplier required to analyze for bromate may reduce monitoring from monthly to quarterly, if the supplier's running annual average bromate concentration is not greater than 0.0025 mg/ℓ based on monthly bromate measurements under subsection (b)(3)(A) of this Section for the most recent four quarters, with samples analyzed using USEPA OGWDW Methods, Method 302.0, Method 317.0 (rev. 2.0), ~~or~~ Method 326.0 (rev. 1.0), or Method 557 or USEPA Organic and Inorganic Methods, Method 321.8. If a supplier has qualified for reduced bromate monitoring under subsection (b)(3)(B)(i) of this Section, that supplier may remain on reduced monitoring as long as the running annual average of quarterly bromate samples not greater than 0.0025 mg/ℓ based on samples analyzed using USEPA OGWDW Methods, Method 302.0, Method 317.0 ~~(rev. 2.0)~~, ~~or~~ Method 326.0 ~~(rev. 1.0)~~, or Method 557 or USEPA Organic and Inorganic Methods, Method 321.8. If the running annual average bromate concentration is greater than 0.0025 mg/ℓ, the supplier must resume routine monitoring required by subsection (b)(3)(A) of this Section.

 - c) Monitoring requirements for disinfectant residuals.
 - 1) Chlorine and chloramines.
 - A) Routine monitoring. A CWS or NTNCWS supplier that uses

5396 chlorine or chloramines must measure the residual disinfectant
5397 level in the distribution system at the same point in the distribution
5398 system and at the same time as total coliforms are sampled, as
5399 specified in Section 611.521. A Subpart B system supplier may
5400 use the results of residual disinfectant concentration sampling
5401 conducted under Section 611.532 for unfiltered systems or Section
5402 611.533 for systems that filter, in lieu of taking separate samples.
5403

5404 B) Reduced monitoring. Monitoring may not be reduced.
5405

5406 2) Chlorine dioxide.
5407

5408 A) Routine monitoring. A CWS, an NTNCWS, or a transient non-
5409 CWS supplier that uses chlorine dioxide for disinfection or
5410 oxidation must take daily samples at the entrance to the
5411 distribution system. For any daily sample that exceeds the MRDL,
5412 the supplier must take samples in the distribution system the
5413 following day at the locations required by subsection (c)(2)(B) of
5414 this Section, in addition to the sample required at the entrance to
5415 the distribution system.
5416

5417 B) Additional monitoring. On each day following a routine sample
5418 monitoring result that exceeds the MRDL, the supplier must take
5419 three chlorine dioxide distribution system samples. If chlorine
5420 dioxide or chloramines are used to maintain a disinfectant residual
5421 in the distribution system, or if chlorine is used to maintain a
5422 disinfectant residual in the distribution system and there are no
5423 disinfection addition points after the entrance to the distribution
5424 system (i.e., no booster chlorination), the supplier must take three
5425 samples as close to the first customer as possible, at intervals of at
5426 least six hours. If chlorine is used to maintain a disinfectant
5427 residual in the distribution system and there are one or more
5428 disinfection addition points after the entrance to the distribution
5429 system (i.e., booster chlorination), the supplier must take one
5430 sample at each of the following locations: as close to the first
5431 customer as possible, in a location representative of average
5432 residence time, and as close to the end of the distribution system as
5433 possible (reflecting maximum residence time in the distribution
5434 system).
5435

5436 C) Reduced monitoring. Monitoring may not be reduced.
5437

5438 d) Monitoring requirements for disinfection byproduct (DBP) precursors.

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- 1) Routine monitoring. A Subpart B system supplier that uses conventional filtration treatment (as defined in Section 611.101) must monitor each treatment plant for TOC not past the point of combined filter effluent turbidity monitoring and representative of the treated water. A supplier required to monitor under this subsection (d)(1) must also monitor for TOC in the source water prior to any treatment at the same time as monitoring for TOC in the treated water. These samples (source water and treated water) are referred to as paired samples. At the same time as the source water sample is taken, a system must monitor for alkalinity in the source water prior to any treatment. A supplier must take one paired sample and one source water alkalinity sample per month per plant at a time representative of normal operating conditions and influent water quality.
 - 2) Reduced monitoring. A Subpart B system supplier with an average treated water TOC of less than 2.0 mg/ℓ for two consecutive years, or less than 1.0 mg/ℓ for one year, may reduce monitoring for both TOC and alkalinity to one paired sample and one source water alkalinity sample per plant per quarter. The supplier must revert to routine monitoring in the month following the quarter when the annual average treated water TOC greater than or equal to 2.0 mg/ℓ.
 - e) Bromide. A supplier required to analyze for bromate may reduce bromate monitoring from monthly to once per quarter, if the supplier demonstrates that the average source water bromide concentration is less than 0.05 mg/ℓ based upon representative monthly measurements for one year. The supplier must continue bromide monitoring to remain on reduced bromate monitoring.
 - f) Monitoring plans. Each supplier required to monitor under this Subpart I must develop and implement a monitoring plan. The supplier must maintain the plan and make it available for inspection by the Agency and the general public no later than 30 days following the applicable compliance dates in Section 611.380(b). A Subpart B system supplier that serves more than 3,300 persons must submit a copy of the monitoring plan to the Agency no later than the date of the first report required under Section 611.384. After review, the Agency may require changes in any plan elements. The plan must include at least the following elements:
 - 1) Specific locations and schedules for collecting samples for any parameters included in this Subpart I;
 - 2) How the supplier will calculate compliance with MCLs, MRDLs, and treatment techniques; and

- 5482
5483 3) If approved for monitoring as a consecutive system, or if providing water
5484 to a consecutive system, under the provisions of Section 611.500, the
5485 sampling plan must reflect the entire distribution system.
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5487 BOARD NOTE: Derived from 40 CFR 141.132 (2009)~~(2006)~~.

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5489 (Source: Amended at 35 Ill. Reg. _____, effective _____)
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5491 SUBPART L: MICROBIOLOGICAL MONITORING
5492 AND ANALYTICAL REQUIREMENTS
5493

5494 **Section 611.526 Analytical Methodology**
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- 5496 a) The standard sample volume required for total coliform analysis, regardless of
5497 analytical method used, is 100 mL.
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5499 b) Suppliers need only determine the presence or absence of total coliforms; a
5500 determination of total coliform density is not required.
5501
5502 c) Suppliers must conduct total coliform analyses in accordance with one of the
5503 following analytical methods, incorporated by reference in Section 611.102, or in
5504 accordance with an alternative method approved by the Agency pursuant to
5505 Section 611.480 (the time from sample collection to initiation of analysis may not
5506 exceed 30 hours, and the supplier is encouraged but not required to hold samples
5507 below 10° C during transit):
5508
5509 1) Total Coliform Fermentation Technique, as set forth in Standard Methods,
5510 18th, 19th, 20th, or 21st ed., Methods 9221 A and B, as follows:
5511
5512 A) Lactose broth, as commercially available, may be used in lieu of
5513 lauryl tryptose broth if the supplier conducts at least 25 parallel
5514 tests between this medium and lauryl tryptose broth using the
5515 water normally tested and this comparison demonstrates that the
5516 false-positive rate and false-negative rate for total coliforms, using
5517 lactose broth, is less than 10 percent;
5518
5519 B) If inverted tubes are used to detect gas production, the media
5520 should cover these tubes at least one-half to two-thirds after the
5521 sample is added; and
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5523 C) No requirement exists to run the completed phase on 10 percent of
5524 all total coliform-positive confirmed tubes.

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- 2) Total Coliform Membrane Filter Technique, as set forth in Standard Methods, 18th, 19th, 20th, or 21st ed., Methods 9222 A, B, and C.
 - 3) Presence-Absence (P-A) Coliform Test, as set forth in: Standard Methods, 18th, 19th, 20th, or 21st ed., Method 9221 D, as follows:
 - A) No requirement exists to run the completed phase on 10 percent of all total coliform-positive confirmed tubes; and
 - B) Six-times formulation strength may be used if the medium is filter-sterilized rather than autoclaved.
 - 4) ONPG-MUG test: Standard Methods, 18th, 19th, 20th, or 21st ed., Method 9223. (The ONPG-MUG test is also known as the Autoanalysis Colilert System.)
 - 5) Colisure Test (Autoanalysis Colilert System). (The Colisure Test may be read after an incubation time of 24 hours.)

BOARD NOTE: USEPA included the P-A Coliform and Colisure Tests for testing finished water under the coliform rule, but did not include them for the purposes of the surface water treatment rule, under Section 611.531, for which quantitation of total coliforms is necessary. For these reasons, USEPA included Standard Methods, Method 9221 C for the surface water treatment rule, but did not include it for the purposes of the total coliform rule, under this Section.
 - 6) E*Colite® Test (Charm Sciences, Inc.).
 - 7) m-ColiBlue24® Test (Hatch Company).
 - 8) Readycult® 2000 ~~Readycult Coliforms 100 Presence/Absence Test.~~
 - 9) ~~Membrane Filter Technique using Chromocult® Method~~ Coliform Agar.
 - 10) Colitag® Test.
 - 11) Modified Colitag™ Method.

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BOARD NOTE: ~~On March 12, 2007 (at 72 Fed. Reg. 11200), USEPA amended note 1 to the table at corresponding 40 CFR 141.21(f)(3) to allow the use of Standard Methods Online (at www.standardmethods.org), Method 9221 A, B, and~~

5568 ~~D (as approved in 1999) or Method 9222 A, B, and C (as approved in 1997); and~~
 5569 ~~9223 B (as approved in 1997). The Board has cited to the 21st edition of Standard~~
 5570 ~~Methods for the Examination of Water and Wastewater (the printed version of~~
 5571 ~~Standard Methods) for Methods 9221 and 9223, since the cited versions of the~~
 5572 ~~methods appears in that reference. USEPA later added Method 9221 A, B, and D;~~
 5573 ~~Method 9222 A, B, and C; Method 9223 from the 21st edition of Standard~~
 5574 ~~Methods USEPA added Standard Methods, 21st ed., Methods 9221 A, B, and D;~~
 5575 ~~9222 A, B, and C; and 9223 as an approved alternative methodsmethod in~~
 5576 ~~appendix A to subpart C of 40 CFR 141, added on June 3, 2008 (at 73 Fed. Reg.~~
 5577 ~~31616). USEPA added Modified Colitag™ Method as an approved alternative~~
 5578 ~~method in appendix A to subpart C of 40 CFR 141 on November 10, 2009 (at 74~~
 5579 ~~Fed. Reg. 57908).~~
 5580

- 5581 d) This subsection corresponds with 40 CFR 141.21(f)(4), which USEPA has
 5582 marked "reserved." This statement maintains structural consistency with the
 5583 federal regulations.
 5584
- 5585 e) Suppliers must conduct fecal coliform analysis in accordance with the following
 5586 procedure:
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- 5588 1) When the MTF Technique or P-A Coliform Test is used to test for total
 5589 coliforms, shake the lactose-positive presumptive tube or P-A vigorously
 5590 and transfer the growth with a sterile 3-mm loop or sterile applicator stick
 5591 into brilliant green lactose bile broth and EC medium, defined below, to
 5592 determine the presence of total and fecal coliforms, respectively.
 5593
 - 5594 2) For approved methods that use a membrane filter, transfer the total
 5595 coliform-positive culture by one of the following methods: remove the
 5596 membrane containing the total coliform colonies from the substrate with
 5597 sterile forceps and carefully curl and insert the membrane into a tube of
 5598 EC medium; (the laboratory may first remove a small portion of selected
 5599 colonies for verification); swab the entire membrane filter surface with a
 5600 sterile cotton swab and transfer the inoculum to EC medium (do not leave
 5601 the cotton swab in the EC medium); or inoculate individual total coliform-
 5602 positive colonies into EC medium. Gently shake the inoculated tubes of
 5603 EC medium to insure adequate mixing and incubate in a waterbath at 44.5
 5604 ±0.2° C for 24 ±2 hours. Gas production of any amount in the inner
 5605 fermentation tube of the EC medium indicates a positive fecal coliform
 5606 test.
 5607
 - 5608 3) EC medium is described in Standard Methods, 18th ed., 19th ed., and 20th
 5609 ed.: Method 9221E.
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- 4) Suppliers need only determine the presence or absence of fecal coliforms; a determination of fecal coliform density is not required.
- f) Suppliers must conduct analysis of *E. coli* in accordance with one of the following analytical methods, incorporated by reference in Section 611.102:
- 1) EC medium supplemented with 50 µg/ℓ of MUG (final concentration). EC medium is as described in subsection (e) of this Section. MUG may be added to EC medium before autoclaving. EC medium supplemented with 50 µg/ℓ MUG is commercially available. At least 10 ml of EC medium supplemented with MUG must be used. The inner inverted fermentation tube may be omitted. The procedure for transferring a total coliform-positive culture to EC medium supplemented with MUG is as in subsection (e) of this Section for transferring a total coliform-positive culture to EC medium. Observe fluorescence with an ultraviolet light (366 nm) in the dark after incubating tube at 44.5 ±2° C for 24 ±2 hours; or
 - 2) Nutrient agar supplemented with 100 µg/ℓ MUG (final concentration), as described in Standard Methods, 19th ed. and 20th ed.; Method 9222 G. This test is used to determine if a total coliform-positive sample, as determined by the MF technique, contains *E. coli*. Alternatively, Standard Methods, 18th ed.; Method 9221 B may be used if the membrane filter containing a total coliform-positive colony or colonies is transferred to nutrient agar, as described in Method 9221 B (paragraph 3), supplemented with 100 µg/ℓ MUG. If Method 9221 B is used, incubate the agar plate at 35° Celsius for four hours, then observe the colony or colonies under ultraviolet light (366-nm) in the dark for fluorescence. If fluorescence is visible, *E. coli* are present.
 - 3) Minimal Medium ONPG-MUG (MMO-MUG) Test, as set forth in Appendix D of this Part. (The Autoanalysis Colilert System is a MMO-MUG test.) If the MMO-MUG test is total coliform positive after a 24-hour incubation, test the medium for fluorescence with a 366-nm ultraviolet light (preferably with a six-watt lamp) in the dark. If fluorescence is observed, the sample is *E. coli*-positive. If fluorescence is questionable (cannot be definitively read) after 24 hours incubation, incubate the culture for an additional four hours (but not to exceed 28 hours total), and again test the medium for fluorescence. The MMO-MUG test with hepes buffer is the only approved formulation for the detection of *E. coli*.
 - 4) The Colisure Test (Autoanalysis Colilert System).

- 5654 5) The membrane filter method with MI agar.
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- 5656 6) The E*Colite® Test.
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- 5658 7) The m-ColiBlue24® Test.
- 5659
- 5660 8) Readycult® 2000~~Readycult Coliforms 100 Presence/Absence Test.~~
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- 5662 9) ~~Membrane Filter Technique using Chromocult® Method~~Coliform Agar.
- 5663
- 5664 10) Colitag® Test.
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- 5666 11) ONPG-MUG Test: Standard Methods, 20th or 21st ed., Method 9223 B.
- 5667
- 5668 12) Modified Colitag™ Method.
- 5669

BOARD NOTE: USEPA added Standard Methods, 20th or 21st ed., Method 9223 B and Standard Methods Online, Method 9223 B-97 as approved alternative methods for E. coli in appendix A to subpart C of 40 CFR 141 on November 10, 2009 (at 74 Fed. Reg. 57908).

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- 5675 g) As an option to the method set forth in subsection (f)(3) of this Section, a supplier
- 5676 with a total coliform-positive, MUG-negative, MMO-MUG test may further
- 5677 analyze the culture for the presence of E. coli by transferring a 0.1 ml, 28-hour
- 5678 MMO-MUG culture to EC medium + MUG with a pipet. The formulation and
- 5679 incubation conditions of the EC medium + MUG, and observation of the results,
- 5680 are described in subsection (f)(1) of this Section.
- 5681
- 5682 h) This subsection corresponds with 40 CFR 141.21(f)(8), a central listing of all
- 5683 documents incorporated by reference into the federal microbiological analytical
- 5684 methods. The corresponding Illinois incorporations by reference are located at
- 5685 Section 611.102. This statement maintains structural parity with USEPA
- 5686 regulations.
- 5687

BOARD NOTE: Derived from 40 CFR 141.21(f)-(2007) and appendix A to 40 CFR 141 (2009), as added at 73 Fed. Reg. 31616 (June 3, 2008).

(Source: Amended at 35 Ill. Reg. _____, effective _____)

Section 611.531 Analytical Requirements

The analytical methods specified in this Section, or alternative methods approved by the Agency pursuant to Section 611.480, must be used to demonstrate compliance with the requirements of

5697 only 611.Subpart B; they do not apply to analyses performed for the purposes of Sections
5698 611.521 through 611.527 of this Subpart L. Measurements for pH, temperature, turbidity, and
5699 RDCs must be conducted under the supervision of a certified operator. Measurements for total
5700 coliforms, fecal coliforms and HPC must be conducted by a laboratory certified by the Agency to
5701 do such analysis. The following procedures must be performed by the following methods,
5702 incorporated by reference in Section 611.102:

5703
5704 a) A supplier must conduct analyses~~shall do~~ as follows:

- 5705
5706 1) The supplier must conduct~~Conduct~~ analyses for~~of~~ pH in accordance with
5707 one of the methods listed at Section 611.611; and
5708
5709 2) The supplier must conduct~~Conduct~~ analyses for~~of~~ total coliforms, fecal
5710 coliforms, heterotrophic bacteria, and turbidity in accordance with one of
5711 the following methods, and by using analytical test procedures contained
5712 in USEPA Technical Notes, incorporated by reference in Section 611.102,
5713 as follows:

5714
5715 A) Total Coliforms.

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5717 BOARD NOTE: The time from sample collection to initiation of
5718 analysis for source (raw) water samples required by Sections
5719 611.521 and 611.532 and Subpart B of this Part only must not
5720 exceed eight hours. The supplier is encouraged but not required to
5721 hold samples below 10° C during transit.

- 5722
5723 i) Total coliform fermentation technique: Standard Methods,
5724 18th, 19th, 20th, or 21st ed., Method 9221 A, B, and C.

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5726 BOARD NOTE: Lactose broth, as commercially available,
5727 may be used in lieu of lauryl tryptose broth if the supplier
5728 conducts at least 25 parallel tests between this medium and
5729 lauryl tryptose broth using the water normally tested and
5730 this comparison demonstrates that the false-positive rate
5731 and false-negative rate for total coliforms, using lactose
5732 broth, is less than 10 percent. If inverted tubes are used to
5733 detect gas production, the media should cover these tubes at
5734 least one-half to two-thirds after the sample is added. No
5735 requirement exists to run the completed phase on 10
5736 percent of all total coliform-positive confirmed tubes.

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5738 ii) Total coliform membrane filter technique: Standard
5739 Methods, 18th, 19th, 20th, or 21st ed., Method 9222 A, B,

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and C.

- iii) ONPG-MUG test (also known as the Autoanalysis Colilert System): Standard Methods, 18th, 19th, 20th, or 21st ed., Method 9223.

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

BOARD NOTE: USEPA added Standard Methods, 21st ed., Methods 9221 A, B, and C; 9222 A, B, and C; and 9223 as approved alternative methods for total coliform in appendix A to subpart C of 40 CFR 141 on June 3, 2008 (at 73 Fed. Reg. 31616).

B) Fecal Coliforms.

BOARD NOTE: The time from sample collection to initiation of analysis for source (raw) water samples required by Sections 611.521 and 611.532 and Subpart B of this Part only must not exceed eight hours. The supplier is encouraged but not required to hold samples below 10° C during transit.

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

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

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

BOARD NOTE: USEPA added Standard Methods, 21st ed., Methods 9221 E and 9222 D as approved alternative methods for fecal coliforms in appendix A to subpart C of 40 CFR 141 on June 3, 2008 (at 73 Fed. Reg. 31616).

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- C) Heterotrophic bacteria.
- i) Pour plate method: Standard Methods, 18th, 19th, 20th, or 21st ed., Method 9215 B.
- BOARD NOTE: The time from sample collection to initiation of analysis must not exceed eight hours. The supplier is encouraged but not required to hold samples below 10° C during transit.
- ii) SimPlate method.
- BOARD NOTE: USEPA added Standard Methods, 21st ed., Method 9215 B as an approved alternative method for heterotrophic bacteria in appendix A to subpart C of 40 CFR 141 on June 3, 2008 (at 73 Fed. Reg. 31616).
- D) Turbidity.
- BOARD NOTE: Styrene divinyl benzene beads (e.g., AMCO-AEPA-1 or equivalent) and stabilized formazin (e.g., Hach StablCal™ or equivalent) are acceptable substitutes for formazin.
- i) Nephelometric method: Standard Methods, 18th, 19th, 20th, or 21st ed., Method 2130 B.
- ii) Nephelometric method: USEPA Environmental Inorganic Methods, Method 180.1 (rev.2.0).
- iii) GLI Method 2.
- iv) Hach FilterTrak Method 10133.
- v) Laser nephelometry (on-line): Mitchell Method M5271.
- vi) LED nephelometry (on-line): Mitchell Method M5331 or AMI Turbiwell Method.
- vii) LED nephelometry (portable): Orion Method AQ4500.
- BOARD NOTE: USEPA added Standard Methods, 21st ed., Method 9130 B as an approved alternative method for turbidity in appendix A to subpart C of 40 CFR 141 on June 3, 2008 (at 73

5826 Fed. Reg. 31616). USEPA added Mitchell Method M5271 and
 5827 Orion Method AQ4500 as approved alternative methods for
 5828 turbidity in appendix A to subpart C of 40 CFR 141 on August 3,
 5829 2009 (at 74 Fed. Reg. 38348). USEPA added AMI Turbiwell
 5830 Method as an approved alternative method for turbidity in
 5831 appendix A to subpart C of 40 CFR 141 on November 10, 2009 (at
 5832 74 Fed. Reg. 57908).

- 5833
 5834 E) Temperature: Standard Methods, 18th, 19th, 20th, or 21st ed.;
 5835 Method 2550.
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5837 ~~BOARD NOTE: On March 12, 2007 (at 72 Fed. Reg. 11200), USEPA amended~~
 5838 ~~the entries for total coliforms, fecal coliforms, heterotrophic bacteria, turbidity,~~
 5839 ~~and temperature at corresponding 40 CFR 141.74(a)(1) to allow the use of~~
 5840 ~~Standard Methods Online (at www.standardmethods.org), Method 2130 B (as~~
 5841 ~~approved in 2001); Method 9215 B (as approved in 2000); Method 9221 A, B,~~
 5842 ~~and C (as approved in 1999); Method 9222 A, B, C, and D (as approved in 1997);~~
 5843 ~~and Method 9223 B (as approved in 1997). The Board has instead cited to the~~
 5844 ~~21st edition of Standard Methods for the Examination of Water and Wastewater~~
 5845 ~~(the printed version of Standard Methods), since the versions of Method 2130,~~
 5846 ~~Method 9215, Method 9221, Method 9222, and Method 9223 that appear in that~~
 5847 ~~printed volume are those cited by USEPA as acceptable for use. USEPA later~~
 5848 ~~added Method 2130 B; Method 9215 B; Method 9221 A, B, C, and E; Method~~
 5849 ~~9222 A, B, C, and D; and Method 9223 from the 21st edition of Standard Methods~~
 5850 ~~as an approved alternative method in appendix A to subpart C of 40 CFR 141,~~
 5851 ~~added on June 3, 2008 (at 73 Fed. Reg. 31616).~~
 5852

- 5853 b) A supplier must measure residual disinfectant concentrations with one of the
 5854 following analytical methods:
 5855

- 5856 1) Free chlorine.
 5857

- 5858 A) Amperometric Titration.
 5859

5860 i) Standard Methods, 18th, 19th, 20th, or 21st ed.; Method
 5861 4500-C1 D.
 5862

5863 ii) ASTM Method D1253-03 or D1253-08~~D 1253-03~~.
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- 5865 B) DPD Ferrous Titrimetric: Standard Methods, 18th, 19th, 20th, or
 5866 21st ed.; Method 4500-C1 F.
 5867

- 5868 C) DPD Colimetric: Standard Methods, 18th, 19th, 20th, or 21st ed.;

5869 Method 4500-CI G.
5870

5871 D) Syringaldazine (FACTS): Standard Methods, 18th, 19th, 20th, or
5872 21st ed., Method 4500-CI H.
5873

5874 E) On-line chlorine analyzer: USEPA OGWDW Methods, Method
5875 334.0.
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5877 F) Amperometric sensor: Palintest ChloroSense.
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5879 BOARD NOTE: USEPA added Standard Methods, 21st ed., Methods
5880 4500-CI D, F, G, and H; Method 4500-CI O₂ C and E as approved
5881 alternative methods for free chlorine in appendix A to subpart C of 40
5882 CFR 141 on June 3, 2008 (at 73 Fed. Reg. 31616). USEPA added ASTM
5883 Method D1253-08, USEPA OGWDW Methods, Method 334.0, and
5884 Palintest ChloroSense as approved alternative methods for free chlorine in
5885 appendix A to subpart C of 40 CFR 141 on November 10, 2009 (at 74
5886 Fed. Reg. 57908).
5887

5888 2) Total chlorine.
5889

5890 A) Amperometric Titration:-
5891

5892 i) Standard Methods, 18th, 19th, 20th, or 21st ed., Method
5893 4500-CI D.
5894

5895 ii) ASTM Method D1253-03 or D1253-08D-1253-03.
5896

5897 B) Amperometric Titration (low level measurement): Standard
5898 Methods, 18th, 19th, 20th, or 21st ed., Method 4500-CI E.
5899

5900 C) DPD Ferrous Titrimetric: Standard Methods, 18th, 19th, 20th, or
5901 21st ed., Method 4500-CI F.
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5903 D) DPD Colimetric: Standard Methods, 18th, 19th, 20th, or 21st ed.,
5904 Method 4500-CI G.
5905

5906 E) Iodometric Electrode: Standard Methods, 18th, 19th, 20th, or 21st
5907 ed., Method 4500-CI I.
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5909 F) On-line chlorine analyzer: USEPA OGWDW Methods, Method
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G) Amperometric sensor: Palintest ChloroSense.

BOARD NOTE: USEPA added Standard Methods, 21st ed., Methods 4500-Cl D, E, F, G, and I as approved alternative methods for total chlorine in appendix A to subpart C of 40 CFR 141 on June 3, 2008 (at 73 Fed. Reg. 31616). USEPA added ASTM Method D1253-08, USEPA OGWDW Methods, Method 334.0, and Palintest ChloroSense as approved alternative methods for total chlorine in appendix A to subpart C of 40 CFR 141 on November 10, 2009 (at 74 Fed. Reg. 57908).

3) Chlorine dioxide.

- A) Amperometric Titration: Standard Methods, 18th, 19th, 20th, or 21st ed.; Method 4500-ClO₂ C or E.
- B) DPD Method: Standard Methods, 18th, 19th or 20th ed.; Method 4500-ClO₂ D.
- C) Spectrophotometric: USEPA OGWDW Methods, Method 327.0 (rev. 1.1).

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

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.

5955 BOARD NOTE: USEPA added Standard Methods, 21st ed., Method
5956 4500-ClO₂ C, D, and E and Method 4500-O₃ B as approved alternative
5957 methods for chlorine dioxide in appendix A to subpart C of 40 CFR 141
5958 on June 3, 2008 (at 73 Fed. Reg. 31616).
5959

5960 ~~BOARD NOTE: On March 12, 2007 (at 72 Fed. Reg. 11200), USEPA amended~~
5961 ~~the entries for free chlorine, total chlorine, chlorine dioxide, and ozone at~~
5962 ~~corresponding 40 CFR 141.74(a)(2) to allow the use of Standard Methods Online~~
5963 ~~(at www.standardmethods.org), Method 4500-Cl D, E, F, G, and H (as approved~~
5964 ~~in 2000); Method 4500-ClO₂-C and E (as approved in 2000); and Method 4500-~~
5965 ~~O₃-B (as approved in 1997). The Board has instead cited to the 21st edition of~~
5966 ~~Standard Methods for the Examination of Water and Wastewater (the printed~~
5967 ~~version of Standard Methods), since the versions of Method 4500-Cl, Method~~
5968 ~~4500-ClO₂, and Method 4500-O₃ that appear in that printed volume are those~~
5969 ~~cited by USEPA as acceptable for use. USEPA later added Method 4500-Cl D, E,~~
5970 ~~F, G, and H; Method 4500-ClO₂-C and E; and Method 4500-O₃-B from the 21st~~
5971 ~~edition of Standard Methods as an approved alternative method in appendix A to~~
5972 ~~subpart C of 40 CFR 141, added on June 3, 2008 (at 73 Fed. Reg. 31616).~~
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5974 BOARD NOTE: Derived from 40 CFR 141.74(a)-(2007) and appendix A to 40 CFR 141
5975 (2009), as added at 73 Fed. Reg. 31616 (June 3, 2008).
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5977 (Source: Amended at 35 Ill. Reg. _____, effective _____)
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5979 SUBPART N: INORGANIC MONITORING AND ANALYTICAL REQUIREMENTS
5980

5981 **Section 611.611 Inorganic Analysis**
5982

5983 Analytical methods are from documents incorporated by reference in Section 611.102. These are
5984 mostly referenced by a short name defined by Section 611.102(a). Other abbreviations are
5985 defined in Section 611.101.
5986

- 5987 a) Analysis for the following contaminants must be conducted using the following
5988 methods or an alternative method approved pursuant to Section 611.480. Criteria
5989 for analyzing arsenic, chromium, copper, lead, nickel, selenium, sodium, and
5990 thallium with digestion or directly without digestion, and other analytical
5991 procedures, are contained in USEPA Technical Notes, incorporated by reference
5992 in Section 611.102.
5993

5994 BOARD NOTE: Because MDLs reported in USEPA Environmental Metals
5995 Methods 200.7 and 200.9 were determined using a 2× preconcentration step
5996 during sample digestion, MDLs determined when samples are analyzed by direct
5997 analysis (i.e., no sample digestion) will be higher. For direct analysis of cadmium

5998 and arsenic by USEPA Environmental Metals Method 200.7, and arsenic by
 5999 Standard Methods, 18th, 19th, 20th, or 21st ed., Method 3120 B sample
 6000 preconcentration using pneumatic nebulization may be required to achieve lower
 6001 detection limits. Preconcentration may also be required for direct analysis of
 6002 antimony, lead, and thallium by USEPA Environmental Metals Method 200.9;
 6003 antimony and lead by Standard Methods, 18th, 19th, or 21st ed., Method 3113 B;
 6004 and lead by ASTM Method D3559-96 D or D3559-03 D unless multiple in-
 6005 furnace depositions are made.

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 6007 1) Alkalinity.

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 6009 A) Titrimetric.

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 6011 i) ASTM Method D1067-92 B or D1067-02 B; or

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 6013 ii) Standard Methods, 18th, 19th, 20th, or 21st ed., Method
 6014 2320 B.

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 6016 ~~BOARD NOTE: On March 12, 2007 (at 72 Fed. Reg.~~
 6017 ~~11200), USEPA amended the entry for alkalinity by~~
 6018 ~~titrimetric alkalinity in the table at corresponding 40 CFR~~
 6019 ~~141.23(k)(1) to allow the use of Standard Methods Online~~
 6020 ~~(at www.standardmethods.org), Method 2320 B (as~~
 6021 ~~approved in 1997). The Board has instead cited to the 21st~~
 6022 ~~edition of Standard Methods for the Examination of Water~~
 6023 ~~and Wastewater (the printed version of Standard Methods),~~
 6024 ~~since the version of Method 2320 that appears in that~~
 6025 ~~printed volume is that cited by USEPA as acceptable for~~
 6026 ~~use. USEPA later added Method 2320 B from the 21st~~
 6027 ~~edition of Standard Methods as an approved alternative~~
 6028 ~~method in appendix A to subpart C of 40 CFR 141, added~~
 6029 ~~on June 3, 2008 (at 73 Fed. Reg. 31616).~~
 6030

6031 B) Electrometric titration: USGS Methods: Method I-1030-85.

6032
 6033 BOARD NOTE: USEPA added Standard Methods, 21st ed., Method 2320
 6034 B as an approved alternative method for alkalinity in appendix A to
 6035 subpart C of 40 CFR 141 on June 3, 2008 (at 73 Fed. Reg. 31616).
 6036

6037 2) Antimony.

6038
 6039 A) Inductively coupled plasma-mass spectrometry: USEPA
 6040 Environmental Metals Methods, Method 200.8 (rev. 5.3).

- 6041
- 6042 B) Atomic absorption, hydride technique: ASTM Method D3697-92,
- 6043 ~~or D3697-02, or D3697-07.~~
- 6044
- 6045 C) Atomic absorption, platform furnace technique: USEPA
- 6046 Environmental Metals Methods, Method 200.9 (rev.2.2).
- 6047
- 6048 D) Atomic absorption, furnace technique: Standard Methods, 18th,
- 6049 19th, or 21st ed., Method 3113 B.
- 6050

~~BOARD NOTE: On March 12, 2007 (at 72 Fed. Reg. 11200), USEPA amended the entry for antimony by atomic absorption, furnace technique, in the table at corresponding 40 CFR 141.23(k)(1) to allow the use of Standard Methods Online (at www.standardmethods.org), Method 3113 B (as approved in 1999). The Board has instead cited to the 21st edition of Standard Methods for the Examination of Water and Wastewater (the printed version of Standard Methods), since the version of Method 3113 that appears in that printed volume is that cited by USEPA as acceptable for use. USEPA later added Method 3113 B from the 21st edition of Standard Methods as an approved alternative method in appendix A to subpart C of 40 CFR 141, added on June 3, 2008 (at 73 Fed. Reg. 31616).~~

- 6065 E) Axially viewed inductively coupled plasma-atomic emission
- 6066 spectrometry (AVICP-AES): USEPA NERL Methods: Method
- 6067 200.5.
- 6068

~~BOARD NOTE: USEPA added this method as an approved alternative method in appendix A to subpart C of 40 CFR 141, added on June 3, 2008 (at 73 Fed. Reg. 31616).~~

3) Arsenic.

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6075 BOARD NOTE: If ultrasonic nebulization is used in the determination of

6076 arsenic by ~~Method~~Methods 200.7, 200.8, or Standard Methods, 18th, 19th,

6077 20th, or 21st ed., 3120 B, the arsenic must be in the pentavalent state to

6078 provide uniform signal response. For methods 200.7 and 3120 B, both

6079 samples and standards must be diluted in the same mixed acid matrix

6080 concentration of nitric and hydrochloric acid with the addition of 100 µl

6081 of 30% hydrogen peroxide per 100 ml of solution. For direct analysis of

6082 arsenic with ~~Method~~method 200.8 using ultrasonic nebulization, samples

6083 and standards must contain one mg/l of sodium hypochlorite.

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A) Inductively coupled plasma.

~~BOARD NOTE: Effective January 23, 2006, a supplier may no longer employ analytical methods using the ICP-AES technology because the detection limits for these methods are 0.008 mg/l or higher. This restriction means that the two ICP-AES methods (USEPA Environmental Metals Method 200.7 and Standard Methods, Method 3120 B) approved for use for the MCL of 0.05 mg/l may not be used for compliance determinations for the revised MCL of 0.010 mg/l. However, prior to the 2005 through 2007 compliance period, a supplier may have compliance samples analyzed with these less sensitive methods.~~

- ~~i) USEPA Environmental Metals Methods: Method 200.7; or~~
- ~~ii) Standard Methods, 18th, 19th, 20th, or 21st ed.: Method 3120 B.~~

~~BOARD NOTE: On March 12, 2007 (at 72 Fed. Reg. 11200), USEPA amended the entry for arsenic by inductively coupled plasma in the table at corresponding 40 CFR 141.23(k)(1) to allow the use of Standard Methods Online (at www.standardmethods.org), Method 3120 B (as approved in 1999). The Board has instead cited to the 21st edition of Standard Methods for the Examination of Water and Wastewater (the printed version of Standard Methods), since the version of Method 3120 that appears in that printed volume is that cited by USEPA as acceptable for use. USEPA later added Method 3120 B from the 21st edition of Standard Methods as an approved alternative method for several other metals in appendix A to subpart C of 40 CFR 141, added on June 3, 2008 (at 73 Fed. Reg. 31616). USEPA, however, did not specifically add Method 2130 B as to arsenic in the June 3, 2008 action.~~

- ~~A)B) Inductively coupled plasma-mass spectrometry: USEPA Environmental Metals Methods, Method 200.8 (rev. 5.3).~~
- ~~B)C) Atomic absorption, platform furnace technique: USEPA Environmental Metals Methods, Method 200.9 (rev. 2.2).~~
- ~~C)D) Atomic absorption, furnace technique.~~

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- i) ASTM Method D2972-97 C, D2972-03 C, or D2972-08 C
or ~~2972-03 C~~; or
- ii) Standard Methods, 18th, 19th, or 21st ed.; Method 3113 B.

~~BOARD NOTE: On March 12, 2007 (at 72 Fed. Reg. 11200), USEPA amended the entry for arsenic by atomic absorption, furnace technique, in the table at corresponding 40 CFR 141.23(k)(1) to allow the use of Standard Methods Online (at www.standardmethods.org), Method 3113 B (as approved in 1999). The Board has instead cited to the 21st edition of Standard Methods for the Examination of Water and Wastewater (the printed version of Standard Methods), since the version of Method 3113 that appears in that printed volume is that cited by USEPA as acceptable for use. USEPA later added Method 3113 B from the 21st edition of Standard Methods as an approved alternative method in appendix A to subpart C of 40 CFR 141, added on June 3, 2008 (at 73 Fed. Reg. 31616).~~

D)E) Atomic absorption, hydride technique.

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- i) ASTM Method D2972-97 B, D2972-03 C, or D2972-08 B
or ~~2972-03 B~~; or
- ii) Standard Methods, 18th, 19th, or 21st ed.; Method 3114 B.

~~BOARD NOTE: On March 12, 2007 (at 72 Fed. Reg. 11200), USEPA amended the entry for antimony by atomic absorption, hydride technique, in the table at corresponding 40 CFR 141.23(k)(1) to allow the use of Standard Methods Online (at www.standardmethods.org), Method 3114 B (as approved in 1997). The Board has instead cited to the 21st edition of Standard Methods for the Examination of Water and Wastewater (the printed version of Standard Methods), since the version of Method 3114 that appears in that printed volume is that cited by USEPA as acceptable for use. USEPA later added Method 3114 B from the 21st edition of Standard Methods as an approved alternative method in appendix A to subpart C of 40 CFR 141, added on June 3, 2008 (at 73 Fed. Reg. 31616).~~

6170 E)F) Axially viewed inductively coupled plasma-atomic emission
 6171 spectrometry (AVICP-AES): USEPA ~~NERL Methods~~ Method
 6172 200.5.
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6174 BOARD NOTE: USEPA added Standard Methods, 21st ed., Method 3113
 6175 B and USEPA NERL Method 200.5 as approved alternative methods for
 6176 arsenic in appendix A to subpart C of 40 CFR 141 on June 3, 2008 (at 73
 6177 Fed. Reg. 31616). USEPA added ASTM Methods D2972-08 B and C as
 6178 approved alternative methods for arsenic in appendix A to subpart C of 40
 6179 CFR 141 on November 10, 2009 (at 74 Fed. Reg. 57908).
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~~BOARD NOTE: USEPA added this method as an approved
 alternative method in appendix A to subpart C of 40 CFR 141,
 added on June 3, 2008 (at 73 Fed. Reg. 31616).~~

6185 4) Asbestos: Transmission electron microscopy: USEPA Asbestos
 6186 ~~Method Methods-100.1~~ or USEPA Asbestos ~~Method Methods-100.2~~.
 6187

6188 5) Barium.
 6189

6190 A) Inductively coupled plasma.

6192 i) USEPA Environmental Metals Methods, Method 200.7
 6193 (rev. 4.4); or

6195 ii) Standard Methods, 18th, 19th, 20th, or 21st ed., Method
 6196 3120 B.
 6197

6198 ~~BOARD NOTE: On March 12, 2007 (at 72 Fed. Reg.~~
 6199 ~~11200), USEPA amended the entry for barium by~~
 6200 ~~inductively coupled plasma in the table at corresponding 40~~
 6201 ~~CFR 141.23(k)(1) to allow the use of Standard Methods~~
 6202 ~~Online (at www.standardmethods.org), Method 3120 B (as~~
 6203 ~~approved in 1999). The Board has instead cited to the 21st~~
 6204 ~~edition of Standard Methods for the Examination of Water~~
 6205 ~~and Wastewater (the printed version of Standard Methods),~~
 6206 ~~since the version of Method 3120 that appears in that~~
 6207 ~~printed volume is that cited by USEPA as acceptable for~~
 6208 ~~use. USEPA later added Method 3120 B from the 21st~~
 6209 ~~edition of Standard Methods as an approved alternative~~
 6210 ~~method in appendix A to subpart C of 40 CFR 141, added~~
 6211 ~~on June 3, 2008 (at 73 Fed. Reg. 31616).~~
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- B) Inductively coupled plasma-mass spectrometry: USEPA Environmental Metals Methods, Method 200.8 (rev. 5.3).
 - C) Atomic absorption, direct aspiration technique: Standard Methods, 18th, 19th, or 21st ed., Method 3111 D.

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~~BOARD NOTE: On March 12, 2007 (at 72 Fed. Reg. 11200), USEPA amended the entry for barium by atomic absorption, direct aspiration technique, in the table at corresponding 40 CFR 141.23(k)(1) to allow the use of Standard Methods Online (at www.standardmethods.org), Method 3111 D (as approved in 1999). The Board has instead cited to the 21st edition of Standard Methods for the Examination of Water and Wastewater (the printed version of Standard Methods), since the version of Method 3111 that appears in that printed volume is that cited by USEPA as acceptable for use. USEPA later added Method 3111 D from the 21st edition of Standard Methods as an approved alternative method in appendix A to subpart C of 40 CFR 141, added on June 3, 2008 (at 73 Fed. Reg. 31616).~~

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- D) Atomic absorption, furnace technique: Standard Methods, 18th, 19th, or 21st ed., Method 3113 B.

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~~BOARD NOTE: On March 12, 2007 (at 72 Fed. Reg. 11200), USEPA amended the entry for barium by atomic absorption, furnace technique, in the table at corresponding 40 CFR 141.23(k)(1) to allow the use of Standard Methods Online (at www.standardmethods.org), Method 3113 B (as approved in 1999). The Board has instead cited to the 21st edition of Standard Methods for the Examination of Water and Wastewater (the printed version of Standard Methods), since the version of Method 3113 that appears in that printed volume is that cited by USEPA as acceptable for use. USEPA later added Method 3113 B from the 21st edition of Standard Methods as an approved alternative method in appendix A to subpart C of 40 CFR 141, added on June 3, 2008 (at 73 Fed. Reg. 31616).~~

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

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BOARD NOTE: USEPA added Standard Methods, 21st ed., Methods 3111 D, 3113 B, and 3120 B and USEPA NERL Method 200.5 as

6256 approved alternative methods for barium in appendix A to subpart C of 40
 6257 CFR 141 on June 3, 2008 (at 73 Fed. Reg. 31616).

~~BOARD NOTE: USEPA added this method as an approved
 alternative method in appendix A to subpart C of 40 CFR 141,
 added on June 3, 2008 (at 73 Fed. Reg. 31616).~~

6) Beryllium.

A) Inductively coupled plasma.

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

ii) Standard Methods, 18th, 19th, 20th, or 21st ed., Method
 3120 B.

~~BOARD NOTE: On March 12, 2007 (at 72 Fed. Reg.
 11200), USEPA amended the entry for beryllium by
 inductively coupled plasma in the table at corresponding 40
 CFR 141.23(k)(1) to allow the use of Standard Methods
 Online (at www.standardmethods.org), Method 3120 B (as
 approved in 1999). The Board has instead cited to the 21st
 edition of Standard Methods for the Examination of Water
 and Wastewater (the printed version of Standard Methods),
 since the version of Method 3120 that appears in that
 printed volume is that cited by USEPA as acceptable for
 use. USEPA later added Method 3120 B from the 21st
 edition of Standard Methods as an approved alternative
 method in appendix A to subpart C of 40 CFR 141, added
 on June 3, 2008 (at 73 Fed. Reg. 31616).~~

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

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

D) Atomic absorption, furnace technique.

i) ASTM Method D3645-97 B or D3645-03 B; or

ii) Standard Methods, 18th, 19th, or 21st ed., Method 3113 B.

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6300 BOARD NOTE: ~~On March 12, 2007 (at 72 Fed. Reg.~~
6301 ~~11200), USEPA amended the entry for beryllium by atomic~~
6302 ~~absorption, furnace technique, in the table at corresponding~~
6303 ~~40 CFR 141.23(k)(1) to allow the use of Standard Methods~~
6304 ~~Online (at www.standardmethods.org), Method 3113 B (as~~
6305 ~~approved in 1999). The Board has instead cited to the 21st~~
6306 ~~edition of Standard Methods for the Examination of Water~~
6307 ~~and Wastewater (the printed version of Standard Methods),~~
6308 ~~since the version of Method 3113 that appears in that~~
6309 ~~printed volume is that cited by USEPA as acceptable for~~
6310 ~~use. USEPA later added Method 3113 B from the 21st~~
6311 ~~edition of Standard Methods as an approved alternative~~
6312 ~~method in appendix A to subpart C of 40 CFR 141, added~~
6313 ~~on June 3, 2008 (at 73 Fed. Reg. 31616).~~
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- 6315 E) Axially viewed inductively coupled plasma-atomic emission
6316 spectrometry (AVICP-AES): USEPA NERL Methods: Method
6317 200.5.
6318

6319 BOARD NOTE: USEPA added Standard Methods, 21st ed., Methods
6320 3113 B and 3120 B and USEPA NERL Method 200.5 as approved
6321 alternative methods for beryllium in appendix A to subpart C of 40 CFR
6322 141 on June 3, 2008 (at 73 Fed. Reg. 31616). USEPA added ASTM
6323 Method D3645-08 B as an approved alternative method for beryllium in
6324 appendix A to subpart C of 40 CFR 141 on November 10, 2009 (at 74
6325 Fed. Reg. 57908).
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6327 ~~BOARD NOTE: USEPA added this method as an approved~~
6328 ~~alternative method in appendix A to subpart C of 40 CFR 141,~~
6329 ~~added on June 3, 2008 (at 73 Fed. Reg. 31616).~~
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6331 7) Cadmium.
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- 6333 A) Inductively coupled plasma arc furnace: USEPA Environmental
6334 Metals Methods, Method 200.7 (rev. 4.4).
6335
6336 B) Inductively coupled plasma-mass spectrometry: USEPA
6337 Environmental Metals Methods, Method 200.8 (rev. 5.3).
6338
6339 C) Atomic absorption, platform furnace technique: USEPA
6340 Environmental Metals Methods, Method 200.9 (rev. 2.2).
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D) Atomic absorption, furnace technique: Standard Methods, 18th, 19th, or 21st ed.; Method 3113 B.

~~BOARD NOTE: On March 12, 2007 (at 72 Fed. Reg. 11200), USEPA amended the entry for cadmium by atomic absorption, furnace technique, in the table at corresponding 40 CFR 141.23(k)(1) to allow the use of Standard Methods Online (at www.standardmethods.org), Method 3113 B (as approved in 1999). The Board has instead cited to the 21st edition of Standard Methods for the Examination of Water and Wastewater (the printed version of Standard Methods), since the version of Method 3113 that appears in that printed volume is that cited by USEPA as acceptable for use. USEPA later added Method 3113 B from the 21st edition of Standard Methods as an approved alternative method in appendix A to subpart C of 40 CFR 141, added on June 3, 2008 (at 73 Fed. Reg. 31616).~~

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

BOARD NOTE: USEPA added Standard Methods, 21st ed., Method 3113 B and USEPA NERL Method 200.5 as approved alternative methods for cadmium in appendix A to subpart C of 40 CFR 141 on June 3, 2008 (at 73 Fed. Reg. 31616).

~~BOARD NOTE: USEPA added this method as an approved alternative method in appendix A to subpart C of 40 CFR 141, added on June 3, 2008 (at 73 Fed. Reg. 31616).~~

8) Calcium.

A) EDTA titrimetric.

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

~~BOARD NOTE: On March 12, 2007 (at 72 Fed. Reg. 11200), USEPA amended the entry for calcium by EDTA titrimetric in the table at corresponding 40 CFR~~

6385 141.23(k)(1) to allow the use of Standard Methods Online
 6386 (at www.standardmethods.org), Method 3500-Ca D (as
 6387 approved in 1997). The Board has instead cited to the 21st
 6388 edition of Standard Methods for the Examination of Water
 6389 and Wastewater (the printed version of Standard Methods),
 6390 since the version of Method 3500-Ca that appears in that
 6391 printed volume is that cited by USEPA as acceptable for
 6392 use. USEPA later added Method 3500-Ca B from the 21st
 6393 edition of Standard Methods as an approved alternative
 6394 method in appendix A to subpart C of 40 CFR 141, added
 6395 on June 3, 2008 (at 73 Fed. Reg. 31616).
 6396

6397 B) Atomic absorption, direct aspiration.

6398
 6399 i) ASTM Method D511-93 B₂ or D511-03 B₂ or D511-09 B;
 6400 or

6401
 6402 ii) Standard Methods, 18th, 19th, or 21st ed.; Method 3111 B.
 6403

6404 BOARD NOTE: On March 12, 2007 (at 72 Fed. Reg.
 6405 11200), USEPA amended the entry for calcium by atomic
 6406 absorption, direct aspiration, in the table at corresponding
 6407 40 CFR 141.23(k)(1) to allow the use of Standard Methods
 6408 Online (at www.standardmethods.org), Method 3111 B (as
 6409 approved in 1999). The Board has instead cited to the 21st
 6410 edition of Standard Methods for the Examination of Water
 6411 and Wastewater (the printed version of Standard Methods),
 6412 since the version of Method 3111 that appears in that
 6413 printed volume is that cited by USEPA as acceptable for
 6414 use. USEPA later added Method 3111 B from the 21st
 6415 edition of Standard Methods as an approved alternative
 6416 method in appendix A to subpart C of 40 CFR 141, added
 6417 on June 3, 2008 (at 73 Fed. Reg. 31616).
 6418

6419 C) Inductively coupled plasma.

6420
 6421 i) USEPA Environmental Metals Methods; Method 200.7
 6422 (rev. 4.4); or

6423
 6424 ii) Standard Methods, 18th, 19th, 20th, or 21st ed.; Method
 6425 3120 B.
 6426

6427 BOARD NOTE: ~~On March 12, 2007 (at 72 Fed. Reg.~~
 6428 ~~11200), USEPA amended the entry for calcium by~~
 6429 ~~inductively coupled plasma in the table at corresponding 40~~
 6430 ~~CFR 141.23(k)(1) to allow the use of Standard Methods~~
 6431 ~~Online (at www.standardmethods.org), Method 3120 B (as~~
 6432 ~~approved in 1999). The Board has instead cited to the 21st~~
 6433 ~~edition of Standard Methods for the Examination of Water~~
 6434 ~~and Wastewater (the printed version of Standard Methods),~~
 6435 ~~since the version of Method 3120 that appears in that~~
 6436 ~~printed volume is that cited by USEPA as acceptable for~~
 6437 ~~use. USEPA later added Method 3120 B from the 21st~~
 6438 ~~edition of Standard Methods as an approved alternative~~
 6439 ~~method in appendix A to subpart C of CFR 141, added on~~
 6440 ~~June 3, 2008 (at 73 Fed. Reg. 31616).~~

6441
 6442 D) Ion chromatography: ASTM Method D6919-03.

6443
 6444 E) Axially viewed inductively coupled plasma-atomic emission
 6445 spectrometry (AVICP-AES): ~~USEPA NERL Methods:~~ Method
 6446 200.5.

6447
 6448 BOARD NOTE: USEPA added Standard Methods, 21st ed., Methods
 6449 3111 B, 3120 B, and 3500-Ca B and USEPA NERL Method 200.5 as
 6450 approved alternative methods for calcium in appendix A to subpart C of
 6451 40 CFR 141 on June 3, 2008 (at 73 Fed. Reg. 31616). USEPA added
 6452 ASTM Methods D511-09 A and B as approved alternative methods for
 6453 calcium in appendix A to subpart C of 40 CFR 141 on November 10, 2009
 6454 (at 74 Fed. Reg. 57908).

6455
 6456 ~~BOARD NOTE: USEPA added this method as an approved~~
 6457 ~~alternative method in appendix A to subpart C of 40 CFR 141,~~
 6458 ~~added on June 3, 2008 (at 73 Fed. Reg. 31616).~~

6459
 6460 9) Chromium.

6461
 6462 A) Inductively coupled plasma.

6463
 6464 i) USEPA Environmental Metals Methods, Method 200.7
 6465 (rev. 4.4); or

6466
 6467 ii) Standard Methods, 18th, 19th, 20th, or 21st ed., Method
 6468 3120 B.

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6470 BOARD NOTE: ~~On March 12, 2007 (at 72 Fed. Reg.~~
 6471 ~~11200), USEPA amended the entry for chromium by~~
 6472 ~~inductively coupled plasma in the table at corresponding 40~~
 6473 ~~CFR 141.23(k)(1) to allow the use of Standard Methods~~
 6474 ~~Online (at www.standardmethods.org), Method 3120 B (as~~
 6475 ~~approved in 1999). The Board has instead cited to the 21st~~
 6476 ~~edition of Standard Methods for the Examination of Water~~
 6477 ~~and Wastewater (the printed version of Standard Methods),~~
 6478 ~~since the version of Method 3120 that appears in that~~
 6479 ~~printed volume is that cited by USEPA as acceptable for~~
 6480 ~~use. USEPA later added Method 3120 B from the 21st~~
 6481 ~~edition of Standard Methods as an approved alternative~~
 6482 ~~method in appendix A to subpart C of 40 CFR 141, added~~
 6483 ~~on June 3, 2008 (at 73 Fed. Reg. 31616).~~

6485 B) Inductively coupled plasma-mass spectrometry: USEPA
 6486 Environmental Metals Methods, Method 200.8 (rev. 5.3).

6488 C) Atomic absorption, platform furnace technique: USEPA
 6489 Environmental Metals Methods, Method 200.9 (rev. 2.2).

6491 D) Atomic absorption, furnace technique: Standard Methods, 18th,
 6492 19th, or 21st ed., Method 3113 B.

6494 BOARD NOTE: ~~On March 12, 2007 (at 72 Fed. Reg. 11200),~~
 6495 ~~USEPA amended the entry for chromium by atomic absorption,~~
 6496 ~~furnace technique, in the table at corresponding 40 CFR~~
 6497 ~~141.23(k)(1) to allow the use of Standard Methods Online (at~~
 6498 ~~www.standardmethods.org), Method 3113 B (as approved in~~
 6499 ~~1999). The Board has instead cited to the 21st edition of Standard~~
 6500 ~~Methods for the Examination of Water and Wastewater (the~~
 6501 ~~printed version of Standard Methods), since the version of Method~~
 6502 ~~3113 that appears in that printed volume is that cited by USEPA as~~
 6503 ~~acceptable for use. USEPA later added Method 3113 B from the~~
 6504 ~~21st edition of Standard Methods as an approved alternative~~
 6505 ~~method in appendix A to subpart C of 40 CFR 141, added on June~~
 6506 ~~3, 2008 (at 73 Fed. Reg. 31616).~~

6508 E) Axially viewed inductively coupled plasma-atomic emission
 6509 spectrometry (AVICP-AES): USEPA NERLMethods: Method
 6510 200.5.
 6511

6512 BOARD NOTE: USEPA added Standard Methods, 21st ed., Methods
6513 3113 B and 3120 B and USEPA NERL Method 200.5 as approved
6514 alternative methods for chromium in appendix A to subpart C of 40 CFR
6515 141 on June 3, 2008 (at 73 Fed. Reg. 31616).
6516

6517 ~~BOARD NOTE: USEPA added this method as an approved~~
6518 ~~alternative method in appendix A to subpart C of 40 CFR 141,~~
6519 ~~added on June 3, 2008 (at 73 Fed. Reg. 31616).~~
6520

6521 10) Copper.

6522 A) Atomic absorption, furnace technique.

6523 i) ~~ASTM Method D1688-95 C₂, or D1688-02 C₂, or D1688-07~~
6524 ~~C₂; or~~

6525 ii) Standard Methods, 18th, 19th, or 21st ed.; Method 3113 B.

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6530 ~~BOARD NOTE: On March 12, 2007 (at 72 Fed. Reg.~~
6531 ~~11200), USEPA amended the entry for copper by atomic~~
6532 ~~absorption, furnace technique, in the table at corresponding~~
6533 ~~40 CFR 141.23(k)(1) to allow the use of Standard Methods~~
6534 ~~Online (at www.standardmethods.org), Method 3113 B (as~~
6535 ~~approved in 1999). The Board has instead cited to the 21st~~
6536 ~~edition of Standard Methods for the Examination of Water~~
6537 ~~and Wastewater (the printed version of Standard Methods),~~
6538 ~~since the version of Method 3113 that appears in that~~
6539 ~~printed volume is that cited by USEPA as acceptable for~~
6540 ~~use. USEPA later added Method 3113 B from the 21st~~
6541 ~~edition of Standard Methods as an approved alternative~~
6542 ~~method in appendix A to subpart C of 40 CFR 141, added~~
6543 ~~on June 3, 2008 (at 73 Fed. Reg. 31616).~~
6544

6545 B) Atomic absorption, direct aspiration.

6546 i) ~~ASTM Method D1688-95 A₁, or D1688-02 A₁, or D1688-07~~
6547 ~~A₁; or~~

6548 ii) Standard Methods, 18th, 19th, or 21st ed.; Method 3111 B.

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6552 ~~BOARD NOTE: On March 12, 2007 (at 72 Fed. Reg.~~
6553 ~~11200), USEPA amended the entry for copper by atomic~~
6554 ~~absorption, direct aspiration, in the table at corresponding~~

6555 40 CFR 141.23(k)(1) to allow the use of Standard Methods
 6556 Online (at www.standardmethods.org), Method 3111 B (as
 6557 approved in 1999). The Board has instead cited to the 21st
 6558 edition of Standard Methods for the Examination of Water
 6559 and Wastewater (the printed version of Standard Methods),
 6560 since the version of Method 3111 that appears in that
 6561 printed volume is that cited by USEPA as acceptable for
 6562 use. USEPA later added Method 3111 B from the 21st
 6563 edition of Standard Methods as an approved alternative
 6564 method in appendix A to subpart C of 40 CFR 141, added
 6565 on June 3, 2008 (at 73 Fed. Reg. 31616).
 6566

6567 C) Inductively coupled plasma.

- 6568
- 6569 i) USEPA Environmental Metals Methods, ÷ Method 200.7
 6570 (rev. 4.4); or
 - 6571
 - 6572 ii) Standard Methods, 18th, 19th, 20th, or 21st ed., ÷ Method
 6573 3120 B.
 6574

6575 BOARD NOTE: On March 12, 2007 (at 72 Fed. Reg.
 6576 11200), USEPA amended the entry for copper by
 6577 inductively coupled plasma in the table at corresponding 40
 6578 CFR 141.23(k)(1) to allow the use of Standard Methods
 6579 Online (at www.standardmethods.org), Method 3120 B (as
 6580 approved in 1999). The Board has instead cited to the 21st
 6581 edition of Standard Methods for the Examination of Water
 6582 and Wastewater (the printed version of Standard Methods),
 6583 since the version of Method 3120 that appears in that
 6584 printed volume is that cited by USEPA as acceptable for
 6585 use. USEPA later added Method 3120 B from the 21st
 6586 edition of Standard Methods as an approved alternative
 6587 method in appendix A to subpart C of 40 CFR 141, added
 6588 on June 3, 2008 (at 73 Fed. Reg. 31616).
 6589

6590 D) Inductively coupled plasma-mass spectrometry: USEPA
 6591 Environmental Metals Methods, ÷ Method 200.8 (rev. 5.3).

6592

6593 E) Atomic absorption, platform furnace technique: USEPA
 6594 Environmental Metals Methods, ÷ Method 200.9 (rev. 2.2).
 6595

6596 F) Axially viewed inductively coupled plasma-atomic emission
6597 spectrometry (AVICP-AES); USEPA ~~NERL Methods~~; Method
6598 200.5.
6599

6600 BOARD NOTE: USEPA added Standard Methods, 21st ed., Methods
6601 3111 B, 3113 B, and 3120 B and USEPA NERL Method 200.5 as an
6602 approved alternative method for copper in appendix A to subpart C of 40
6603 CFR 141 on June 3, 2008 (at 73 Fed. Reg. 31616). USEPA added ASTM
6604 Methods D1688-07 A and C as approved alternative methods for copper in
6605 appendix A to subpart C of 40 CFR 141 on November 10, 2009 (at 74
6606 Fed. Reg. 57908).
6607

6608 ~~BOARD NOTE: USEPA added this method as an approved~~
6609 ~~alternative method in appendix A to subpart C of 40 CFR 141,~~
6610 ~~added on June 3, 2008 (at 73 Fed. Reg. 31616).~~
6611

6612 11) Conductivity; Conductance.
6613

6614 A) ASTM Method D1125-95(1999) A; or
6615

6616 B) Standard Methods, 18th, 19th, 20th, or 21st ed.; Method 2510 B.
6617

6618 BOARD NOTE: USEPA added Standard Methods, 21st ed., Method 2510 B as an
6619 approved alternative method for conductivity in appendix A to subpart C of 40
6620 CFR 141 on June 3, 2008 (at 73 Fed. Reg. 31616).
6621

6622 ~~BOARD NOTE: On March 12, 2007 (at 72 Fed. Reg. 11200),~~
6623 ~~USEPA amended the entry for conductivity by conductance in the~~
6624 ~~table at corresponding 40 CFR 141.23(k)(1) to allow the use of~~
6625 ~~Standard Methods Online (at www.standardmethods.org), Method~~
6626 ~~2510 B (as approved in 1997). The Board has instead cited to the~~
6627 ~~21st edition of Standard Methods for the Examination of Water and~~
6628 ~~Wastewater (the printed version of Standard Methods), since the~~
6629 ~~version of Method 2510 that appears in that printed volume is that~~
6630 ~~cited by USEPA as acceptable for use. USEPA later added~~
6631 ~~Method 2510 B from the 21st edition of Standard Methods as an~~
6632 ~~approved alternative method in appendix A to subpart C of 40 CFR~~
6633 ~~141, added on June 3, 2008 (at 73 Fed. Reg. 31616).~~
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6635 12) Cyanide.
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- A) Manual distillation (ASTM Method D2036-98 A or Standard Methods, 18th, 19th, or 20th ed., Method 4500-CN C), followed by spectrophotometric, amenable.
 - i) ASTM Method D2036-98 B or 2036-06 B; or

 BOARD NOTE: ~~USEPA added ASTM Method 2036-06 A as an approved alternative method in appendix A to subpart C of 40 CFR 141, added on June 3, 2008 (at 73 Fed. Reg. 31616).~~
 - ii) Standard Methods, 18th, 19th, 20th, or 21st ed., Method 4500-CN G.

 BOARD NOTE: ~~On March 12, 2007 (at 72 Fed. Reg. 11200), USEPA amended the entry for cyanide by spectrophotometric, amenable, in the table at corresponding 40 CFR 141.23(k)(1) to allow the use of Standard Methods Online (at www.standardmethods.org), Method 4500-CN G (as approved in 1999). The Board has instead cited to the 21st edition of Standard Methods for the Examination of Water and Wastewater (the printed version of Standard Methods), since the version of Method 4500-CN that appears in that printed volume is that cited by USEPA as acceptable for use. USEPA later added Method 4500-CN G from the 21st edition of Standard Methods as an approved alternative method in appendix A to subpart C of 40 CFR 141, added on June 3, 2008 (at 73 Fed. Reg. 31616).~~
 - B) Manual distillation (ASTM Method D2036-98 A or Standard Methods, 18th, 19th, or 20th ed., Method 4500-CN C), followed by spectrophotometric, manual.
 - i) ASTM Method D2036-98 A or ~~D2036-06 A~~ 2036-06 A;
 - ii) Standard Methods, 18th, 19th, 20th, or 21st ed., Method 4500-CN E; or

 BOARD NOTE: ~~On March 12, 2007 (at 72 Fed. Reg. 11200), USEPA amended the entry for cyanide by spectrophotometric, manual, in the table at corresponding 40 CFR 141.23(k)(1) to allow the use of Standard Methods Online (at www.standardmethods.org), Method 4500-CN~~

6680 E (as approved in 1999). The Board has instead cited to the
 6681 21st edition of Standard Methods for the Examination of
 6682 Water and Wastewater (the printed version of Standard
 6683 Methods), since the version of Method 4500-CN⁻ that
 6684 appears in that printed volume is that cited by USEPA as
 6685 acceptable for use. USEPA later added Method 4500-CN⁻
 6686 E from the 21st edition of Standard Methods as an approved
 6687 alternative method in appendix A to subpart C of 40 CFR
 6688 141, added on June 3, 2008 (at 73 Fed. Reg. 31616).
 6689

6690 iii) USGS Methods, Method I-3300-85.

6691
 6692 C) Spectrophotometric, semiautomated: USEPA Environmental
 6693 Inorganic Methods, Method 335.4 (rev. 1.0).
 6694

6695 D) Selective electrode: Standard Methods, 18th, 19th, 20th, or 21st ed.,
 6696 Method 4500-CN⁻ F.
 6697

6698 ~~BOARD NOTE: On March 12, 2007 (at 72 Fed. Reg. 11200),~~
 6699 ~~USEPA amended the entry for cyanide by selective electrode in the~~
 6700 ~~table at corresponding 40 CFR 141.23(k)(1) to allow the use of~~
 6701 ~~Standard Methods Online (at www.standardmethods.org), Method~~
 6702 ~~4500-CN⁻ F (as approved in 1999). The Board has instead cited to~~
 6703 ~~the 21st edition of Standard Methods for the Examination of Water~~
 6704 ~~and Wastewater (the printed version of Standard Methods), since~~
 6705 ~~the version of Method 4500-CN⁻ that appears in that printed~~
 6706 ~~volume is that cited by USEPA as acceptable for use. USEPA~~
 6707 ~~later added Method 4500-CN⁻ F from the 21st edition of Standard~~
 6708 ~~Methods as an approved alternative method in appendix A to~~
 6709 ~~subpart C of 40 CFR 141, added on June 3, 2008 (at 73 Fed. Reg.~~
 6710 ~~31616).~~
 6711

6712 E) UV/Distillation/Spectrophotometric: Kelada 01.
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6714 F) Microdistillation/Flow Injection/Spectrophotometric:
 6715 QuickChem 10-204-00-1-X.
 6716

6717 G) Ligand exchange and amperometry.
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6719 i) ASTM Method D6888-03.
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6721 ii) OI Analytical Method OIA-1677 DW.
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6723 H) Gas chromatography-mass spectrometry headspace: Method
6724 ME355.01.
6725

6726 BOARD NOTE: USEPA added ASTM Method D2036-06 A and
6727 Standard Methods, 21st ed., Methods 4500-CN E, F, and G as approved
6728 alternative methods for cyanide in appendix A to subpart C of 40 CFR 141
6729 on June 3, 2008 (at 73 Fed. Reg. 31616). USEPA added Method
6730 ME355.01 as an approved alternative method for cyanide in appendix A to
6731 subpart C of 40 CFR 141 on August 3, 2009 (at 74 Fed. Reg. 38348).
6732

6733 13) Fluoride.
6734

6735 A) Ion Chromatography.
6736

6737 i) USEPA Environmental Inorganic Methods, Method 300.0
6738 (rev. 2.1) or USEPA Organic and Inorganic Methods,
6739 Method 300.1 (rev. 1.0);
6740

6741 ii) ASTM Method D4327-97 or D4327-03; or
6742

6743 iii) Standard Methods, 18th, 19th, 20th, or 21st ed., Method
6744 4110 B.
6745

6746 ~~BOARD NOTE: On March 12, 2007 (at 72 Fed. Reg.~~
6747 ~~11200), USEPA amended the entry for fluoride by ion~~
6748 ~~chromatography in the table at corresponding 40 CFR~~
6749 ~~141.23(k)(1) to allow the use of Standard Methods Online~~
6750 ~~(at www.standardmethods.org), Method 4110 B (as~~
6751 ~~approved in 2000). The Board has instead cited to the 21st~~
6752 ~~edition of Standard Methods for the Examination of Water~~
6753 ~~and Wastewater (the printed version of Standard Methods),~~
6754 ~~since the version of Method 4110 that appears in that~~
6755 ~~printed volume is that cited by USEPA as acceptable for~~
6756 ~~use. USEPA later added Method 4110 B from the 21st~~
6757 ~~edition of Standard Methods as an approved alternative~~
6758 ~~method in appendix A to subpart C of 40 CFR 141, added~~
6759 ~~on June 3, 2008 (at 73 Fed. Reg. 31616).~~
6760

6761 B) Manual distillation, colorimetric SPADNS: Standard Methods,
6762 18th, 19th, 20th, or 21st ed., Method 4500-F B and D.
6763

6764 ~~BOARD NOTE: On March 12, 2007 (at 72 Fed. Reg. 11200),~~
6765 ~~USEPA amended the entry for fluoride by manual distillation,~~

colorimetry SPADNS, in the table at corresponding 40 CFR 141.23(k)(1) to allow the use of Standard Methods Online (at www.standardmethods.org), Method 4500 F⁻ B and D (as approved in 1997). The Board has instead cited to the 21st edition of Standard Methods for the Examination of Water and Wastewater (the printed version of Standard Methods), since the version of Method 4500 F⁻ that appears in that printed volume is that cited by USEPA as acceptable for use. USEPA later added Method 4500 F⁻ B and D from the 21st edition of Standard Methods as an approved alternative method in appendix A to subpart C of 40 CFR 141, added on June 3, 2008 (at 73 Fed. Reg. 31616).

C) Manual electrode.

- i) ASTM Method D1179-93 B, D1179-99 B, or D1179-04 B; or

~~BOARD NOTE: USEPA added ASTM Method D1179-04 B as an approved alternative method in appendix A to subpart C of 40 CFR 141, added on June 3, 2008 (at 73 Fed. Reg. 31616).~~

- ii) Standard Methods, 18th, 19th, 20th, or 21st ed.; Method 4500-F⁻ C.

~~BOARD NOTE: On March 12, 2007 (at 72 Fed. Reg. 11200), USEPA amended the entry for fluoride by manual electrode in the table at corresponding 40 CFR 141.23(k)(1) to allow the use of Standard Methods Online (at www.standardmethods.org), Method 4500 F⁻ C (as approved in 1997). The Board has instead cited to the 21st edition of Standard Methods for the Examination of Water and Wastewater (the printed version of Standard Methods), since the version of Method 4500 F⁻ that appears in that printed volume is that cited by USEPA as acceptable for use. USEPA later added Method 4500 F⁻ C from the 21st edition of Standard Methods as an approved alternative method in appendix A to subpart C of 40 CFR 141, added on June 3, 2008 (at 73 Fed. Reg. 31616).~~

D) Automated electrode: Technicon Methods; Method 380-75WE.

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- E) Automated alizarin.
 - i) Standard Methods, 18th, 19th, 20th, or 21st ed., Method 4500-F E; or

~~BOARD NOTE: On March 12, 2007 (at 72 Fed. Reg. 11200), USEPA amended the entry for fluoride by automated alizarin in the table at corresponding 40 CFR 141.23(k)(1) to allow the use of Standard Methods Online (at www.standardmethods.org), Method 4500 F E (as approved in 1997). The Board has instead cited to the 21st edition of Standard Methods for the Examination of Water and Wastewater (the printed version of Standard Methods), since the version of Method 4500 F that appears in that printed volume is that cited by USEPA as acceptable for use. USEPA later added Method 4500 F E from the 21st edition of Standard Methods as an approved alternative method in appendix A to subpart C of 40 CFR 141, added on June 3, 2008 (at 73 Fed. Reg. 31616).~~

- ii) Technicon Methods, Method 129-71W.

- F) Capillary ion electrophoresis: ASTM Method D6508-00(2005).

BOARD NOTE: USEPA added Standard Methods, 21st ed., Methods 4110 B and 4500 B, C, D, and E and ASTM Method D1179-04 B as approved alternative methods for fluoride in appendix A to subpart C of 40 CFR 141 on June 3, 2008 (at 73 Fed. Reg. 31616).

~~BOARD NOTE: On March 12, 2007 (at 72 Fed. Reg. 11200), USEPA amended the entry for fluoride to add capillary ion electrophoresis in the table at corresponding 40 CFR 141.23(k)(1) to allow the use of "Waters Method D6508, Rev. 2." The Board attempt to locate a copy of the method disclosed that it is an ASTM method originally approved in 2000 and reapproved in 2005. The Board has cited to the ASTM Method D6508-00(2005).~~

- 14) Lead.

- A) Atomic absorption, furnace technique.
 - i) ASTM Method D3559-96 D, ~~or~~ D3559-03 D, or D3559-08; or

6852
6853 ii) Standard Methods, 18th, 19th, or 21st ed., Method 3113 B.
6854

6855 ~~BOARD NOTE: On March 12, 2007 (at 72 Fed. Reg.~~
6856 ~~11200), USEPA amended the entry for lead by atomic~~
6857 ~~absorption, furnace technique, in the table at corresponding~~
6858 ~~40 CFR 141.23(k)(1) to allow the use of Standard Methods~~
6859 ~~Online (at www.standardmethods.org), Method 3113 B (as~~
6860 ~~approved in 1999). The Board has instead cited to the 21st~~
6861 ~~edition of Standard Methods for the Examination of Water~~
6862 ~~and Wastewater (the printed version of Standard Methods),~~
6863 ~~since the version of Method 3113 that appears in that~~
6864 ~~printed volume is that cited by USEPA as acceptable for~~
6865 ~~use. USEPA later added Method 3113 B from the 21st~~
6866 ~~edition of Standard Methods as an approved alternative~~
6867 ~~method in appendix A to subpart C of 40 CFR 141, added~~
6868 ~~on June 3, 2008 (at 73 Fed. Reg. 31616).~~
6869

6870 B) Inductively coupled plasma-mass spectrometry: USEPA
6871 Environmental Metals Methods, Method 200.8 (rev. 5.3).
6872

6873 C) Atomic absorption, platform furnace technique: USEPA
6874 Environmental Metals Methods, Method 200.9 (rev. 2.2).
6875

6876 D) Differential Pulse Anodic Stripping Voltammetry: Palintest
6877 Method 1001.
6878

6879 E) Axially viewed inductively coupled plasma-atomic emission
6880 spectrometry (AVICP-AES): USEPA NERL Methods, Method
6881 200.5.
6882

6883 BOARD NOTE: USEPA added Standard Methods, 21st ed., Method 3113
6884 B and USEPA NERL Method 200.5 as approved alternative methods for
6885 lead in appendix A to subpart C of 40 CFR 141 on June 3, 2008 (at 73
6886 Fed. Reg. 31616). USEPA added ASTM Method D3559-08 D as an
6887 approved alternative method for lead in appendix A to subpart C of 40
6888 CFR 141 on November 10, 2009 (at 74 Fed. Reg. 57908).
6889

6890 ~~BOARD NOTE: USEPA added this method as an approved~~
6891 ~~alternative method in appendix A to subpart C of 40 CFR 141,~~
6892 ~~added on June 3, 2008 (at 73 Fed. Reg. 31616).~~
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6894 15) Magnesium.

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A) Atomic absorption.

- i) ~~ASTM Method D511-93 B₂, or D511-03 B, or D511-09 B;~~
or
- ii) ~~Standard Methods, 18th, 19th, or 21st ed.,~~ Method 3111 B.

~~BOARD NOTE: On March 12, 2007 (at 72 Fed. Reg. 11200), USEPA amended the entry for magnesium by atomic absorption in the table at corresponding 40 CFR 141.23(k)(1) to allow the use of Standard Methods Online (at www.standardmethods.org), Method 3111 B (as approved in 1999). The Board has instead cited to the 21st edition of Standard Methods for the Examination of Water and Wastewater (the printed version of Standard Methods), since the version of Method 3111 that appears in that printed volume is that cited by USEPA as acceptable for use. USEPA later added Method 3111 B from the 21st edition of Standard Methods as an approved alternative method in appendix A to subpart C of 40 CFR 141, added on June 3, 2008 (at 73 Fed. Reg. 31616).~~

B) Inductively coupled plasma.

- i) ~~USEPA Environmental Metals Methods,~~ Method 200.7 (rev. 4.4); or
- ii) ~~Standard Methods, 18th, 19th, 20th, or 21st ed.,~~ Method 3120 B.

~~BOARD NOTE: On March 12, 2007 (at 72 Fed. Reg. 11200), USEPA amended the entry for magnesium by inductively coupled plasma in the table at corresponding 40 CFR 141.23(k)(1) to allow the use of Standard Methods Online (at www.standardmethods.org), Method 3120 B (as approved in 1999). The Board has instead cited to the 21st edition of Standard Methods for the Examination of Water and Wastewater (the printed version of Standard Methods), since the version of Method 3120 that appears in that printed volume is that cited by USEPA as acceptable for use. USEPA later added Method 3120 B from the 21st edition of Standard Methods as an approved alternative~~

6938 method in appendix A to subpart C of 40 CFR 141, added
 6939 on June 3, 2008 (at 73 Fed. Reg. 31616).
 6940

6941 C) Complexation titrimetric.

6942
 6943 i) ASTM Method D511-93 A, or D511-03 A, or D511-09 A;
 6944 or

6945
 6946 ii) Standard Methods, 18th or 19th ed.; Method 3500-Mg E or
 6947 Standard Methods, 20th or 21st ed.; Method 3500-Mg B.
 6948

6949 ~~BOARD NOTE: On March 12, 2007 (at 72 Fed. Reg.~~
 6950 ~~11200), USEPA amended the entry for magnesium by~~
 6951 ~~complexation titrimetric in the table at corresponding 40~~
 6952 ~~CFR 141.23(k)(1) to allow the use of Standard Methods~~
 6953 ~~Online (at www.standardmethods.org), Method 3500-Mg B~~
 6954 ~~(as approved in 1997). The Board has instead cited to the~~
 6955 ~~21st edition of Standard Methods for the Examination of~~
 6956 ~~Water and Wastewater (the printed version of Standard~~
 6957 ~~Methods), since the version of Method 3500-Mg that~~
 6958 ~~appears in that printed volume is that cited by USEPA as~~
 6959 ~~acceptable for use. USEPA later added Method 3500-Mg~~
 6960 ~~B from the 21st edition of Standard Methods as an approved~~
 6961 ~~alternative method in appendix A to subpart C, added on~~
 6962 ~~June 3, 2008 (at 73 Fed. Reg. 31616).~~
 6963

6964 D) Ion chromatography: ASTM Method D6919-03.
 6965

6966 E) Axially viewed inductively coupled plasma-atomic emission
 6967 spectrometry (AVICP-AES): USEPA NERL Methods: Method
 6968 200.5.
 6969

6970 BOARD NOTE: USEPA added Standard Methods, 21st ed., Methods
 6971 3111 B, 3120 B, and 3500-Mg B and USEPA NERL Method 200.5 as
 6972 approved alternative methods for magnesium in appendix A to subpart C
 6973 of 40 CFR 141 on June 3, 2008 (at 73 Fed. Reg. 31616). USEPA added
 6974 ASTM Methods D511-09 A and B as approved alternative methods for
 6975 magnesium in appendix A to subpart C of 40 CFR 141 on November 10,
 6976 2009 (at 74 Fed. Reg. 57908).
 6977

6978 ~~BOARD NOTE: USEPA added this method as an approved~~
 6979 ~~alternative method in appendix A to subpart C of 40 CFR 141,~~
 6980 ~~added on June 3, 2008 (at 73 Fed. Reg. 31616).~~

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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 or D3223-02; or
- iii) Standard Methods, 18th, 19th, or 21st ed., Method 3112 B.

~~BOARD NOTE: On March 12, 2007 (at 72 Fed. Reg. 11200), USEPA amended the entry for mercury by manual cold vapor technique in the table at corresponding 40 CFR 141.23(k)(1) to allow the use of Standard Methods Online (at www.standardmethods.org), Method 3112 B (as approved in 1999). The Board has instead cited to the 21st edition of Standard Methods for the Examination of Water and Wastewater (the printed version of Standard Methods), since the version of Method 3112 that appears in that printed volume is that cited by USEPA as acceptable for use. USEPA later added Method 3112 B from the 21st edition of Standard Methods as an approved alternative method in appendix A to subpart C of 40 CFR 141, added on June 3, 2008 (at 73 Fed. Reg. 31616).~~

B) Automated cold vapor technique: USEPA Inorganic Methods, Method 245.2.

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

BOARD NOTE: USEPA added Standard Methods, 21st ed., Method 3112 B as an approved alternative method for mercury in appendix A to subpart C of 40 CFR 141 on June 3, 2008 (at 73 Fed. Reg. 31616).

17) Nickel.

A) Inductively coupled plasma.

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

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- ii) Standard Methods, 18th, 19th, 20th, or 21st ed.,÷ Method 3120 B.

~~BOARD NOTE: On March 12, 2007 (at 72 Fed. Reg. 11200), USEPA amended the entry for nickel by inductively coupled plasma in the table at corresponding 40 CFR 141.23(k)(1) to allow the use of Standard Methods Online (at www.standardmethods.org), Method 3120 B (as approved in 1999). The Board has instead cited to the 21st edition of Standard Methods for the Examination of Water and Wastewater (the printed version of Standard Methods), since the version of Method 3120 that appears in that printed volume is that cited by USEPA as acceptable for use. USEPA later added Method 3120 B from the 21st edition of Standard Methods as an approved alternative method in appendix A to subpart C of 40 CFR 141, added on June 3, 2008 (at 73 Fed. Reg. 31616).~~

- B) Inductively coupled plasma-mass spectrometry: USEPA Environmental Metals Methods,÷ Method 200.8 (rev. 5.3).
- C) Atomic absorption, platform furnace technique: USEPA Environmental Metals Methods,÷ Method 200.9 (rev. 2.2).
- D) Atomic absorption, direct aspiration technique: Standard Methods, 18th, 19th, or 21st ed.,÷ Method 3111 B.

~~BOARD NOTE: On March 12, 2007 (at 72 Fed. Reg. 11200), USEPA amended the entry for nickel by atomic absorption, direct aspiration technique, in the table at corresponding 40 CFR 141.23(k)(1) to allow the use of Standard Methods Online (at www.standardmethods.org), Method 3111 B (as approved in 1999). The Board has instead cited to the 21st edition of Standard Methods for the Examination of Water and Wastewater (the printed version of Standard Methods), since the version of Method 3111 that appears in that printed volume is that cited by USEPA as acceptable for use. USEPA later added Method 3111 B from the 21st edition of Standard Methods as an approved alternative method in appendix A to subpart C of 40 CFR 141, added on June 3, 2008 (at 73 Fed. Reg. 31616).~~

7066 E) Atomic absorption, furnace technique: Standard Methods, 18th,
 7067 19th, or 21st ed., ÷ Method 3113 B.

7068
 7069 ~~BOARD NOTE: On March 12, 2007 (at 72 Fed. Reg. 11200),~~
 7070 ~~USEPA amended the entry for nickel by atomic absorption,~~
 7071 ~~furnace technique, in the table at corresponding 40 CFR~~
 7072 ~~141.23(k)(1) to allow the use of Standard Methods Online (at~~
 7073 ~~www.standardmethods.org), Method 3113 B (as approved in~~
 7074 ~~1999). The Board has instead cited to the 21st edition of Standard~~
 7075 ~~Methods for the Examination of Water and Wastewater (the~~
 7076 ~~printed version of Standard Methods), since the version of Method~~
 7077 ~~3113 that appears in that printed volume is that cited by USEPA as~~
 7078 ~~acceptable for use. USEPA later added Method 3113 B from the~~
 7079 ~~21st edition of Standard Methods as an approved alternative~~
 7080 ~~method in appendix A to subpart C of 40 CFR 141, added on June~~
 7081 ~~3, 2008 (at 73 Fed. Reg. 31616).~~

7082
 7083 F) Axially viewed inductively coupled plasma-atomic emission
 7084 spectrometry (AVICP-AES): USEPA NERL Methods: Method
 7085 200.5.

7086
 7087 BOARD NOTE: USEPA added Standard Methods, 21st ed., Methods
 7088 3111 B, 3113 B, and 3120 B and USEPA NERL Method 200.5 as
 7089 approved alternative methods for nickel in appendix A to subpart C of 40
 7090 CFR 141 on June 3, 2008 (at 73 Fed. Reg. 31616).

7091
 7092 ~~BOARD NOTE: USEPA added this method as an approved~~
 7093 ~~alternative method in appendix A to subpart C of 40 CFR 141,~~
 7094 ~~added on June 3, 2008 (at 73 Fed. Reg. 31616).~~

7095
 7096 18) Nitrate.

7097
 7098 A) Ion chromatography.

7099
 7100 i) USEPA Environmental Inorganic Methods, ÷ Method 300.0
 7101 (rev. 2.1) or USEPA Organic and Inorganic Methods,
 7102 Method 300.1 (rev. 1.0);

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 7104 ii) ASTM Method D4327-97 or D4327-03;

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 7106 iii) Standard Methods, 18th, 19th, 20th, or 21st ed., ÷ Method
 7107 4110 B; or
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7109 BOARD NOTE: On March 12, 2007 (at 72 Fed. Reg.
 7110 11200), USEPA amended the entry for nitrate by ion
 7111 chromatography in the table at corresponding 40 CFR
 7112 141.23(k)(1) to allow the use of Standard Methods Online
 7113 (at www.standardmethods.org), Method 4110 B (as
 7114 approved in 2000). The Board has instead cited to the 21st
 7115 edition of Standard Methods for the Examination of Water
 7116 and Wastewater (the printed version of Standard Methods),
 7117 since the version of Method 4110 that appears in that
 7118 printed volume is that cited by USEPA as acceptable for
 7119 use. USEPA later added Method 4110 B from the 21st
 7120 edition of Standard Methods as an approved alternative
 7121 method in appendix A to subpart C of 40 CFR 141, added
 7122 on June 3, 2008 (at 73 Fed. Reg. 31616).
 7123

7124 iv) Waters Test Method B-1011, available from Millipore
 7125 Corporation.
 7126

7127 B) Automated cadmium reduction.
 7128

7129 i) USEPA Environmental Inorganic Methods, Method 353.2
 7130 (rev. 2.0);
 7131

7132 ii) ASTM Method D3867-90 A; or
 7133

7134 iii) Standard Methods, 18th, 19th, 20th, or 21st ed., Method
 7135 4500-NO₃⁻ F.
 7136

7137 BOARD NOTE: On March 12, 2007 (at 72 Fed. Reg.
 7138 11200), USEPA amended the entry for nitrate by
 7139 automated cadmium reduction in the table at corresponding
 7140 40 CFR 141.23(k)(1) to allow the use of Standard Methods
 7141 Online (at www.standardmethods.org), Method 4500 NO₃⁻
 7142 F (as approved in 2000). The Board has instead cited to the
 7143 21st edition of Standard Methods for the Examination of
 7144 Water and Wastewater (the printed version of Standard
 7145 Methods), since the version of Method 4500 NO₃⁻ that
 7146 appears in that printed volume is that cited by USEPA as
 7147 acceptable for use. USEPA later added Method 4500 NO₃⁻
 7148 F from the 21st edition of Standard Methods as an approved
 7149 alternative method in appendix A to subpart C of 40 CFR
 7150 141, added on June 3, 2008 (at 73 Fed. Reg. 31616).
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- C) Ion selective electrode.
- i) Standard Methods, 18th, 19th, 20th, or 21st ed., Method 4500-NO₃⁻ D; or
- ~~BOARD NOTE: On March 12, 2007 (at 72 Fed. Reg. 11200), USEPA amended the entry for nitrate by ion selective electrode in the table at corresponding 40 CFR 141.23(k)(1) to allow the use of Standard Methods Online (at www.standardmethods.org), Method 4500-NO₃⁻ D (as approved in 2000). The Board has instead cited to the 21st edition of Standard Methods for the Examination of Water and Wastewater (the printed version of Standard Methods), since the version of Method 4500-NO₃⁻ that appears in that printed volume is that cited by USEPA as acceptable for use. USEPA later added Method 4500-NO₃⁻ D from the 21st edition of Standard Methods as an approved alternative method in appendix A to subpart C of 40 CFR 141, added on June 3, 2008 (at 73 Fed. Reg. 31616).~~
- ii) Technical Bulletin 601.
- D) Manual cadmium reduction.
- i) ASTM Method D3867-90 B; or
- ii) Standard Methods, 18th, 19th, 20th, or 21st ed., Method 4500-NO₃⁻ E.
- ~~BOARD NOTE: On March 12, 2007 (at 72 Fed. Reg. 11200), USEPA amended the entry for nitrate by manual cadmium reduction in the table at corresponding 40 CFR 141.23(k)(1) to allow the use of Standard Methods Online (at www.standardmethods.org), Method 4500-NO₃⁻ E (as approved in 2000). The Board has instead cited to the 21st edition of Standard Methods for the Examination of Water and Wastewater (the printed version of Standard Methods), since the version of Method 4500-NO₃⁻ that appears in that printed volume is that cited by USEPA as acceptable for use. USEPA later added Method 4500-NO₃⁻ E from the 21st edition of Standard Methods as an approved alternative method in appendix A to subpart C of 40 CFR 141, added on June 3, 2008 (at 73 Fed. Reg. 31616).~~

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E) Capillary ion electrophoresis: ASTM Method D6508-00(2005).

BOARD NOTE: On March 12, 2007 (at 72 Fed. Reg. 11200), USEPA amended the entry for nitrate to add capillary ion electrophoresis in the table at corresponding 40 CFR 141.23(k)(1) to allow the use of "Waters Method D6508, Rev. 2." The Board attempt to locate a copy of the method disclosed that it is an ASTM method originally approved in 2000 and reapproved in 2005. The Board has cited to the ASTM Method D6508-00(2005).

F) Reduction-colorimetric: Syssta Easy (1-Reagent).

BOARD NOTE: USEPA added Standard Methods, 21st ed., Methods 4110 B and 4500-NO₃⁻ D, E, and F as approved alternative methods for nitrate in appendix A to subpart C of 40 CFR 141 on June 3, 2008 (at 73 Fed. Reg. 31616). USEPA added Syssta Easy (1-Reagent) as an approved alternative method for nitrate in appendix A to subpart C of 40 CFR 141 on August 3, 2009 (at 73 Fed. Reg. 38348).

19) Nitrite.

A) Ion chromatography.

- i) USEPA Environmental Inorganic Methods, Method 300.0 (rev. 2.1) or USEPA Organic and Inorganic Methods, Method 300.1 (rev. 1.0);
- ii) ASTM Method D4327-97 or D4327-03;
- iii) Standard Methods, 18th, 19th, 20th, or 21st ed., Method 4110 B; or

~~BOARD NOTE: On March 12, 2007 (at 72 Fed. Reg. 11200), USEPA amended the entry for nitrite by ion chromatography in the table at corresponding 40 CFR 141.23(k)(1) to allow the use of Standard Methods Online (at www.standardmethods.org), Method 4110 B (as approved in 2000). The Board has instead cited to the 21st edition of Standard Methods for the Examination of Water and Wastewater (the printed version of Standard Methods), since the version of Method 4110 that appears in that printed volume is that cited by USEPA as acceptable for~~

7238 use. USEPA later added Method 4110 B from the 21st
 7239 edition of Standard Methods as an approved alternative
 7240 method in appendix A to subpart C of 40 CFR 141, added
 7241 on June 3, 2008 (at 73 Fed. Reg. 31616).
 7242

7243 iv) Waters Test Method B-1011, available from Millipore
 7244 Corporation.
 7245

7246 B) Automated cadmium reduction.
 7247

7248 i) USEPA Environmental Inorganic Methods, Method 353.2
 7249 (rev. 2.0);
 7250

7251 ii) ASTM Method D3867-90 A; or
 7252

7253 iii) Standard Methods, 18th, 19th, 20th, or 21st ed., Method
 7254 4500-NO₃⁻ F.
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7256 ~~BOARD NOTE: On March 12, 2007 (at 72 Fed. Reg.~~
 7257 ~~11200), USEPA amended the entry for nitrite by automated~~
 7258 ~~cadmium reduction in the table at corresponding 40 CFR~~
 7259 ~~141.23(k)(1) to allow the use of Standard Methods Online~~
 7260 ~~(at www.standardmethods.org), Method 4500-NO₃⁻ F (as~~
 7261 ~~approved in 2000). The Board has instead cited to the 21st~~
 7262 ~~edition of Standard Methods for the Examination of Water~~
 7263 ~~and Wastewater (the printed version of Standard Methods),~~
 7264 ~~since the version of Method 4500-NO₃⁻ that appears in that~~
 7265 ~~printed volume is that cited by USEPA as acceptable for~~
 7266 ~~use. USEPA later added Method 4500-NO₃⁻ F from the~~
 7267 ~~21st edition of Standard Methods as an approved alternative~~
 7268 ~~method in appendix A to subpart C of 40 CFR 141, added~~
 7269 ~~on June 3, 2008 (at 73 Fed. Reg. 31616).~~
 7270

7271 C) Manual cadmium reduction.
 7272

7273 i) ASTM Method D3867-90 B; or
 7274

7275 ii) Standard Methods, 18th, 19th, 20th, or 21st ed., Method
 7276 4500-NO₃⁻ E.
 7277

7278 ~~BOARD NOTE: On March 12, 2007 (at 72 Fed. Reg.~~
 7279 ~~11200), USEPA amended the entry for nitrite by manual~~
 7280 ~~cadmium reduction in the table at corresponding 40 CFR~~

7281 141.23(k)(1) to allow the use of Standard Methods Online
 7282 (at www.standardmethods.org), Method 4500-NO₃⁻-E (as
 7283 approved in 2000). The Board has instead cited to the 21st
 7284 edition of Standard Methods for the Examination of Water
 7285 and Wastewater (the printed version of Standard Methods),
 7286 since the version of Method 4500-NO₃⁻ that appears in that
 7287 printed volume is that cited by USEPA as acceptable for
 7288 use. USEPA later added Method 4500-NO₃⁻-E from the
 7289 21st edition of Standard Methods as an approved alternative
 7290 method in appendix A to subpart C of 40 CFR 141, added
 7291 on June 3, 2008 (at 73 Fed. Reg. 31616).
 7292

- 7293 D) Spectrophotometric: Standard Methods, 18th, 19th, 20th, or 21st
 7294 ed.; Method 4500-NO₂⁻-B.

7296 BOARD NOTE: On March 12, 2007 (at 72 Fed. Reg. 11200),
 7297 USEPA amended the entry for nitrite by spectrophotometric in the
 7298 table at corresponding 40 CFR 141.23(k)(1) to allow the use of
 7299 Standard Methods Online (at www.standardmethods.org), Method
 7300 4500-NO₂⁻-B (as approved in 2000). The Board has instead cited
 7301 to the 21st edition of Standard Methods for the Examination of
 7302 Water and Wastewater (the printed version of Standard Methods),
 7303 since the version of Method 4500-NO₂⁻ that appears in that printed
 7304 volume is that cited by USEPA as acceptable for use. USEPA
 7305 later added Method 4500-NO₂⁻-B from the 21st edition of Standard
 7306 Methods as an approved alternative method in appendix A to
 7307 subpart C of 40 CFR 141, added on June 3, 2008 (at 73 Fed. Reg.
 7308 31616).
 7309

- 7310 E) Capillary ion electrophoresis: ASTM Method D6508-00(2005).
 7311

7312 BOARD NOTE: On March 12, 2007 (at 72 Fed. Reg. 11200),
 7313 USEPA amended the entry for nitrite to add capillary ion
 7314 electrophoresis in the table at corresponding 40 CFR 141.23(k)(1)
 7315 to allow the use of "Waters Method D6508, Rev. 2." The Board
 7316 attempt to locate a copy of the method disclosed that it is an
 7317 ASTM method originally approved in 2000 and reapproved in
 7318 2005. The Board has cited to the ASTM Method D6508-00(2005).
 7319

- 7320 F) Reduction-colorimetric: Systea Easy (1-Reagent).
 7321

7322 BOARD NOTE: USEPA added Standard Methods, 21st ed., Methods
 7323 4110 B, 4500-NO₃⁻-E and F; and 4500-NO₂⁻-B as approved alternative

7324 methods for nitrite in appendix A to subpart C of 40 CFR 141 on June 3,
 7325 2008 (at 73 Fed. Reg. 31616). USEPA added Syssta Easy (1-Reagent) as
 7326 an approved alternative method for nitrite in appendix A to subpart C of
 7327 40 CFR 141 on August 3, 2009 (at 73 Fed. Reg. 38348).

7328
 7329 20) Orthophosphate (unfiltered, without digestion or hydrolysis).

7330
 7331 A) Automated colorimetric, ascorbic acid.

7332
 7333 i) USEPA Environmental Inorganic Methods, Method 365.1
 7334 (rev. 2.0); or

7335
 7336 ii) Standard Methods, 18th, 19th, 20th, or 21st ed., Method
 7337 4500-P F.

7338
 7339 ~~BOARD NOTE: USEPA added Method 4500 P F from the~~
 7340 ~~21st edition of Standard Methods as an approved alternative~~
 7341 ~~method in appendix A to subpart C of 40 CFR 141, added~~
 7342 ~~on June 3, 2008 (at 73 Fed. Reg. 31616). USEPA also~~
 7343 ~~added Method 4500 P F (as approved in 1999) as available~~
 7344 ~~from Standard Methods Online (at~~
 7345 ~~www.standardmethods.org). The Board has instead cited~~
 7346 ~~only to the 21st edition of Standard Methods for the~~
 7347 ~~Examination of Water and Wastewater (the printed version~~
 7348 ~~of Standard Methods), since the version of Method 4500 P~~
 7349 ~~F that appears in the printed volume is the 1999 version~~
 7350 ~~available from the online source.~~

7351
 7352 B) Single reagent colorimetric, ascorbic acid.

7353
 7354 i) ASTM Method D515-88 A; or

7355
 7356 ii) Standard Methods, 18th, 19th, 20th, or 21st ed., Method
 7357 4500-P E.

7358
 7359 ~~BOARD NOTE: USEPA added Method 4500 P E from~~
 7360 ~~the 21st edition of Standard Methods as an approved~~
 7361 ~~alternative method in appendix A to subpart C of 40 CFR~~
 7362 ~~141, added on June 3, 2008 (at 73 Fed. Reg. 31616).~~
 7363 ~~USEPA also added Method 4500 P E (as approved in~~
 7364 ~~1999) as available from Standard Methods Online (at~~
 7365 ~~www.standardmethods.org). The Board has instead cited~~
 7366 ~~only to the 21st edition of Standard Methods for the~~

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- ~~Examination of Water and Wastewater (the printed version of Standard Methods), since the version of Method 4500 P E that appears in the printed volume is the 1999 version available from the online source.~~
- C) Colorimetric, phosphomolybdate: USGS Methods; Method I-1601-85.
 - D) Colorimetric, phosphomolybdate, automated-segmented flow: USGS Methods; Method I-2601-90.
 - E) Colorimetric, phosphomolybdate, automated discrete: USGS Methods; Method I-2598-85.
 - F) Ion Chromatography.
 - i) USEPA Environmental Inorganic Methods: Method 300.0 (rev. 2.1) or USEPA Organic and Inorganic Methods, Method 300.1 (rev. 1.0);
 - ii) ASTM Method D4327-97 or D4327-03; or
 - iii) Standard Methods, 18th, 19th, 20th, or 21st ed.; Method 4110 B.
- ~~BOARD NOTE: On March 12, 2007 (at 72 Fed. Reg. 11200), USEPA amended the entry for orthophosphate by ion chromatography in the table at corresponding 40 CFR 141.23(k)(1) to allow the use of Standard Methods Online (at www.standardmethods.org), Method 4110 B (as approved in 2000). The Board has instead cited to the 21st edition of Standard Methods for the Examination of Water and Wastewater (the printed version of Standard Methods), since the version of Method 4110 that appears in that printed volume is that cited by USEPA as acceptable for use. USEPA later added Method 4110 B from the 21st edition of Standard Methods as an approved alternative method in appendix A to subpart C of 40 CFR 141, added on June 3, 2008 (at 73 Fed. Reg. 31616).~~
- G) Capillary ion electrophoresis: ASTM Method D6508-00(2005).

7409 BOARD NOTE: On March 12, 2007 (at 72 Fed. Reg. 11200),
 7410 USEPA amended the entry for orthophosphate to add capillary ion
 7411 electrophoresis in the table at corresponding 40 CFR 141.23(k)(1)
 7412 to allow the use of "Waters Method D6508, Rev. 2." The Board
 7413 attempt to locate a copy of the method disclosed that it is an
 7414 ASTM method originally approved in 2000 and reapproved in
 7415 2005. The Board has cited to the ASTM Method D6508-00(2005).
 7416

7417 BOARD NOTE: USEPA added Standard Methods, 21st ed., Methods 4110
 7418 B, 4500-P E and F as approved alternative methods for orthophosphate in
 7419 appendix A to subpart C of 40 CFR 141 on June 3, 2008 (at 73 Fed. Reg.
 7420 31616).
 7421

7422 21) pH: electrometric.

7423
 7424 A) USEPA Inorganic Methods,÷ Method 150.1 or Method 150.2;

7425
 7426 B) ASTM Method D1293-95 or D1293-99; or

7427
 7428 C) Standard Methods, 18th, 19th, 20th, or 21st ed.,÷ Method 4500-H⁺ B.
 7429

7430 BOARD NOTE: USEPA added Standard Methods, 21st ed., Method
 7431 4500-H⁺ B as an approved alternative method for pH in appendix A to
 7432 subpart C of 40 CFR 141 on June 3, 2008 (at 73 Fed. Reg. 31616).
 7433

7434 ~~BOARD NOTE: On March 12, 2007 (at 72 Fed. Reg. 11200),~~
 7435 ~~USEPA amended the entry for pH by electrometric in the table at~~
 7436 ~~corresponding 40 CFR 141.23(k)(1) to allow the use of Standard~~
 7437 ~~Methods Online (at www.standardmethods.org), Method 4500 H⁺~~
 7438 ~~B (as approved in 2000). The Board has instead cited to the 21st~~
 7439 ~~edition of Standard Methods for the Examination of Water and~~
 7440 ~~Wastewater (the printed version of Standard Methods), since the~~
 7441 ~~version of Method 4500 H⁺ that appears in that printed volume is~~
 7442 ~~that cited by USEPA as acceptable for use. USEPA later added~~
 7443 ~~Method 4500 H⁺ B from the 21st edition of Standard Methods as~~
 7444 ~~an approved alternative method in appendix A to subpart C of 40~~
 7445 ~~CFR 141, added on June 3, 2008 (at 73 Fed. Reg. 31616).~~
 7446

7447 22) Selenium.

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 7449 A) Atomic absorption, hydride.
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- i) ASTM Method D3859-98 A₂, or D3859-03 A₂, or D3859-08 A₂; or
 - ii) Standard Methods, 18th, 19th, or 21st ed., Method 3114 B.

~~BOARD NOTE: On March 12, 2007 (at 72 Fed. Reg. 11200), USEPA amended the entry for selenium by atomic absorption, hydride, in the table at corresponding 40 CFR 141.23(k)(1) to allow the use of Standard Methods Online (at www.standardmethods.org), Method 3114 B (as approved in 1997). The Board has instead cited to the 21st edition of Standard Methods for the Examination of Water and Wastewater (the printed version of Standard Methods), since the version of Method 3114 that appears in that printed volume is that cited by USEPA as acceptable for use. USEPA later added Method 3114 B from the 21st edition of Standard Methods as an approved alternative method in appendix A to subpart C of 40 CFR 141, added on June 3, 2008 (at 73 Fed. Reg. 31616).~~
- 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 B₂, or D3859-03 B₂, or D3859-08 B₂; or
 - ii) Standard Methods, 18th, 19th, or 21st ed., Method 3113 B.

~~BOARD NOTE: On March 12, 2007 (at 72 Fed. Reg. 11200), USEPA amended the entry for selenium by atomic absorption, furnace technique, in the table at corresponding 40 CFR 141.23(k)(1) to allow the use of Standard Methods Online (at www.standardmethods.org), Method 3113 B (as approved in 1999). The Board has instead cited to the 21st edition of Standard Methods for the Examination of Water and Wastewater (the printed version of Standard Methods), since the version of Method 3113 that appears in that printed volume is that cited by USEPA as acceptable for~~

~~use. USEPA later added Method 3113 B from the 21st edition of Standard Methods as an approved alternative method in appendix A to subpart C of 40 CFR 141, added on June 3, 2008 (at 73 Fed. Reg. 31616).~~

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

BOARD NOTE: USEPA added Standard Methods, 21st ed., Methods 3113 B and 3114 B and USEPA NERL Method 200.5 as approved alternative methods for selenium in appendix A to subpart C of 40 CFR 141 on June 3, 2008 (at 73 Fed. Reg. 31616). USEPA added ASTM Methods D3859-08 A and B as approved alternative methods for selenium in appendix A to subpart C of 40 CFR 141 on November 10, 2009 (at 74 Fed. Reg. 57908).

~~BOARD NOTE: USEPA added this method as an approved alternative method in appendix A to subpart C of 40 CFR 141, added on June 3, 2008 (at 73 Fed. Reg. 31616).~~

23) Silica.

- A) Colorimetric, molybdate blue: USGS Methods, Method I-1700-85.
- B) Colorimetric, molybdate blue, automated-segmented flow: USGS Methods, Method I-2700-85.
- C) Colorimetric: ASTM Method D859-94, D859-00, or D859-05.

~~BOARD NOTE: USEPA added ASTM Method D859-05 as an approved alternative method in appendix A to subpart C of 40 CFR 141, added on June 3, 2008 (at 73 Fed. Reg. 31616).~~

- D) Molybdosilicate: Standard Methods, 18th or 19th ed., Method 4500-Si D or Standard Methods, 20th or 21st ed., Method 4500-SiO₂ C.

~~BOARD NOTE: On March 12, 2007 (at 72 Fed. Reg. 11200), USEPA amended the entry for silica by molybdosilicate in the table at corresponding 40 CFR 141.23(k)(1) to allow the use of Standard Methods Online (at www.standardmethods.org), Method~~

4500-SiO₂-C (as approved in 1997). The Board has instead cited to the 21st edition of Standard Methods for the Examination of Water and Wastewater (the printed version of Standard Methods), since the version of Method 4500-SiO₂ that appears in that printed volume is that cited by USEPA as acceptable for use. USEPA later added Method 4500-SiO₂-C from the 21st edition of Standard Methods as an approved alternative method in appendix A to subpart C of 40 CFR 141, added on June 3, 2008 (at 73 Fed. Reg. 31616).

- E) Heteropoly blue: Standard Methods, 18th or 19th ed.; Method 4500-Si E or Standard Methods, 20th or 21st ed.; Method 4500-SiO₂ D.

~~BOARD NOTE: On March 12, 2007 (at 72 Fed. Reg. 11200), USEPA amended the entry for silica by heteropoly blue in the table at corresponding 40 CFR 141.23(k)(1) to allow the use of Standard Methods Online (at www.standardmethods.org), Method 4500-SiO₂-D (as approved in 1997). The Board has instead cited to the 21st edition of Standard Methods for the Examination of Water and Wastewater (the printed version of Standard Methods), since the version of Method 4500-SiO₂ that appears in that printed volume is that cited by USEPA as acceptable for use. USEPA later added Method 4500-SiO₂-D from the 21st edition of Standard Methods as an approved alternative method in appendix A to subpart C of 40 CFR 141, added on June 3, 2008 (at 73 Fed. Reg. 31616).~~

- F) Automated method for molybdate-reactive silica: Standard Methods, 18th or 19th ed.; Method 4500-Si F or Standard Methods, 20th or 21st ed.; Method 4500-SiO₂ E.

~~BOARD NOTE: On March 12, 2007 (at 72 Fed. Reg. 11200), USEPA amended the entry for silica by automated method for molybdate reactive silica in the table at corresponding 40 CFR 141.23(k)(1) to allow the use of Standard Methods Online (at www.standardmethods.org), Method 4500-SiO₂-E (as approved in 1997). The Board has instead cited to the 21st edition of Standard Methods for the Examination of Water and Wastewater (the printed version of Standard Methods), since the version of Method 4500-SiO₂ that appears in that printed volume is that cited by USEPA as acceptable for use. USEPA later added Method 4500-SiO₂-E from the 21st edition of Standard Methods as an approved~~

alternative method in appendix A to subpart C of 40 CFR 141, added on June 3, 2008 (at 73 Fed. Reg. 31616).

G) Inductively coupled plasma.

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

ii) Standard Methods, 18th, 19th, 20th, or 21st ed., ÷ Method 3120 B.

~~BOARD NOTE: On March 12, 2007 (at 72 Fed. Reg. 11200), USEPA amended the entry for silica by inductively coupled plasma in the table at corresponding 40 CFR 141.23(k)(1) to allow the use of Standard Methods Online (at www.standardmethods.org), Method 3120 B (as approved in 1999). The Board has instead cited to the 21st edition of Standard Methods for the Examination of Water and Wastewater (the printed version of Standard Methods), since the version of Method 3120 that appears in that printed volume is that cited by USEPA as acceptable for use. USEPA later added Method 3120 B from the 21st edition of Standard Methods as an approved alternative method in appendix A to subpart C of 40 CFR 141, added on June 3, 2008 (at 73 Fed. Reg. 31616).~~

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

BOARD NOTE: USEPA added ASTM Method D859-05, Standard Methods, 21st ed.; Methods 3120 B and 4500-SiO₂ C, D, and E; and USEPA NERL Method 200.5 as approved alternative methods for silica in appendix A to subpart C of 40 CFR 141 on June 3, 2008 (at 73 Fed. Reg. 31616).

~~BOARD NOTE: USEPA added this method as an approved alternative method in appendix A to subpart C of 40 CFR 141, added on June 3, 2008 (at 73 Fed. Reg. 31616).~~

24) Sodium.

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- A) Inductively coupled plasma: USEPA Environmental Metals Methods; Method 200.7 (rev. 4.4).
- B) Atomic absorption, direct aspiration: Standard Methods, 18th, 19th, or 21st ed.; Method 3111 B.
- ~~BOARD NOTE: On March 12, 2007 (at 72 Fed. Reg. 11200), USEPA amended the entry for sodium by atomic absorption, direct aspiration, in the table at corresponding 40 CFR 141.23(k)(1) to allow the use of Standard Methods Online (at www.standardmethods.org), Method 3111 B (as approved in 1999). The Board has instead cited to the 21st edition of Standard Methods for the Examination of Water and Wastewater (the printed version of Standard Methods), since the version of Method 3111 that appears in that printed volume is that cited by USEPA as acceptable for use. USEPA later added Method 3111 B from the 21st edition of Standard Methods as an approved alternative method in appendix A to subpart C of 40 CFR 141, added on June 3, 2008 (at 73 Fed. Reg. 31616).~~
- C) Ion chromatography: ASTM Method D6919-03.
- D) Axially viewed inductively coupled plasma-atomic emission spectrometry (AVICP-AES): USEPA NERL Methods; Method 200.5.
- ~~BOARD NOTE: USEPA added Standard Methods, 21st ed., Method 3113 B and USEPA NERL Method 200.5 as approved alternative methods for sodium in appendix A to subpart C of 40 CFR 141 on June 3, 2008 (at 73 Fed. Reg. 31616).~~
- ~~BOARD NOTE: USEPA added this method as an approved alternative method in appendix A to subpart C of 40 CFR 141, added on June 3, 2008 (at 73 Fed. Reg. 31616).~~
- 25) Temperature; thermometric: Standard Methods, 18th, 19th, 20th, or 21st ed.; Method 2550.
- ~~BOARD NOTE: On March 12, 2007 (at 72 Fed. Reg. 11200), USEPA amended the entry for temperature by thermometric in the table at corresponding 40 CFR 141.23(k)(1) to allow the use of Standard Methods Online (at www.standardmethods.org), Method 2550 (as approved in 2000). The Board has instead cited to the 21st edition of Standard~~

7665 ~~Methods for the Examination of Water and Wastewater (the printed~~
 7666 ~~version of Standard Methods), since the version of Method 2550 that~~
 7667 ~~appears in that printed volume is that cited by USEPA as acceptable for~~
 7668 ~~use. USEPA later added Method 2550 from the 21st edition of Standard~~
 7669 ~~Methods USEPA added Standard Methods, 21st ed., Method 2550 as an~~
 7670 ~~approved alternative method for temperature in appendix A to subpart C,~~
 7671 ~~added on June 3, 2008 (at 73 Fed. Reg. 31616).~~

7672
 7673 26) Thallium.

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 7675 A) Inductively coupled plasma-mass spectrometry: USEPA
 7676 Environmental Metals Methods, Method 200.8 (rev. 5.3).
 7677
 7678 B) Atomic absorption, platform furnace technique: USEPA
 7679 Environmental Metals Methods, Method 200.9 (rev. 2.2).
 7680

- 7681 b) Sample collection for antimony, arsenic (effective January 22, 2004), asbestos,
 7682 barium, beryllium, cadmium, chromium, cyanide, fluoride, mercury, nickel,
 7683 nitrate, nitrite, selenium, and thallium pursuant to Sections 611.600 through
 7684 611.604 must be conducted using the following sample preservation, container,
 7685 and maximum holding time procedures:
 7686

7687 BOARD NOTE: For cyanide determinations samples must be adjusted with
 7688 sodium hydroxide to pH 12 at the time of collection. When chilling is indicated
 7689 the sample must be shipped and stored at 4° C or less. Acidification of nitrate or
 7690 metals samples may be with a concentrated acid or a dilute (50% by volume)
 7691 solution of the applicable concentrated acid. Acidification of samples for metals
 7692 analysis is encouraged and allowed at the laboratory rather than at the time of
 7693 sampling provided the shipping time and other instructions in Section 8.3 of
 7694 USEPA Environmental Metals Method 200.7, 200.8, or 200.9 are followed.
 7695

7696 1) Antimony.

- 7697
 7698 A) Preservative: Concentrated nitric acid to pH less than 2.
 7699
 7700 B) Plastic or glass (hard or soft).
 7701
 7702 C) Holding time: Samples must be analyzed as soon after collection
 7703 as possible, but in any event within six months.
 7704

7705 2) Arsenic.

- 7706 A) Preservative: Concentrated nitric acid to pH less than 2.
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- B) Plastic or glass (hard or soft).
- C) Holding time: Samples must be analyzed as soon after collection as possible, but in any event within six months.
- 3) Asbestos.
- A) Preservative: Cool to 4° C.
- B) Plastic or glass (hard or soft).
- C) Holding time: Samples must be analyzed as soon after collection as possible, but in any event within 48 hours.
- 4) Barium.
- A) Preservative: Concentrated nitric acid to pH less than 2.
- B) Plastic or glass (hard or soft).
- C) Holding time: Samples must be analyzed as soon after collection as possible, but in any event within six months.
- 5) Beryllium.
- A) Preservative: Concentrated nitric acid to pH less than 2.
- B) Plastic or glass (hard or soft).
- C) Holding time: Samples must be analyzed as soon after collection as possible, but in any event within six months.
- 6) Cadmium.
- A) Preservative: Concentrated nitric acid to pH less than 2.
- B) Plastic or glass (hard or soft).
- C) Holding time: Samples must be analyzed as soon after collection as possible, but in any event within six months.
- 7) Chromium.

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- A) Preservative: Concentrated nitric acid to pH less than 2.
- B) Plastic or glass (hard or soft).
- C) Holding time: Samples must be analyzed as soon after collection as possible, but in any event within six months.
- 8) Cyanide.
- A) Preservative: Cool to 4° C. Add sodium hydroxide to pH greater than 12. See the analytical methods for information on sample preservation.
- B) Plastic or glass (hard or soft).
- C) Holding time: Samples must be analyzed as soon after collection as possible, but in any event within 14 days.
- 9) Fluoride.
- A) Preservative: None.
- B) Plastic or glass (hard or soft).
- C) Holding time: Samples must be analyzed as soon after collection as possible, but in any event within one month.
- 10) Mercury.
- A) Preservative: Concentrated nitric acid to pH less than 2.
- B) Plastic or glass (hard or soft).
- C) Holding time: Samples must be analyzed as soon after collection as possible, but in any event within 28 days.
- 11) Nickel.
- A) Preservative: Concentrated nitric acid to pH less than 2.
- B) Plastic or glass (hard or soft).

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- C) Holding time: Samples must be analyzed as soon after collection as possible, but in any event within six months.
 - 12) Nitrate, chlorinated.
 - A) Preservative: Cool to 4° C.
 - B) Plastic or glass (hard or soft).
 - C) Holding time: Samples must be analyzed as soon after collection as possible, but in any event within 14 days.
 - 13) Nitrate, non-chlorinated.
 - A) Preservative: Concentrated sulfuric acid to pH less than 2.
 - B) Plastic or glass (hard or soft).
 - C) Holding time: Samples must be analyzed as soon after collection as possible, but in any event within 14 days.
 - 14) Nitrite.
 - A) Preservative: Cool to 4° C.
 - B) Plastic or glass (hard or soft).
 - C) Holding time: Samples must be analyzed as soon after collection as possible, but in any event within 48 hours.
 - 15) Selenium.
 - A) Preservative: Concentrated nitric acid to pH less than 2.
 - B) Plastic or glass (hard or soft).
 - C) Holding time: Samples must be analyzed as soon after collection as possible, but in any event within six months.
 - 16) Thallium.
 - A) Preservative: Concentrated nitric acid to pH less than 2.

- 7837 B) Plastic or glass (hard or soft).
 7838
 7839 C) Holding time: Samples must be analyzed as soon after collection
 7840 as possible, but in any event within six months.
 7841
 7842 c) Analyses under this Subpart N must be conducted by laboratories that received
 7843 approval from USEPA or the Agency. The Agency must certify laboratories to
 7844 conduct analyses for antimony, arsenic (effective January 23, 2006), asbestos,
 7845 barium, beryllium, cadmium, chromium, cyanide, fluoride, mercury, nickel,
 7846 nitrate, nitrite, selenium, and thallium if the laboratory does as follows:
 7847
 7848 1) It analyzes performance evaluation (PE) samples, provided by the Agency
 7849 pursuant to 35 Ill. Adm. Code 186, that include those substances at levels
 7850 not in excess of levels expected in drinking water; and
 7851
 7852 2) It achieves quantitative results on the analyses within the following
 7853 acceptance limits:
 7854
 7855 A) Antimony: $\pm 30\%$ at greater than or equal to 0.006 mg/l.
 7856
 7857 B) Arsenic: $\pm 30\%$ at greater than or equal to 0.003 mg/l.
 7858
 7859 C) Asbestos: 2 standard deviations based on study statistics.
 7860
 7861 D) Barium: $\pm 15\%$ at greater than or equal to 0.15 mg/l.
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 7863 E) Beryllium: $\pm 15\%$ at greater than or equal to 0.001 mg/l.
 7864
 7865 F) Cadmium: $\pm 20\%$ at greater than or equal to 0.002 mg/l.
 7866
 7867 G) Chromium: $\pm 15\%$ at greater than or equal to 0.01 mg/l.
 7868
 7869 H) Cyanide: $\pm 25\%$ at greater than or equal to 0.1 mg/l.
 7870
 7871 I) Fluoride: $\pm 10\%$ at 1 to 10 mg/l.
 7872
 7873 J) Mercury: $\pm 30\%$ at greater than or equal to 0.0005 mg/l.
 7874
 7875 K) Nickel: $\pm 15\%$ at greater than or equal to 0.01 mg/l.
 7876
 7877 L) Nitrate: $\pm 10\%$ at greater than or equal to 0.4 mg/l.
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 7879 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.

O) Thallium: $\pm 30\%$ at greater than or equal to 0.002 mg/l.

BOARD NOTE: Derived from 40 CFR 141.23(k) ~~(2007)~~ and appendix A to 40 CFR 141 (2009), as added at 73 Fed. Reg. 31616 (June 3, 2008).

(Source: Amended at 35 Ill. Reg. _____, effective _____)

Section 611.612 Monitoring Requirements for Old Inorganic MCLs

- a) Analyses for the purpose of determining compliance with the old inorganic MCLs of Section 611.300 are required as follows:
 - 1) Analyses for all CWSs utilizing surface water sources must be repeated at yearly intervals.
 - 2) Analyses for all CWSs utilizing only groundwater sources must be repeated at three-year intervals.
 - 3) This subsection (a)(3) corresponds with 40 CFR 141.23(1)(3), which requires monitoring for the repealed old MCL for nitrate at a frequency specified by the state. The Board has followed the USEPA lead and repealed that old MCL. This statement maintains structural consistency with USEPA rules.
 - 4) This subsection (a)(4) corresponds with 40 CFR 141.23(1)(4), which authorizes the state to determine compliance and initiate enforcement action. This statement maintains structural consistency with USEPA rules.
- b) If the result of an analysis made under subsection (a) of this Section indicates that the level of any contaminant listed in Section 611.300 exceeds the old MCL, the supplier must report to the Agency within seven days and initiate three additional analyses at the same sampling point within one month.
- c) When the average of four analyses made pursuant to subsection (b) of this Section, rounded to the same number of significant figures as the old MCL for the substance in question, exceeds the old MCL, the supplier must notify the Agency and give notice to the public pursuant to Subpart V of this Part. Monitoring after public notification must be at a frequency designated by the Agency by a SEP granted pursuant to Section 611.110 and must continue until the old MCL has not

- 7923 been exceeded in two successive samples or until a different monitoring schedule
 7924 becomes effective as a condition to a variance, an adjusted standard, a site
 7925 specific rule, an enforcement action, or another SEP granted pursuant to Section
 7926 611.110.
 7927
- 7928 d) This subsection (d) corresponds with 40 CFR 141.23(o), which pertains to
 7929 monitoring for the repealed old MCL for nitrate. This statement maintains
 7930 structural consistency with USEPA rules.
 7931
- 7932 e) This subsection (e) corresponds with 40 CFR 141.23(p), which pertains to the use
 7933 of existing data up until a date long since expired. This statement maintains
 7934 structural consistency with USEPA rules.
 7935
- 7936 f) Except for arsenic, for which analyses must be made in accordance with Section
 7937 611.611, analyses conducted to determine compliance with the old MCLs of
 7938 Section 611.300 must be made in accordance with the following methods,
 7939 incorporated by reference in Section 611.102, or alternative methods approved by
 7940 the Agency pursuant to Section 611.480.
 7941
- 7942 1) Fluoride: The methods specified in Section 611.611(c) must apply for the
 7943 purposes of this Section.
 7944
- 7945 2) Iron.
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- 7947 A) Standard Methods.
 7948
- 7949 i) Method 3111 B, 18th, 19th, or 21st ed.;
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- 7951 ii) Method 3113 B, 18th, 19th, or 21st ed.;
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- 7953 iii) Method 3120 B, 18th, 19th, 20th, or 21st ed.
 7954
- 7955 ~~BOARD NOTE: On March 12, 2007 (at 72 Fed. Reg. 11200),~~
 7956 ~~USEPA amended the entries for iron in the table at 40 CFR~~
 7957 ~~143.4(b) to allow the use of Standard Methods Online (at~~
 7958 ~~www.standardmethods.org), Method 3111 B, Method 3113 B, and~~
 7959 ~~Method 3120 B (as approved in 1999). The Board has instead~~
 7960 ~~eited to the 21st edition of Standard Methods for the Examination~~
 7961 ~~of Water and Wastewater (the printed version of Standard~~
 7962 ~~Methods), since the versions of Method 3111, Method 3113, and~~
 7963 ~~Method 3120 that appear in that printed volume are those cited by~~
 7964 ~~USEPA as acceptable for use. USEPA later added Method 3111~~
 7965 ~~B, Method 3113 B, and Method 3120 B from the 21st edition of~~

7966 Standard Methods as approved alternative methods in appendix A
7967 to subpart C of 40 CFR 141, added on June 3, 2008 (at 73 Fed.
7968 Reg. 31616).

- 7969
7970 B) USEPA Environmental Metals Methods.
7971
7972 i) Method 200.7 (rev. 4.4); or
7973
7974 ii) Method 200.9 (rev. 2.2).
7975
7976 C) Axially viewed inductively coupled plasma-atomic emission
7977 spectrometry (AVICP-AES): USEPA ~~NERL Methods~~: Method
7978 200.5.
7979

7980 BOARD NOTE: USEPA added this method as an approved
7981 alternative method in appendix A to subpart C of 40 CFR 141;
7982 added on June 3, 2008 (at 73 Fed. Reg. 31616).

7983
7984 BOARD NOTE: USEPA added Standard Methods, 21st ed.; Methods
7985 3111 B, 3113 B, and 3120 B and USEPA NERL Method 200.5 as
7986 approved alternative methods for iron in appendix A to subpart C of 40
7987 CFR 141 on June 3, 2008 (at 73 Fed. Reg. 31616).

7988
7989 3) Manganese.

- 7990
7991 A) Standard Methods.
7992
7993 i) Method 3111 B, 18th, 19th, or 21st ed.;
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7995 ii) Method 3113 B, 18th, 19th, or 21st ed.; or
7996
7997 iii) Method 3120 B, 18th, 19th, 20th, or 21st ed.

7998
7999 ~~BOARD NOTE: On March 12, 2007 (at 72 Fed. Reg. 11200),~~
8000 ~~USEPA amended the entries for manganese in the table at 40 CFR~~
8001 ~~143.4(b) to allow the use of Standard Methods Online (at~~
8002 ~~www.standardmethods.org), Method 3111 B, Method 3113 B, and~~
8003 ~~Method 3120 B (as approved in 1999). The Board has instead~~
8004 ~~cited to the 21st edition of Standard Methods for the Examination~~
8005 ~~of Water and Wastewater (the printed version of Standard~~
8006 ~~Methods), since the versions of Method 3111, Method 3113, and~~
8007 ~~Method 3120 that appear in that printed volume are those cited by~~
8008 ~~USEPA as acceptable for use. USEPA later added Method 3111~~

8009 ~~B, Method 3113 B, and Method 3120 B from the 21st edition of~~
8010 ~~Standard Methods as approved alternative methods in appendix A~~
8011 ~~to subpart C of 40 CFR 141, added on June 3, 2008 (at 73 Fed.~~
8012 ~~Reg. 31616).~~

8013
8014 B) USEPA Environmental Metals Methods.

8015
8016 i) Method 200.7 (rev. 4.4);

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8018 ii) Method 200.8 (rev. 5.3); or

8019
8020 iii) Method 200.9 (rev. 2.2).

8021
8022 C) Axially viewed inductively coupled plasma-atomic emission
8023 spectrometry (AVICP-AES): USEPA ~~NERL Methods~~: Method
8024 200.5.

8025
8026 BOARD NOTE: USEPA added Standard Methods, 21st ed.; Methods
8027 3111 B, 3113 B, and 3120 B and USEPA NERL Method 200.5 as
8028 approved alternative methods for manganese in appendix A to subpart C
8029 of 40 CFR 141 on June 3, 2008 (at 73 Fed. Reg. 31616).

8030
8031 ~~BOARD NOTE: USEPA added this method as an approved~~
8032 ~~alternative method in appendix A to subpart C of 40 CFR 141,~~
8033 ~~added on June 3, 2008 (at 73 Fed. Reg. 31616).~~

8034
8035 4) Zinc.

8036
8037 A) Standard Methods.

8038
8039 i) Method 3111 B, 18th, 19th, or 21st ed.; or

8040
8041 ii) Method 3120 B, 18th, 19th, 20th, or 21st ed.

8042
8043 ~~BOARD NOTE: On March 12, 2007 (at 72 Fed. Reg. 11200),~~
8044 ~~USEPA amended the entries for zinc in the table at 40 CFR~~
8045 ~~143.4(b) to allow the use of Standard Methods Online (at~~
8046 ~~www.standardmethods.org), Method 3111 B and Method 3120 B~~
8047 ~~(as approved in 1999). The Board has instead cited to the 21st~~
8048 ~~edition of Standard Methods for the Examination of Water and~~
8049 ~~Wastewater (the printed version of Standard Methods), since the~~
8050 ~~versions of Method 3111 and Method 3120 that appear in that~~
8051 ~~printed volume are those cited by USEPA as acceptable for use.~~

USEPA later added Method 3111 B, Method 3113 B, and Method 3120 B from the 21st edition of Standard Methods as approved alternative methods in appendix A to subpart C of 40 CFR 141, added on June 3, 2008 (at 73 Fed. Reg. 31616).

B) USEPA Environmental Metals Methods.

i) Method 200.7 (rev. 4.4); or

ii) Method 200.8 (rev. 5.3).

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

BOARD NOTE: USEPA added Standard Methods, 21st ed.; Methods 3111 B and 3120 B and USEPA NERL Method 200.5 as approved alternative methods for zinc in appendix A to subpart C of 40 CFR 141 on June 3, 2008 (at 73 Fed. Reg. 31616).

~~BOARD NOTE: USEPA added this method as an approved alternative method in appendix A to subpart C of 40 CFR 141, added on June 3, 2008 (at 73 Fed. Reg. 31616).~~

BOARD NOTE: The provisions of subsections (a) through (e)(f) of this Section derive from 40 CFR 141.23(l) through (p) (2009)(2007). Subsections (f)(2) through (f)(4) of this Section relate exclusively to additional State requirements. The Board retained subsection (f) of this Section to set forth methods for the inorganic contaminants for which there is a State-only MCL. The methods specified are those set forth in 40 CFR 143.4(b) (2007) and appendix A to subpart C of 40 CFR 141 (2009), as added at 73 Fed. Reg. 31616 (June 3, 2008), for secondary MCLs.

(Source: Amended at 35 Ill. Reg. _____, effective _____)

SUBPART O: ORGANIC MONITORING AND ANALYTICAL REQUIREMENTS

Section 611.645 Analytical Methods for Organic Chemical Contaminants

Analysis for the Section 611.311(a) VOCs under Section 611.646; the Section 611.311(c) SOCs under Section 611.648; the Section 611.310 old MCLs under Section 611.641; and for THMs, TTHMs, and TTHM potential must be conducted using the methods listed in this Section ~~or by alternative methods as approved by the Agency pursuant to Section 611.480~~. All methods are from USEPA Organic Methods, unless otherwise indicated. All methods are incorporated by

8095 reference in Section 611.102. Other required analytical test procedures germane to the conduct
 8096 of these analyses are contained in the USEPA document, "Technical Notes of Drinking Water
 8097 Methods," incorporated by reference in Section 611.102.

8098
 8099 Volatile Organic Chemical Contaminants (VOCs).
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Contaminant	Analytical Methods
Benzene	502.2 (rev. 2.1), 524.2 (rev. 4.1), USEPA <u>OGWDW Methods, Method 524.3 (rev. 1.0)</u>
Carbon tetrachloride	502.2 (rev. 2.1), 524.2 (rev. 4.1), USEPA <u>OGWDW Methods, Method 524.3 (rev. 1.0), 551.1 (rev. 1.0)</u>
Chlorobenzene	502.2 (rev. 2.1), 524.2 (rev. 4.1), USEPA <u>OGWDW Methods, Method 524.3 (rev. 1.0)</u>
1,2-Dichlorobenzene	502.2 (rev. 2.1), 524.2 (rev. 4.1), USEPA <u>OGWDW Methods, Method 524.3 (rev. 1.0)</u>
1,4-Dichlorobenzene	502.2 (rev. 2.1), 524.2 (rev. 4.1), USEPA <u>OGWDW Methods, Method 524.3 (rev. 1.0)</u>
1,2-Dichloroethane	502.2 (rev. 2.1), 524.2 (rev. 4.1), USEPA <u>OGWDW Methods, Method 524.3 (rev. 1.0)</u>
cis-Dichloroethylene	502.2 (rev. 2.1), 524.2 (rev. 4.1), USEPA <u>OGWDW Methods, Method 524.3 (rev. 1.0)</u>
trans-Dichloroethylene	502.2 (rev. 2.1), 524.2 (rev. 4.1), USEPA <u>OGWDW Methods, Method 524.3 (rev. 1.0)</u>
Dichloromethane	502.2 (rev. 2.1), 524.2 (rev. 4.1), USEPA <u>OGWDW Methods,</u>

1,2-Dichloropropane	<u>Method 524.3 (rev. 1.0)</u> <u>502.2 (rev. 2.1), 524.2</u> <u>(rev. 4.1), USEPA</u> <u>OGWDW Methods,</u>
Ethylbenzene	<u>Method 524.3 (rev. 1.0)</u> <u>502.2 (rev. 2.1), 524.2</u> <u>(rev. 4.1), USEPA</u> <u>OGWDW Methods,</u>
Styrene	<u>Method 524.3 (rev. 1.0)</u> <u>502.2 (rev. 2.1), 524.2</u> <u>(rev. 4.1), USEPA</u> <u>OGWDW Methods,</u>
Tetrachloroethylene	<u>Method 524.3 (rev. 1.0)</u> <u>502.2 (rev. 2.1), 524.2</u> <u>(rev. 4.1), USEPA</u> <u>OGWDW Methods,</u> <u>Method 524.3 (rev. 1.0),</u>
1,1,1-Trichloroethane	<u>551.1 (rev. 1.0)</u> <u>502.2 (rev. 2.1), 524.2</u> <u>(rev. 4.1), USEPA</u> <u>OGWDW Methods,</u> <u>Method 524.3 (rev. 1.0),</u>
Trichloroethylene	<u>551.1 (rev. 1.0)</u> <u>502.2 (rev. 2.1), 524.2</u> <u>(rev. 4.1), USEPA</u> <u>OGWDW Methods,</u> <u>Method 524.3 (rev. 1.0),</u>
Toluene	<u>551.1 (rev. 1.0)</u> <u>502.2 (rev. 2.1), 524.2</u> <u>(rev. 4.1), USEPA</u> <u>OGWDW Methods,</u>
1,2,4-Trichlorobenzene	<u>Method 524.3 (rev. 1.0)</u> <u>502.2 (rev. 2.1), 524.2</u> <u>(rev. 4.1), USEPA</u> <u>OGWDW Methods,</u>
1,1-Dichloroethylene	<u>Method 524.3 (rev. 1.0)</u> <u>502.2 (rev. 2.1), 524.2</u> <u>(rev. 4.1), USEPA</u> <u>OGWDW Methods,</u>
1,1,2-Trichloroethane	<u>Method 524.3 (rev. 1.0)</u> <u>502.2 (rev. 2.1), 524.2</u> <u>(rev. 4.1), USEPA</u> <u>OGWDW Methods,</u>

Vinyl chloride	<u>Method 524.3 (rev. 1.0)</u> <u>502.2 (rev. 2.1), 524.2</u> <u>(rev. 4.1), USEPA</u> <u>OGWDW Methods,</u> <u>Method 524.3 (rev. 1.0)</u> <u>502.2 (rev. 2.1), 524.2</u> <u>(rev. 4.1), USEPA</u> <u>OGWDW Methods,</u> <u>Method 524.3 (rev. 1.0)</u>
Xylenes (total)	<u>Method 524.3 (rev. 1.0)</u> <u>502.2 (rev. 2.1), 524.2</u> <u>(rev. 4.1), USEPA</u> <u>OGWDW Methods,</u> <u>Method 524.3 (rev. 1.0)</u>

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 8102 BOARD NOTE: USEPA added USEPA OGWDW Method 524.3 (rev. 1.0) as an
 8103 alternative method for all of the VOCs in appendix A to subpart C of 40 CFR 141 on
 8104 August 3, 2009 (at 74 Fed. Reg. 38348).
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8106 Synthetic Organic Chemical Contaminants (SOCs).
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Contaminant	Analytical Methods
2,3,7,8-Tetrachlorodibenzodioxin (2,3,7,8-TCDD or dioxin) 2,4-D	Dioxin and Furan Method 1613 (rev. B) 515.2 (rev. 1.1), 555 (rev. 1.0), 515.1 (rev. 4.0), <u>USEPA Organic and</u> <u>Inorganic Methods,</u> <u>Method 515.3 (rev. 1.0),</u> <u>USEPA OGWDW</u> Methods, Method 515.4 (rev. 1.0), ASTM Method D5317-93 or D5317-98 515.2 (rev. 1.1), 555 (rev. 1.0), 515.1 (rev. 4.0), <u>USEPA Organic and</u> <u>Inorganic Methods,</u> <u>Method 515.3 (rev. 1.0),</u> <u>USEPA OGWDW</u> Methods, Method 515.4 (rev. 1.0), ASTM Method D5317-93 or D5317-98 505 (rev. 2.1) ¹ , 507 (rev. 2.1), 508.1 (rev. 2.0), 525.2 (rev. 2.0), 551.1 (rev. 1.0)
2,4,5-TP (Silvex)	515.2 (rev. 1.1), 555 (rev. 1.0), 515.1 (rev. 4.0), <u>USEPA Organic and</u> <u>Inorganic Methods,</u> <u>Method 515.3 (rev. 1.0),</u> <u>USEPA OGWDW</u> Methods, Method 515.4 (rev. 1.0), ASTM Method D5317-93 or D5317-98 505 (rev. 2.1) ¹ , 507 (rev. 2.1), 508.1 (rev. 2.0), 525.2 (rev. 2.0), 551.1 (rev. 1.0)
Alachlor	505 (rev. 2.1) ¹ , 507 (rev. 2.1), 508.1 (rev. 2.0), 525.2 (rev. 2.0), 551.1 (rev. 1.0)

Atrazine	505 (rev. 2.1) ¹ , 507 (rev. 2.1), 508.1 (rev. 2.1), 525.2 (rev. 2.0), 551.1 (rev. 1.0), Syngenta AG-625 ²
Benzo(a)pyrene	525.2 (rev. 2.0), 550, 550.1
Carbofuran	531.1 (rev. 3.1), USEPA OGWDW Methods, Method 531.2 (rev. 1.0), Standard Methods, 18 th ed. Supplement, 19 th ed., or 20 th ed.; Method 6610 or Standard Methods 21 st ed. or Standard Methods Online; Method 6610 B-04
Chlordane	505 (rev. 2.1), 508 (rev. 3.1), 508.1 (rev. 2.1), 525.2 (rev. 2.0)
Dalapon	515.1 (rev. 4.0), 552.1 (rev. 1.0), 552.2 (rev. 1.0), USEPA Organic and Inorganic Methods, Method 515.3 (rev. 1.0), USEPA OGWDW Methods, Method 515.4 (rev. 1.0), OGWDW Methods, Method 552.3 (rev. 1.0), and 557; and Standard Methods, 21 st ed., Method 6640 B
Di(2-ethylhexyl)adipate	506 (rev. 1.1), 525.2 (rev. 2.0)
Di(2-ethylhexyl)phthalate	506 (rev. 1.1), 525.2 (rev. 2.0)
Dibromochloropropane (DBCP)	504.1 (rev. 1.1), USEPA OGWDW Methods, Method 524.3 (rev. 1.0), 551.1 (rev. 1.0)

Dinoseb	515.1 (rev. 4.0), 515.2 (rev. 1.1), USEPA Organic and Inorganic Methods, Method 515.3 (rev. 1.0), USEPA OGWDW Methods, Method 515.4 (rev. 1.0), 555 (rev. 1.0)
Diquat	USEPA NERL Method 549.2 (rev. 1.0) 549.1
Endothall	548.1 (rev. 2.0)
Endrin	505 (rev. 2.1), 508 (rev. 3.1), 508.1 (rev. 2.0), 525.2 (rev. 2.0), 551.1 (rev. 1.0)
Ethylene dibromide Dibromide (EDB)	504.1 (rev. 1.1), USEPA OGWDW Methods, Method 524.3 (rev. 1.0), 551.1 (rev.1.0)
Glyphosate	547, Standard Methods, 18 th ed., 19 th ed., or 20 th ed.,; Method 6651
Heptachlor	505 (rev. 2.1), 508 (rev. 3.1), 508.1 (rev. 2.0), 525.2 (rev. 2.0), 551.1 (rev. 1.0)
Heptachlor Epoxide	505 (rev. 2.1), 508 (rev. 3.1), 508.1 (rev. 2.0), 525.2 (rev. 2.0), 551.1 (rev.1.0)
Hexachlorobenzene	505 (rev. 2.1), 508 (rev. 3.1), 508.1 (rev. 2.0), 525.2 (rev. 2.0), 551.1 (rev. 1.0)
Hexachlorocyclopentadiene	505 (rev. 2.1), 508 (rev. 3.1), 508.1 (rev. 2.0), 525.2 (rev. 2.0), 551.1 (rev. 1.0)
Lindane	505 (rev. 2.1), 508 (rev. 3.1), 508.1 (rev. 2.0), 525.2 (rev. 2.0), 551.1 (rev. 1.0)

Methoxychlor	505 (rev. 2.1), 508 (rev. 3.1), 508.1 (rev. 2.0), 525.2 (rev. 2.0), 551.1 (rev. 1.0)
Oxamyl	531.1 (rev. 3.1); USEPA OGWDW Methods, Method 531.2 (rev. 1.0); Standard Methods, 18 th ed. Supplement, 19 th ed., or 20 th ed.; Method 6610; or Standard Methods 21 st ed., Method 6610 B; or Standard Methods Online; Method 6610 B-04
PCBs (measured for compliance purposes as <u>decachlorobiphenyl</u> (decchlorobiphenyl) PCBs (qualitatively identified as Aroclors)	508A (rev. 1.0)
Pentachlorophenol	505 (rev. 2.1), 508 (rev. 3.1), 508.1 (rev. 2.0), 525.2 (rev. 2.0) 515.1 (rev. 4.0), 515.2 (rev. 1.1), 525.2 (rev. 2.0), 555 (rev. 1.0), USEPA <u>Organic and Inorganic Methods</u> , Method 515.3 (rev. 1.0), USEPA OGWDW Methods, Method 515.4 (rev. 1.0), ASTM Method D5317-93 or D5317-98(2003)
Picloram	515.1 (rev. 4.0), 515.2, (rev. 1.1) 555 (rev. 1.0), USEPA <u>Organic and Inorganic Methods</u> , Method 515.3 (rev. 1.0), USEPA OGWDW Methods, Method 515.4 (rev. 1.0), ASTM Method D5317-93 or D5317-98(2003)

Simazine	505 (rev. 2.1) ¹ , 507 (rev. 2.1), 508.1 (rev. 2.0), 525.2 (rev. 2.0), <u>551.1 (rev. 1.0)</u> 551.2
Toxaphene	505 (rev. 2.1), 508 (rev. 2.1), 508.1 (rev. 2.0), 525.2 (rev. 2.0), 508.1

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

Total Trihalomethanes (TTHMs).

Contaminant	Analytical Methods
Total Trihalomethanes (TTHMs), Trihalomethanes (THMs), and Maximum Total Trihalomethane Potential	502.2 (rev. 2.1), 524.2 (rev. 4.1), <u>USEPA OGWDW Methods, Method 524.3 (rev. 1.0), 551.1 (rev. 1.0)</u>

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

State-Only MCLs (for which a method is not listed above).

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

Dieldrin

505 (rev. 2.1), 508 (rev. 3.1), 508.1 (rev. 2.0), 525.2 (rev. 2.0)

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

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

BOARD NOTE: Derived from 40 CFR 141.24(e)-(2007) and appendix A to subpart C of 40 CFR 141 (2009), as amended added at 7473 Fed. Reg. 38348 (August 3, 2009) and 75 Fed. Reg. 32295 (June 8, 2010)31616 (June 3, 2008).

(Source: Amended at 35 Ill. Reg. _____, effective _____)

SUBPART P: THM MONITORING AND ANALYTICAL REQUIREMENTS

Section 611.680 Sampling, Analytical, and other Requirements

- a) Required monitoring.
 - 1) A CWS supplier that serves a population of 10,000 or more individuals and which adds a disinfectant (oxidant) to the water in any part of the drinking water treatment process must analyze for TTHMs in accordance with this Subpart P.
 - 2) For the purpose of this Subpart P, the minimum number of samples required to be taken by the supplier must be based on the number of treatment plants used by the supplier. However, the Agency shall, by a SEP issued pursuant to Section 611.110, provide that multiple wells drawing raw water from a single aquifer be considered one treatment plant for determining the minimum number of samples.
 - 3) All samples taken within an established frequency must be collected

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- b) A CWS supplier that serves 10,000 or more individuals.
 - 1) For a CWS supplier utilizing surface a water source in whole or in part, and for a CWS supplier utilizing only a groundwater source, except as provided in Section 611.683, analyses for TTHMs must be performed at quarterly intervals on at least four water samples for each treatment plant used by the system. At least 25 percent of the samples must be taken at locations within the distribution system reflecting the maximum residence time (MRT) of the water in the system. The remaining 75 percent must be taken at representative locations in the distribution system, taking into account the number of persons served, different sources of water and different treatment methods employed. The results of all analyses per quarter must be arithmetically averaged and reported to the Agency within 30 days after the supplier's receipt of such results. All samples collected must be used in the computation of the average, unless the analytical results are invalidated for technical reasons. Sampling and analyses must be conducted in accordance with the methods listed in Section 611.685.
 - 2) Upon application by a CWS supplier, the Agency must, by a SEP issued pursuant to Section 611.110, reduce the monitoring frequency required by subsection (b)(1) to a minimum of one sample analyzed for TTHMs per quarter taken at a point in the distribution system reflecting the MRT of the water in the system, if the Agency determines that the data from at least one year of monitoring in accordance with subsection (b)(1) and local conditions demonstrate that TTHM concentrations will be consistently below the MCL.
 - 3) If at any time during which the reduced monitoring frequency prescribed under this subsection (b) applies, the results from any analysis exceed 0.10 mg/l TTHMs and such results are confirmed by at least one check sample taken promptly after such results are received, or if the CWS supplier makes any significant change to its source of water or treatment program, the supplier must immediately begin monitoring in accordance with the requirements of subsection (b)(1), which monitoring must continue for at least ~~one~~ year before the frequency may be reduced again. The Agency must, by a SEP issued pursuant to Section 611.110, require monitoring in excess of the minimum frequency where it is necessary to detect variations of TTHM levels within the distribution system.

BOARD NOTE: Subsections (a) and (b) of this Section are derived from 40 CFR 141.30(a) and (b) (2009)(2002), modified to remove the limitation regarding

8213 addition of disinfectant.

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- c) Surface water sources for a CWS supplier that serves fewer than 10,000 individuals. Suppliers must have submitted at least one initial sample per treatment plant for analysis or analytical results from a certified laboratory for MRT concentration taken between May 1, 1990, and October 31, 1990. After written request by the supplier and the determination by the Agency that the results of the sample indicate that the CWS supplier is not likely to exceed the MCL, the CWS must continue to submit one annual sample per treatment plant for analysis or analytical results from a certified laboratory to the Agency taken between May 1 and October 31 of succeeding years. If the sample exceeds the MCL, the CWS must submit to the Agency samples in accordance with the sampling frequency specified in subsection (b) of this Section.

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BOARD NOTE: This is an additional State requirement.

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- d) Groundwater sources for a CWS supplier that serves fewer than 10,000 individuals. Suppliers are not required to submit samples for THM analysis under this Subpart P.

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BOARD NOTE: This is an additional State requirement.

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(Source: Amended at 35 Ill. Reg. _____, effective _____)

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SUBPART Q: RADIOLOGICAL MONITORING AND ANALYTICAL REQUIREMENTS

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Section 611.720 Analytical Methods

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- a) The methods specified below, or alternative methods approved by the Agency pursuant to Section 611.480, incorporated by reference in Section 611.102, are to be used to determine compliance with Section 611.330, except in cases where alternative methods have been approved in accordance with Section 611.480.

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- 1) Gross Alpha and Beta.

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- A) Standard Methods.

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- i) Method 302, 13th ed.; or

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- ii) Method 7110 B, 17th, 18th, 19th, 20th, or 21st ed.;

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~~BOARD NOTE: On March 12, 2007 (at 72 Fed. Reg. 41200), USEPA amended the entry for gross alpha and beta~~

8256 by evaporation in the table at corresponding 40 CFR
 8257 141.25(a) to allow the use of Standard Methods Online (at
 8258 www.standardmethods.org), Method 7110 B (as approved
 8259 in 2000). The Board has instead cited to the 21st-edition of
 8260 Standard Methods for the Examination of Water and
 8261 Wastewater (the printed version of Standard Methods),
 8262 since the version of Method 7110 that appears in that
 8263 printed volume is that cited by USEPA as acceptable for
 8264 use. USEPA later added Method 7110 B from the 21st
 8265 edition of Standard Methods as an approved alternative
 8266 method in appendix A to subpart C of 40 CFR 141, added
 8267 on June 3, 2008 (at 73 Fed. Reg. 31616).
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- 8269 B) USEPA Interim Radiochemical Methods: page 1-3;
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- 8271 C) USEPA Radioactivity Methods, ÷ Method 900.0;
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- 8273 D) USEPA Radiochemical Analyses: page 1-5;
- 8274
- 8275 E) USEPA Radiochemistry Methods Procedures, ÷ Method 00-01; or
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- 8277 F) USGS Methods, ÷ Method R-1120-76.
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8279 BOARD NOTE: USEPA added Standard Methods, 21st ed., Method 7110
 8280 B as an approved alternative method for gross alpha and beta in appendix
 8281 A to subpart C of 40 CFR 141 on June 3, 2008 (at 73 Fed. Reg. 31616).
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8283 2) Gross Alpha.

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- 8285 A) Standard Methods, 18th, 19th, 20th, or 21st ed., ÷ Method 7110 C; or
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8287 ~~BOARD NOTE: On March 12, 2007 (at 72 Fed. Reg. 11200),~~
 8288 ~~USEPA amended the entry for gross alpha by coprecipitation in the~~
 8289 ~~table at corresponding 40 CFR 141.25(a) to allow the use of~~
 8290 ~~Standard Methods Online (at www.standardmethods.org), Method~~
 8291 ~~7110 C (as approved in 2000). The Board has instead cited to the~~
 8292 ~~21st-edition of Standard Methods for the Examination of Water and~~
 8293 ~~Wastewater (the printed version of Standard Methods), since the~~
 8294 ~~version of Method 7110 that appears in that printed volume is that~~
 8295 ~~cited by USEPA as acceptable for use. USEPA later added~~
 8296 ~~Method 7110 C from the 21st-edition of Standard Methods as an~~
 8297 ~~approved alternative method in appendix A to subpart C, added on~~
 8298 ~~June 3, 2008 (at 73 Fed. Reg. 31616).~~

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B) USEPA Radiochemistry ~~Procedures, Methods~~: Method 00-02.

BOARD NOTE: USEPA added Standard Methods, 21st ed., Method 7110 C as an approved alternative method for gross alpha in appendix A to subpart C of 40 CFR 141 on June 3, 2008 (at 73 Fed. Reg. 31616).

3) Radium-226.

A) ASTM Methods.

i) Method D2460-97 or D2460-07; or

ii) Method D3454-97 or D3454-05;

B) New York Radium Method;

C) Standard Methods.

i) Method 304, 13th ed.;

ii) Method 305, 13th ed.;

iii) Method 7500-Ra B, 17th, 18th, 19th, 20th, or 21st ed.; or

iv) Method 7500-Ra C, 17th, 18th, 19th, 20th, or 21st ed.;

~~BOARD NOTE: On March 12, 2007 (at 72 Fed. Reg. 11200), USEPA amended the entries for radium-226 in the table at eorresponding 40 CFR 141.25(a) to allow the use of Standard Methods Online (at www.standardmethods.org), Method 7500 Ra B and C (as approved in 2000). The Board has instead cited to the 21st edition of Standard Methods for the Examination of Water and Wastewater (the printed version of Standard Methods), since the version of Method 7500 Ra that appears in that printed volume is that cited by USEPA as acceptable for use. USEPA later added Method 7500 Ra B and C from the 21st edition of Standard Methods as an approved alternative method in appendix A to subpart C, added on June 3, 2008 (at 73 Fed. Reg. 31616).~~

D) EML Procedures~~USDOE Manual~~ (27th or 28th ed.); Method Ra-04;

- 8342 E) USEPA Interim Radiochemical Methods: pages 13-15 or and 16-
- 8343 23;
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- 8345 F) USEPA Radioactivity Methods, Methods 903.0, 903.1;
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- 8347 G) USEPA Radiochemical Analyses, pages: page 19-32;
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- 8349 H) USEPA Radiochemistry Procedures, MethodMethods: Methods
- 8350 Ra-03 or; Ra-04; or
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- 8352 I) USGS Methods.
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- 8354 i) Method R-1140-76; or
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- 8356 ii) Method R-1141-76.
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- 8358 J) Georgia Radium Method.
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8360 BOARD NOTE: USEPA added Standard Methods, 21st ed., Methods

8361 7500-Ra B and C as approved alternative methods for radium-226 in

8362 appendix A to subpart C of 40 CFR 141 on June 3, 2008 (at 73 Fed. Reg.

8363 31616). USEPA added ASTM Methods D2460-07 and D3454-05 as

8364 approved alternative methods for radium-226 in appendix A to subpart C

8365 of 40 CFR 141 on June 8, 2010 (at 75 Fed. Reg. 32295).

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- 8367 4) Radium-228.
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- 8369 A) Standard Methods, 17th, 18th, 19th, 20th, or 21st ed., Method 7500-
- 8370 Ra D;
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8372 ~~BOARD NOTE: On March 12, 2007 (at 72 Fed. Reg. 11200),~~

8373 ~~USEPA amended the entry for radium 228 by radiochemical in the~~

8374 ~~table at corresponding 40 CFR 141.25(a) to allow the use of~~

8375 ~~Standard Methods Online (at www.standardmethods.org), Method~~

8376 ~~7500-Ra D (as approved in 2000). The Board has instead cited to~~

8377 ~~the 21st edition of Standard Methods for the Examination of Water~~

8378 ~~and Wastewater (the printed version of Standard Methods), since~~

8379 ~~the version of Method 7500-Ra that appears in that printed volume~~

8380 ~~is that cited by USEPA as acceptable for use. USEPA later added~~

8381 ~~Method 7500-Ra D from the 21st edition of Standard Methods as~~

8382 ~~an approved alternative method in appendix A to subpart C of 40~~

8383 ~~CFR 141, added on June 3, 2008 (at 73 Fed. Reg. 31616).~~

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- 8385 B) New York Radium Method;
- 8386
- 8387 C) USEPA Interim Radiochemical Methods, ~~pages: page 24-28;~~
- 8388
- 8389 D) USEPA Radioactivity Methods, ~~Method 904.0;~~
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- 8391 E) USEPA Radiochemical Analyses, ~~pages: page 19-32;~~
- 8392
- 8393 F) USEPA Radiochemistry Procedures, Methods: Method Ra-05;
- 8394
- 8395 G) USGS Methods, ~~Method R-1142-76;~~
- 8396
- 8397 H) New Jersey Radium Method; or
- 8398
- 8399 I) Georgia Radium Method.

BOARD NOTE: USEPA added Standard Methods, 21st ed., Method 7500-Ra D as an approved alternative method for radium-228 in appendix A to subpart C of 40 CFR 141 on June 3, 2008 (at 73 Fed. Reg. 31616).

5) Uranium.

- A) Standard Methods, 17th, 18th, 19th, 20th, or 21st ed., ~~Method 7500-U C;~~

~~BOARD NOTE: On March 12, 2007 (at 72 Fed. Reg. 11200), USEPA amended the entries for uranium by radiochemical and alpha spectrometry in the table at corresponding 40 CFR 141.25(a) to allow the use of Standard Methods Online (at www.standardmethods.org), Method 7500 U C (as approved in 2000). The Board has instead cited to the 21st edition of Standard Methods for the Examination of Water and Wastewater (the printed version of Standard Methods), since the version of Method 7500 U that appears in that printed volume is that cited by USEPA as acceptable for use. USEPA later added Method 7500 U B from the 21st edition of Standard Methods as an approved alternative method in appendix A to subpart C of 40 CFR 141, added on June 3, 2008 (at 73 Fed. Reg. 31616).~~

- B) Standard Methods, 20th ed., ~~Method 3125;~~
- C) ASTM Methods.

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- 8428 i) Method D2907-97;
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 8430 ii) Method D3972-97 or D3972-02;
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 8432 iii) Method D5174-97, ~~or~~ D5174-02, or D5174-07; or
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 8434 iv) Method D5673-03 or Method 5673-05;
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 8436 ~~BOARD NOTE: USEPA added this method as an approved~~
 8437 ~~alternative method in appendix A to subpart C of 40 CFR 141,~~
 8438 ~~added on June 3, 2008 (at 73 Fed. Reg. 31616).~~
 8439
 8440 D) USEPA Radioactivity Methods, ~~÷~~ Methods 908.0, 908.1;
 8441
 8442 E) USEPA Environmental Metals Methods, ~~÷~~ Method 200.8 (rev. 5.3);
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 8444 F) USEPA Radiochemical Analyses, ~~pages: page 33-48~~;
 8445
 8446 G) USEPA Radiochemistry Procedures, Methods: Method 00-07;
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 8448 H) EML Procedures ~~USDOE~~ Manual (27th or 28th ed.), ~~÷~~ Method U-02
 8449 or U-04; or
 8450
 8451 I) USGS Methods.
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 8453 i) Method R-1180-76;
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 8455 ii) Method R-1181-76; or
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 8457 iii) Method R-1182-76.
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8459 BOARD NOTE: If uranium (U) is determined by mass, a conversion
 8460 factor of 0.67 pCi/μg of uranium must be used. This conversion factor is
 8461 based on the 1:1 activity ratio of ²³⁴U and ²³⁸U that is characteristic of
 8462 naturally occurring uranium.
 8463

8464 BOARD NOTE: USEPA added Standard Methods, 21st ed., Method
 8465 7500-U C and ASTM D5673-05 as approved alternative methods for
 8466 uranium in appendix A to subpart C of 40 CFR 141 on June 3, 2008 (at 73
 8467 Fed. Reg. 31616). USEPA added ASTM Method D5174-07 as an
 8468 approved alternative method for uranium in appendix A to subpart C of 40
 8469 CFR 141 on June 8, 2010 (at 75 Fed. Reg. 32295).
 8470

- 8471 6) Radioactive Cesium.
 8472
 8473 A) ASTM Methods.
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 8475 i) Method D2459-72; or
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 8477 ii) Method D3649-91, ~~or~~ D3649-98a, or D3649-06;
 8478
 8479 B) Standard Methods.
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 8481 i) Method 7120, 19th, 20th, or 21st ed.; or
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 8483 ii) Method 7500-Cs B, 17th, 18th, 19th, 20th, or 21st ed.;
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 8485 ~~BOARD NOTE: On March 12, 2007 (at 72 Fed. Reg. 11200),~~
 8486 ~~USEPA amended the entries for radioactive cesium in the table at~~
 8487 ~~corresponding 40 CFR 141.25(a) to allow the use of Standard~~
 8488 ~~Methods Online (at www.standardmethods.org), Method 7120 (as~~
 8489 ~~approved in 1997) and Method 7500-Cs B (as approved in 2000).~~
 8490 ~~The Board has instead cited to the 21st edition of Standard Methods~~
 8491 ~~for the Examination of Water and Wastewater (the printed version~~
 8492 ~~of Standard Methods), since the versions of Method 7120 and~~
 8493 ~~Method 7500-Cs that appear in that printed volume are those cited~~
 8494 ~~by USEPA as acceptable for use. USEPA later added Method~~
 8495 ~~7120 and Method 7500-Cs B from the 21st edition of Standard~~
 8496 ~~Methods as an approved alternative method in appendix A to~~
 8497 ~~subpart C of 40 CFR 141, added on June 3, 2008 (at 73 Fed. Reg.~~
 8498 ~~31616).~~
 8499
 8500 C) EML Procedures USDOE Manual (27th or 28th ed.); Method
 8501 4.5.2.3;
 8502
 8503 D) USEPA Interim Radiochemical Methods, pages: ~~page~~ 4-5;
 8504
 8505 E) USEPA Radioactivity Methods; ~~Methods~~ 901.0, 901.1;
 8506
 8507 F) USEPA Radiochemical Analyses, pages: ~~page~~ 92-95; or
 8508
 8509 G) USGS Methods.
 8510
 8511 i) Method R-1110-76; or
 8512
 8513 ii) Method R-1111-76.
 8514

8515 BOARD NOTE: USEPA added Standard Methods, 21st ed., Methods
 8516 7120 and 7500-Cs B as approved alternative methods for radioactive
 8517 cesium in appendix A to subpart C of 40 CFR 141 on June 3, 2008 (at 73
 8518 Fed. Reg. 31616). USEPA added ASTM Method D3649-06 as an
 8519 approved alternative method for radioactive cesium in appendix A to
 8520 subpart C of 40 CFR 141 on June 8, 2010 (at 75 Fed. Reg. 32295).

7) Radioactive Iodine.

A) ASTM Methods.

i) ~~D3649-91, or D3649-98a, or D3649-06;~~ or

ii) ~~D4785-93, or D4785-98, or D4785-08;~~

B) Standard Methods.

i) Method 7120, 19th, 20th, or 21st ed.;

ii) Method 7500-I B, 17th, 18th, 19th, 20th, or 21st ed.;

iii) Method 7500-I C, 17th, 18th, 19th, 20th, or 21st ed.; or

iv) Method 7500-I D, 17th, 18th, 19th, 20th, or 21st ed.;

8540 ~~BOARD NOTE: On March 12, 2007 (at 72 Fed. Reg. 11200),~~
 8541 ~~USEPA amended the entries for radioactive iodine in the table at~~
 8542 ~~corresponding 40 CFR 141.25(a) to allow the use of Standard~~
 8543 ~~Methods Online (at www.standardmethods.org), Method 7120 (as~~
 8544 ~~approved in 1997) and Method 7500 I B, C, and D (as approved in~~
 8545 ~~2000). The Board has instead cited to the 21st edition of Standard~~
 8546 ~~Methods for the Examination of Water and Wastewater (the~~
 8547 ~~printed version of Standard Methods), since the versions of~~
 8548 ~~Method 7120 and Method 7500 I that appear in that printed~~
 8549 ~~volume are those cited by USEPA as acceptable for use. USEPA~~
 8550 ~~later added Method 7500 I B, C, and D from the 21st edition of~~
 8551 ~~Standard Methods as an approved alternative method in appendix~~
 8552 ~~A to subpart C of 40 CFR 141, added on June 3, 2008 (at 73 Fed.~~
 8553 ~~Reg. 31616).~~

C) EML Procedures~~USDOE~~ Manual (27th or 28th ed.),÷ Method
 4.5.2.3;

8557

- 8558 D) USEPA Interim Radiochemical Methods, pages 6-8 or 9-12;
- 8559
- 8560 E) USEPA Radiochemical Analyses, pages 92-95; or
- 8561
- 8562 F) USEPA Radioactivity Methods, Methods 901.1 or 902.0.
- 8563

BOARD NOTE: USEPA added Standard Methods, 21st ed., Methods 7120 and 7500-I B, C, and D as approved alternative methods for radioactive iodine in appendix A to subpart C of 40 CFR 141 on June 3, 2008 (at 73 Fed. Reg. 31616). USEPA added ASTM Methods D3649-06 and D4785-08 as approved alternative methods for radioactive iodine in appendix A to subpart C of 40 CFR 141 on June 8, 2010 (at 75 Fed. Reg. 32295).

8) Radioactive Strontium-89 & 90.

A) Standard Methods.

- i) Method 303, 13th ed.; or
- ii) Method 7500-Sr B, 17th, 18th, 19th, 20th, or 21st ed.;

~~BOARD NOTE: On March 12, 2007 (at 72 Fed. Reg. 11200), USEPA amended the entry for radioactive strontium in the table at corresponding 40 CFR 141.25(a) to allow the use of Standard Methods Online (at www.standardmethods.org), Method 7500 Sr B (as approved in 2001). The Board has instead cited to the 21st edition of Standard Methods for the Examination of Water and Wastewater (the printed version of Standard Methods), since the version of Method 7500 Sr that appears in that printed volume is that cited by USEPA as acceptable for use. USEPA later added Method 7500 Sr B from the 21st edition of Standard Methods as an approved alternative method in appendix A to subpart C of 40 CFR 141, added on June 3, 2008 (at 73 Fed. Reg. 31616).~~

B) EML Procedures~~USDOE Manual~~ (27th or 28th ed.), Method Sr-01 or Sr-02.

- i) ~~Method Sr-01; or~~
- ii) ~~Method Sr-02;~~

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- C) USEPA Interim Radiochemical Methods, ~~pages: page 29-33~~;
- D) USEPA Radioactivity Methods, ~~Method 905.0~~;
- E) USEPA Radiochemical Analyses, ~~pages: page 65-73~~;
- F) USEPA Radiochemistry Procedures, Methods: Method Sr-04; or
- G) USGS Methods, ~~Method R-1160-76~~.

BOARD NOTE: USEPA added Standard Methods, 21st ed., Method 7500-Sr B as an approved alternative method for radioactive strontium in appendix A to subpart C of 40 CFR 141 on June 3, 2008 (at 73 Fed. Reg. 31616).

9) Tritium.

- A) ASTM Methods: Method D4107-91, ~~or D4107-98~~, or D4107-08;
- B) Standard Methods.
 - i) Method 306, 13th ed.; or
 - ii) Method 7500-³H B, 17th, 18th, 19th, 20th, or 21st ed.;

~~BOARD NOTE: On March 12, 2007 (at 72 Fed. Reg. 11200), USEPA amended the entry for tritium in the table at corresponding 40 CFR 141.25(a) to allow the use of Standard Methods Online (at www.standardmethods.org), Method 7500-³H B (as approved in 2000). The Board has instead cited to the 21st edition of Standard Methods for the Examination of Water and Wastewater (the printed version of Standard Methods), since the version of Method 7500-³H that appears in that printed volume is that cited by USEPA as acceptable for use. USEPA later added Method 7500-³H B from the 21st edition of Standard Methods as an approved alternative method in appendix A to subpart C of 40 CFR 141, added on June 3, 2008 (at 73 Fed. Reg. 31616).~~

- C) USEPA Interim Radiochemical Methods, ~~pages: page 34-37~~;

- 8644 D) USEPA Radioactivity Methods, ~~Method 906.0;~~
- 8645
- 8646 E) USEPA Radiochemical Analyses, ~~pages: page 87-91;~~
- 8647
- 8648 F) USEPA Radiochemistry Procedures, Methods: Method H-02; or
- 8649
- 8650 G) USGS Methods, ~~Method R-1171-76.~~
- 8651

BOARD NOTE: USEPA added Standard Methods, 21st ed., Method 7500-³H B as an approved alternative method for tritium in appendix A to subpart C of 40 CFR 141 on June 3, 2008 (at 73 Fed. Reg. 31616). USEPA added ASTM Method D4107-08 as an approved alternative method for tritium in appendix A to subpart C of 40 CFR 141 on June 8, 2010 (at 75 Fed. Reg. 32295).

10) Gamma Emitters.

- 8660 A) ASTM Methods.
- 8661
- 8662 i) Method D3649-91, ~~or D3649-98a,~~ or D3649-06; or
- 8663
- 8664 ii) Method D4785-93, ~~or D4785-00a,~~ or D4785-08;
- 8665
- 8666 B) Standard Methods.
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- 8668 i) Method 7120, 19th, 20th, or 21st ed.;
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- 8670 ii) Method 7500-Cs B, 17th, 18th, 19th, 20th, or 21st ed.; or
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- 8672 iii) Method 7500-I B, 17th, 18th, 19th, 20th, or 21st ed.;
- 8673
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~~BOARD NOTE: On March 12, 2007 (at 72 Fed. Reg. 11200), USEPA amended the entries for gamma emitters in the table at corresponding 40 CFR 141.25(a) to allow the use of Standard Methods Online (at www.standardmethods.org), Method 7120 (as approved in 1997), Method 7500-Cs B (as approved in 2000), and Method 7500-I B (as approved in 2000). The Board has instead cited to the 21st edition of Standard Methods for the Examination of Water and Wastewater (the printed version of Standard Methods), since the versions of Method 7120, Method 7500-Cs, and Method 7500-I that appear in that printed volume are those cited by USEPA as acceptable for use. USEPA later added Method 7150, Method 7500-Cs B, and Method 7500-I B from the~~

21st edition of Standard Methods as an approved alternative method in appendix A to subpart C of 40 CFR 141, added on June 3, 2008 (at 73 Fed. Reg. 31616).

- C) EML Procedures~~USDOE~~ Manual (27th or 28th ed.), Method Ga-01-R;
- D) USEPA Radioactivity Methods, Methods 901.0, 901.1, or 902.0;
- E) USEPA Radiochemical Analyses, ~~pages~~ page 92-95; or
- F) USGS Methods, Method R-1110-76.

BOARD NOTE: USEPA added Standard Methods, 21st ed., Methods 7120, 7500-Cs B, and 7500-I B as approved alternative methods for gamma emitters in appendix A to subpart C of 40 CFR 141 on June 3, 2008 (at 73 Fed. Reg. 31616). USEPA added ASTM Methods D3649-08 and D4785-08 as approved alternative methods for tritium in appendix A to subpart C of 40 CFR 141 on June 8, 2010 (at 75 Fed. Reg. 32295).

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

- 1) "Procedures for Radiochemical Analysis of Nuclear Reactor Aqueous Solutions," available from NTIS.
- 2) EML Procedures~~HASL Procedure~~ Manual (27th or 28th ed.), ~~HASL 300,~~ available from USDOE, EML~~ERDA Health and Safety Laboratory.~~

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

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

Contaminant	Detection Limit
Gross alpha particle	3 pCi/ℓ

activity	
Radium-226	1 pCi/ℓ
Radium-228	1 pCi/ℓ
Uranium	1 µg/ℓ

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BOARD NOTE: Derived from 40 CFR 141.25(c) Table B ~~(2009)~~(2007).

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

Radionuclide	Detection Limit
Tritium	1,000 pCi/ℓ
Strontium-89	10 pCi/ℓ
Strontium-90	2 pCi/ℓ
Iodine-131	1 pCi/ℓ
Cesium-134	10 pCi/ℓ
Gross beta	4 pCi/ℓ
Other radionuclides	1/10 of applicable limit

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BOARD NOTE: Derived from 40 CFR 141.25(c) Table C ~~(2009)~~(2007).

- d) To judge compliance with the MCLs listed in Section 611.330, averages of data must be used and must be rounded to the same number of significant figures as the MCL for the substance in question.

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BOARD NOTE: Derived from 40 CFR 141.25-~~(2007)~~ and appendix A to subpart C of 40 CFR 141 ~~(2009)~~, as added at 73 Fed. Reg. 31616 (June 3, 2008).

(Source: Amended at 35 Ill. Reg. _____, effective _____)

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SUBPART S: GROUNDWATER RULE

Section 611.802 Groundwater Source Microbial Monitoring and Analytical Methods

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- a) Triggered source water monitoring.
 - 1) General requirements. A GWS supplier must conduct triggered source water monitoring if the following conditions exist:
 - A) The supplier does not provide at least 4-log treatment of viruses (using inactivation, removal, or an Agency-approved combination of 4-log virus inactivation and removal) before or at the first customer for each groundwater source; and

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- B) The supplier is notified that a sample collected pursuant to Section 611.521 is total coliform-positive, and the sample is not invalidated by the Agency pursuant to Section 611.523.
 - 2) Sampling requirements. A GWS supplier must collect, within 24 hours after notification of the total coliform-positive sample, at least one groundwater source sample from each groundwater source in use at the time the total coliform-positive sample was collected pursuant to Section 611.521, except as provided in subsection (a)(2)(B) of this Section.
 - A) The Agency may, by a SEP issued pursuant to Section 611.110, extend the 24-hour time limit on a case-by-case basis if it determines that the supplier cannot collect the groundwater source water sample within 24 hours due to circumstances beyond the supplier's control. In the case of an extension, the Agency must specify how much time the supplier has to collect the sample.
 - B) If approved by the Agency, a supplier with more than one groundwater source may meet the requirements of this subsection (a)(2) by sampling a representative groundwater source or sources. If directed by the Agency by a SEP issued pursuant to Section 611.110, the supplier must submit for Agency approval a triggered source water monitoring plan that identifies one or more groundwater sources that are representative of each monitoring site in the system's sample siting plan pursuant to Section 611.521 and that the system intends to use for representative sampling pursuant to this subsection (a).
 - C) A GWS supplier that serves 1,000 or fewer people may use a repeat sample collected from a groundwater source to meet both the requirements of Section 611.522 and to satisfy the monitoring requirements of subsection (a)(2) of this Section for that groundwater source only if the Agency approves the use of E. coli as a fecal indicator for source water monitoring pursuant to this subsection (a) by a SEP issued pursuant to Section 611.110. If the repeat sample collected from the groundwater source is E.coli positive, the system must comply with subsection (a)(3) of this Section.
 - 3) Additional requirements. If the Agency does not require corrective action pursuant to Section 611.803(a)(2) for a fecal indicator-positive source water sample collected pursuant to subsection (a)(2) of this Section that is

8802 not invalidated pursuant to subsection (d) of this Section, the system must
8803 collect five additional source water samples from the same source within
8804 24 hours after being notified of the fecal indicator-positive sample.
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8806 4) Consecutive and wholesale systems.
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8808 A) In addition to the other requirements of this subsection (a), a
8809 consecutive GWS supplier that has a total coliform-positive sample
8810 collected pursuant to Section 611.521 must notify the wholesale
8811 systems within 24 hours after being notified of the total coliform-
8812 positive sample.
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8814 B) In addition to the other requirements of this subsection (a), a
8815 wholesale GWS supplier must comply with the following
8816 requirements:
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8818 i) A wholesale GWS supplier that receives notice from a
8819 consecutive system it serves that a sample collected
8820 pursuant to Section 611.521 is total coliform-positive must,
8821 within 24 hours after being notified, collect a sample from
8822 its groundwater sources pursuant to subsection (a)(2) of this
8823 Section and analyze it for a fecal indicator pursuant to
8824 subsection (c) of this Section.
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8826 ii) If the sample collected pursuant to subsection (a)(4)(B)(i)
8827 of this section is fecal indicator-positive, the wholesale
8828 GWS supplier must notify all consecutive systems served
8829 by that groundwater source of the fecal indicator source
8830 water positive within 24 hours of being notified of the
8831 groundwater source sample monitoring result and must
8832 meet the requirements of subsection (a)(3) of this Section.
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8834 5) Exceptions to the triggered source water monitoring requirements. A
8835 GWS supplier is not required to comply with the source water monitoring
8836 requirements of subsection (a) of this Section if either of the following
8837 conditions exists:
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8839 A) The Agency determines, and documents in writing, by a SEP
8840 issued pursuant to Section 611.110, that the total coliform-positive
8841 sample collected pursuant to Section 611.521 is caused by a
8842 distribution system deficiency; or
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- 8844 B) The total coliform-positive sample collected pursuant to Section
8845 611.521 is collected at a location that meets Agency criteria for
8846 distribution system conditions that will cause total coliform-
8847 positive samples.
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- 8849 b) Assessment source water monitoring. If directed by the Agency by a SEP issued
8850 pursuant to Section 611.110, a GWS supplier must conduct assessment source
8851 water monitoring that meets Agency-determined requirements for such
8852 monitoring. A GWS supplier conducting assessment source water monitoring
8853 may use a triggered source water sample collected pursuant to subsection (a)(2) of
8854 this Section to meet the requirements of subsection (b) of this Section. Agency-
8855 determined assessment source water monitoring requirements may include the
8856 following:
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- 8858 1) Collection of a total of 12 groundwater source samples that represent each
8859 month the system provides groundwater to the public;
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- 8861 2) Collection of samples from each well, unless the system obtains written
8862 Agency approval to conduct monitoring at one or more wells within the
8863 GWS that are representative of multiple wells used by that system and
8864 which draw water from the same hydrogeologic setting;
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- 8866 3) Collection of a standard sample volume of at least 100 mL for fecal
8867 indicator analysis, regardless of the fecal indicator or analytical method
8868 used;
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- 8870 4) Analysis of all groundwater source samples using one of the analytical
8871 methods listed in subsection (c)(2) of this Section for the presence of E.
8872 coli, enterococci, or coliphage;
8873
- 8874 5) Collection of groundwater source samples at a location prior to any
8875 treatment of the groundwater source unless the Agency approves a
8876 sampling location after treatment; and
8877
- 8878 6) Collection of groundwater source samples at the well itself, unless the
8879 system's configuration does not allow for sampling at the well itself and
8880 the Agency approves an alternate sampling location by a SEP issued
8881 pursuant to Section 611.110 that is representative of the water quality of
8882 that well.
8883
- 8884 c) Analytical methods.
8885

- 8886 1) A GWS supplier subject to the source water monitoring requirements of
8887 subsection (a) of this Section must collect a standard sample volume of at
8888 least 100 ml for fecal indicator analysis, regardless of the fecal indicator
8889 or analytical method used.
8890
- 8891 2) A GWS supplier must analyze all groundwater source samples collected
8892 pursuant to subsection (a) of this Section using one of the analytical
8893 methods listed in subsections (c)(2)(A) through (c)(2)(C) of this Section,
8894 or alternative methods approved by the Agency pursuant to Section
8895 611.480, subject to the limitations of subsection (c)(2)(D) of this Section,
8896 for the presence of E. coli, enterococci, or coliphage:
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- 8898 A) E. coli:
8899
- 8900 i) Autoanalysis Colilert System, Standard Methods, 20th or
8901 21st ed., Method 9223 B.
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- 8903 ii) Colisure Test, Standard Methods, 20th or 21st ed., Method
8904 9223 B.
8905
- 8906 iii) Membrane Filter Method with MI Agar, USEPA Method
8907 1604.
8908
- 8909 iv) m-ColiBlue24 Test.
8910
- 8911 v) E*Colite Test.
8912
- 8913 vi) EC-MUG, Standard Methods, 20th ed., Method 9221 F.
8914
- 8915 vii) NA-MUG, Standard Methods, 20th ed., Method 9222 G.
8916
- 8917 viii) Colilert-18, Standard Methods, 20th or 21st ed., Method
8918 9223 B~~9222 G~~.
8919
- 8920 ix) Readycult® 2007.
8921
- 8922 x) Modified Colitag™ Method.
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- 8924 xi) Chromocult® Method.
8925

8926 BOARD NOTE: EC-MUG (Standard Methods, Method 9221F) or NA-
8927 MUG (Standard Methods, Method 9222G) can be used for E. coli testing
8928 step, as described in Section 611.526(f)(1) or (f)(2)~~611.526(a) or (b)~~ after

8929 use of Standard Methods, Method 9221 B, 9221 D, 9222 B, or 9222 C.
 8930 USEPA added Standard Methods, 21st ed., Method 9223 B as an approved
 8931 alternative method for E. coli on June 3, 2008 (at 73 Fed. Reg. 31616).
 8932 USEPA added ReadyCult® 2007, Modified Colitag™ Method, and
 8933 Chromocult® Method as approved alternative methods for E. coli on June
 8934 8, 2010 (at 75 Fed. Reg. 32295). On June 3, 2008 (at 73 Fed. Reg. 31616),
 8935 USEPA added appendix A to subpart C of 40 CFR 141, which authorized
 8936 alternative methods to those listed for E. coli by Colilert and Colisure and
 8937 added Colilert 18 in the table at corresponding 40 CFR 141.402(e)(2) to
 8938 allow the use of the 21st edition of Standard Methods for the Examination
 8939 of Water and Wastewater and Standard Methods Online (at
 8940 www.standardmethods.org), Method 9223 B (as approved in 1997). The
 8941 Board has instead cited only to the 21st edition of Standard Methods for
 8942 the Examination of Water and Wastewater (the printed version of Standard
 8943 Methods), since the version of Method 9223 B that appears in that printed
 8944 volume is that cited by USEPA as acceptable for use. USEPA also added
 8945 the version of Method 9223 B that appears in the 20th edition of Standard
 8946 Methods as to Colilert 18.

8947
 8948 B) Enterococci:

- 8949
 8950 i) Multiple-Tube Technique, Standard Methods, 20th ed.,
 8951 Method 9230 B or Standard Methods Online, Method 9230
 8952 B-04.

8953
 8954 ~~BOARD NOTE: On June 3, 2008 (at 73 Fed. Reg. 31616),~~
 8955 ~~USEPA added appendix A to subpart C of 40 CFR 141,~~
 8956 ~~which authorized alternative methods to those listed for~~
 8957 ~~enterococci by multiple tube technique at corresponding 40~~
 8958 ~~CFR 141.402(e)(2) to allow the use of the Standard~~
 8959 ~~Methods Online (at www.standardmethods.org), Method~~
 8960 ~~9230 B (as approved in 2004).~~

- 8961
 8962 ii) Membrane Filter Technique, Standard Methods, 20th ed.,
 8963 Method 9230 C, and USEPA Method 1600.

8964
 8965 BOARD NOTE: The holding time and temperature for
 8966 groundwater samples are specified in subsection (c)(2)(D)
 8967 of this Section, rather than as specified in Section 8 of
 8968 USEPA Method 1600.

- 8969
 8970 iii) Enterolert.
 8971

8972 BOARD NOTE: Medium is available through IDEXX
8973 Laboratories, Inc., at the address set forth in Section
8974 611.102(b). Preparation and use of the medium must be as
8975 set forth in the article that embodies the method as
8976 incorporated by reference in Section 611.102(b).
8977

8978 BOARD NOTE: USEPA added Standard Methods Online,
8979 Method 9230 B-04 as an approved alternative method for
8980 enterococci on June 3, 2008 (at 73 Fed. Reg. 31616).
8981

- 8982 C) Coliphage:
- 8983
- 8984 i) Two-Step Enrichment Presence-Absence Procedure,
8985 USEPA Method 1601.
- 8986
- 8987 ii) Single Agar Layer Procedure, USEPA Method 1602.
8988
- 8989 D) Limitation on methods use. The time from sample collection to
8990 initiation of analysis may not exceed 30 hours. The GWS supplier
8991 is encouraged but is not required to hold samples below 10°C
8992 during transit.
8993

8994 d) Invalidation of a fecal indicator-positive groundwater source sample.
8995

- 8996 1) A GWS supplier may obtain Agency invalidation of a fecal indicator-
8997 positive groundwater source sample collected pursuant to subsection (a) of
8998 this Section only under either of the following conditions:
8999
- 9000 A) The supplier provides the Agency with written notice from the
9001 laboratory that improper sample analysis occurred; or
9002
- 9003 B) The Agency determines and documents in writing by a SEP issued
9004 pursuant to Section 611.110 that there is substantial evidence that a
9005 fecal indicator-positive groundwater source sample is not related to
9006 source water quality.
9007
- 9008 2) If the Agency invalidates a fecal indicator-positive groundwater source
9009 sample, the GWS supplier must collect another source water sample
9010 pursuant to subsection (a) of this Section within 24 hours after being
9011 notified by the Agency of its invalidation decision, and the supplier must
9012 have it analyzed for the same fecal indicator using the analytical methods
9013 in subsection (c) of this Section. The Agency may extend the 24-hour
9014 time limit on a case-by-case basis if the supplier cannot collect the source

9015 water sample within 24 hours due to circumstances beyond its control. In
9016 the case of an extension, the Agency must specify how much time the
9017 system has to collect the sample.
9018

- 9019 e) Sampling location.
- 9020
- 9021 1) Any groundwater source sample required pursuant to subsection (a) of this
9022 Section must be collected at a location prior to any treatment of the
9023 groundwater source unless the Agency approves a sampling location after
9024 treatment.
9025
- 9026 2) If the supplier's system configuration does not allow for sampling at the
9027 well itself, it may collect a sample at an Agency-approved location to meet
9028 the requirements of subsection (a) of this Section if the sample is
9029 representative of the water quality of that well.
9030
- 9031 f) New sources. If directed by the Agency by a SEP issued pursuant to Section
9032 611.110, a GWS supplier that places a new groundwater source into service after
9033 November 30, 2009 must conduct assessment source water monitoring pursuant
9034 to subsection (b) of this Section. If directed by the SEP, the system must begin
9035 monitoring before the groundwater source is used to provide water to the public.
9036
- 9037 g) Public Notification. A GWS supplier with a groundwater source sample collected
9038 pursuant to subsection (a) or (b) of this Section that is fecal indicator-positive and
9039 which is not invalidated pursuant to subsection (d) of this Section, including a
9040 consecutive system supplier served by the groundwater source, must conduct
9041 public notification pursuant to Section 611.902.
9042
- 9043 h) Monitoring Violations. A failure to meet the requirements of subsections (a)
9044 through (f) of this Section is a monitoring violation that requires the GWS
9045 supplier to provide public notification pursuant to Section 611.904.
9046

9047 BOARD NOTE: Derived from 40 CFR 141.402 (2007) and appendix A to 40 CFR 141
9048 (2009), as added at 73 Fed. Reg. 31616 (June 3, 2008).
9049

9050 (Source: Amended at 35 Ill. Reg. _____, effective _____)
9051

9052 SUBPART W: INITIAL DISTRIBUTION SYSTEM EVALUATIONS
9053

9054 **Section 611.925 Subpart Y Compliance Monitoring Location Recommendations**
9055

- 9056 a) A supplier's IDSE report must include its recommendations and justification for
9057 where and during what months it will conduct TTHM and HAA5 monitoring for

9058 Subpart Y of this Part. The supplier must base its recommendations on the
 9059 criteria set forth in subsections (b) through (e) of this Section.
 9060

b) The supplier must select the number of monitoring locations specified in the
 9061 applicable of subsections (b)(1) through (b)(13) of this Section, subject to the
 9062 limitations of subsections (b)(14) and (b)(15) of this Section. The supplier will
 9063 use these recommended locations as Subpart Y routine compliance monitoring
 9064 locations, unless the Agency requires different or additional locations. The
 9065 supplier should distribute locations throughout the distribution system to the
 9066 extent possible.
 9067

- 9068 1) A Subpart B system supplier that serves fewer than 500 persons must
 9069 annually collect samples from two monitoring locations: one sample from
 9070 the highest TTHM location and one sample from the highest HAA5
 9071 location.
 9072
- 9073 2) A Subpart B system supplier that serves 500 to 3,300 persons must
 9074 quarterly collect samples from two monitoring locations: one sample from
 9075 the highest TTHM location and one sample from the highest HAA5
 9076 location.
 9077
- 9078 3) A Subpart B system supplier that serves 3,301 to 9,999 persons must
 9079 quarterly collect samples from two monitoring locations: one sample from
 9080 the highest TTHM location and one sample from the highest HAA5
 9081 location.
 9082
- 9083 4) A Subpart B system supplier that serves 10,000 to 49,999 persons must
 9084 quarterly collect samples from four monitoring locations: two samples
 9085 from the highest TTHM locations, one sample from the highest HAA5
 9086 location, and one sample from an existing Subpart I compliance location.
 9087
- 9088 5) A Subpart B system supplier that serves 50,000 to 249,999 persons must
 9089 quarterly collect samples from eight monitoring locations: three samples
 9090 from the highest TTHM location, three samples from the highest HAA5
 9091 locations, and two samples from existing Subpart I compliance locations.
 9092
- 9093 6) A Subpart B system supplier that serves 250,000 to 999,999 persons must
 9094 quarterly collect samples from 12 monitoring locations: five samples from
 9095 the highest TTHM location, four samples from the highest HAA5
 9096 locations, and three samples from existing Subpart I compliance locations.
 9097
- 9098 7) A Subpart B system supplier that serves 1,000,000 to 4,999,999 persons
 9099 must quarterly collect samples from 16 monitoring locations: six samples
 9100

- 9101 from the highest TTHM location, six samples from the highest HAA5
9102 locations, and four samples from existing Subpart I compliance locations.
9103
- 9104 8) A Subpart B system supplier that serves more than 5,000,000 persons
9105 must quarterly collect samples from 20 monitoring locations: eight
9106 samples from the highest TTHM location, seven samples from the highest
9107 HAA5 locations, and five samples from existing Subpart I compliance
9108 locations.
9109
- 9110 9) A groundwater system supplier that serves fewer than 500 persons must
9111 annually collect samples from two monitoring locations: one sample from
9112 the highest TTHM location and one sample from the highest HAA5
9113 location.
9114
- 9115 10) A groundwater system supplier that serves 500 to 9,999 persons must
9116 annually collect samples from two monitoring locations: one sample from
9117 the highest TTHM location and one sample from the highest HAA5
9118 location.
9119
- 9120 11) A groundwater system supplier that serves 10,000 to 99,999 persons must
9121 quarterly collect samples from four monitoring locations: two samples
9122 from the highest TTHM locations, one sample from the highest HAA5
9123 location, and one sample from an existing Subpart I compliance location.
9124
- 9125 12) A groundwater system supplier that serves 100,000 to 499,999 persons
9126 must quarterly collect samples from six monitoring locations: three
9127 samples from the highest TTHM locations, two samples from the highest
9128 HAA5 locations, and one sample from an existing Subpart I compliance
9129 location.
9130
- 9131 13) A groundwater system supplier that serves more than 500,000 persons
9132 must quarterly collect samples from eight monitoring locations: three
9133 samples from the highest TTHM locations, three samples from the highest
9134 HAA5 locations, and two samples from existing Subpart I compliance
9135 locations.
9136
- 9137 14) The supplier must monitor during the month of highest DBP
9138 concentrations.
9139
- 9140 15) A supplier on quarterly monitoring must take dual sample sets every 90
9141 days at each monitoring location, except for a Subpart B system supplier
9142 that serves 500 to 3,300 persons. A groundwater system supplier that
9143 serves 500 to 9,999 persons which is on annual monitoring must take dual

9144 sample sets at each monitoring location. Any otherA supplier that is on
 9145 annual monitoring or which isand a Subpart B system supplier that serves
 9146 500 to 3,300 persons is required to take individual TTHM and HAA5
 9147 samples (instead of a dual sample set) at the locations with the highest
 9148 TTHM and HAA5 concentrations, respectively. For a supplier that serves
 9149 fewer than 500 people, only ~~Only~~ one location with a dual sample set per
 9150 monitoring period is needed if the highest TTHM and HAA5
 9151 concentrations occur at the same location and month, ~~if monitored~~
 9152 annually.
 9153

9154 c) The supplier must recommend Subpart Y compliance monitoring locations based
 9155 on standard monitoring results, system-specific study results, and Subpart I
 9156 compliance monitoring results. The supplier must follow the protocol in
 9157 subsections (c)(1) through (c)(8) of this Section. If required to monitor at more
 9158 than eight locations, the supplier must repeat the protocol as necessary. If the
 9159 supplier does not have existing Subpart I compliance monitoring results or if the
 9160 supplier does not have enough existing Subpart I compliance monitoring results,
 9161 the supplier must repeat the protocol, skipping the provisions of subsections (c)(3)
 9162 and (c)(7) of this Section as necessary, until the supplier has identified the
 9163 required total number of monitoring locations.
 9164

- 9165 1) The location with the highest TTHM LRAA not previously selected as a
 9166 Subpart Y monitoring location.
 9167
- 9168 2) The location with the highest HAA5 LRAA not previously selected as a
 9169 Subpart Y monitoring location.
 9170
- 9171 3) The existing Subpart I average residence time compliance monitoring
 9172 location (maximum residence time compliance monitoring location for a
 9173 groundwater system) with the highest HAA5 LRAA not previously
 9174 selected as a Subpart Y monitoring location.
 9175
- 9176 4) The location with the highest TTHM LRAA not previously selected as a
 9177 Subpart Y monitoring location.
 9178
- 9179 5) The location with the highest TTHM LRAA not previously selected as a
 9180 Subpart Y monitoring location.
 9181
- 9182 6) The location with the highest HAA5 LRAA not previously selected as a
 9183 Subpart Y monitoring location.
 9184
- 9185 7) The existing Subpart I average residence time compliance monitoring
 9186 location (maximum residence time compliance monitoring location for a

9187 groundwater system) with the highest TTHM LRAA not previously
9188 selected as a Subpart Y monitoring location.

9189
9190 8) The location with the highest HAA5 LRAA not previously selected as a
9191 Subpart Y monitoring location.

9192
9193 d) The supplier may recommend locations other than those specified in subsection
9194 (c) of this Section if the supplier includes a rationale for selecting other locations.
9195 If the Agency approves the alternative locations, the supplier must monitor at
9196 these locations to determine compliance under Subpart Y of this Part.

9197
9198 e) The supplier's recommended schedule must include Subpart Y monitoring during
9199 the peak historical month for TTHM and HAA5 concentration, unless the Agency
9200 approves another month. Once the supplier has identified the peak historical
9201 month, and if the supplier is required to conduct routine monitoring at least
9202 quarterly, the supplier must schedule Subpart Y compliance monitoring at a
9203 regular frequency of every 90 or fewer days.

9204
9205 BOARD NOTE: Derived from 40 CFR 141.605 (2009)~~(2006)~~.

9206
9207 (Source: Amended at 35 Ill. Reg. _____, effective _____)

9208
9209 **SUBPART Y: STAGE 2 DISINFECTION BYPRODUCTS REQUIREMENTS**

9210
9211 **Section 611.971 Routine Monitoring**

9212
9213 a) Monitoring.

9214
9215 1) If a supplier submitted an IDSE report, it must begin monitoring at the
9216 locations and during the months that the supplier has recommended in its
9217 IDSE report submitted pursuant to Section 611.925, following the
9218 schedule set forth in Section 611.970(c), unless the Agency, by a SEP
9219 issued pursuant to Section 611.110, requires other locations or additional
9220 locations after its review. If the supplier submitted a 40/30 certification
9221 pursuant to Section 611.923, it qualified for a very small system waiver
9222 pursuant to Section 611.924, or it is a NTNCWS that serves fewer than
9223 10,000 persons, the supplier must monitor at the locations and on the dates
9224 identified in its monitoring plan as described in Section 611.382(f),
9225 updated as required by Section 611.972.

9226
9227 2) The supplier must monitor at no fewer than the number of locations
9228 identified in the applicable of subsections (a)(2)(A) through (a)(2)(M) of

- 9229 this Section, subject to the limitations of subsections (a)(2)(N) and
9230 (a)(2)(O) of this Section.
9231
9232 A) A Subpart B system supplier that serves fewer than 500 persons
9233 must monitor annually at two distribution system monitoring
9234 locations during each monitoring period.
9235
9236 B) A Subpart B system supplier that serves 500 to 3,300 persons must
9237 monitor quarterly at two distribution system monitoring locations
9238 during each monitoring period.
9239
9240 C) A Subpart B system supplier that serves 3,301 to 9,999 persons
9241 must monitor quarterly at two distribution system monitoring
9242 locations during each monitoring period.
9243
9244 D) A Subpart B system supplier that serves 10,000 to 49,999 persons
9245 must monitor quarterly at four distribution system monitoring
9246 locations during each monitoring period.
9247
9248 E) A Subpart B system supplier that serves 50,000 to 249,999 persons
9249 must monitor quarterly at eight distribution system monitoring
9250 locations during each monitoring period.
9251
9252 F) A Subpart B system supplier that serves 250,000 to 999,999
9253 persons must monitor quarterly at 12 distribution system
9254 monitoring locations during each monitoring period.
9255
9256 G) A Subpart B system supplier that serves 1,000,000 to 4,999,999
9257 persons must monitor quarterly at 16 distribution system
9258 monitoring locations during each monitoring period.
9259
9260 H) A Subpart B system supplier that serves 5,000,000 or more persons
9261 must monitor quarterly at 20 distribution system monitoring
9262 locations during each monitoring period.
9263
9264 I) A groundwater system supplier that serves fewer than 500 persons
9265 must monitor annually at two distribution system monitoring
9266 locations during each monitoring period.
9267
9268 J) A groundwater system supplier that serves 500 to 9,999 persons
9269 must monitor annually at two distribution system monitoring
9270 locations during each monitoring period.
9271

- 9272 K) A groundwater system supplier that serves 10,000 to 99,999
 9273 persons must monitor quarterly at four distribution system
 9274 monitoring locations during each monitoring period.
 9275
- 9276 L) A groundwater system supplier that serves 100,000 to 499,999
 9277 persons must monitor quarterly at six distribution system
 9278 monitoring locations during each monitoring period.
 9279
- 9280 M) A groundwater system supplier that serves 500,000 or more
 9281 persons must monitor quarterly at eight distribution system
 9282 monitoring locations during each monitoring period.
 9283
- 9284 N) The supplier must monitor during month of highest DBP
 9285 concentrations.
 9286
- 9287 O) A supplier on quarterly monitoring must take dual sample sets
 9288 every 90 days at each monitoring location, except for a Subpart B
 9289 system supplier that serves 500 to 3,300. A groundwater system
 9290 supplier that serves 500 to 9,999 persons which is on annual
 9291 monitoring must take dual sample sets at each monitoring location.
 9292 Any otherA-supplier that is on annual monitoring or which is a
 9293 Subpart B system supplier that serves 500 to 3,300 is required to
 9294 take individual TTHM and HAA5 samples (instead of a dual
 9295 sample set) at the locations with the highest TTHM and HAA5
 9296 concentrations, respectively. For a supplier that serves fewer than
 9297 500 people, only~~Only~~ one location with a dual sample set per
 9298 monitoring period is needed if the highest TTHM and HAA5
 9299 concentrations occur at the same location ~~(and month, if monitored~~
 9300 ~~annually).~~
- 9301
- 9302 3) If a supplier is an undisinfected system that begins using a disinfectant
 9303 other than UV light after the dates set forth in Subpart W of this Part for
 9304 complying with the IDSE requirements, the supplier must consult with the
 9305 Agency to identify compliance monitoring locations for this Subpart Y.
 9306 The supplier must then develop a monitoring plan pursuant to Section
 9307 611.972 that includes those monitoring locations.
 9308
- 9309 b) Analytical methods. A supplier must use an approved method listed in Section
 9310 611.381 for TTHM and HAA5 analyses in this Subpart Y. Analyses must be
 9311 conducted by laboratories that have received certification by USEPA or the
 9312 Agency as specified in Section 611.381.
 9313

9314 BOARD NOTE: Derived from 40 CFR 141.621 (2009)(2006).

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(Source: Amended at 35 Ill. Reg. _____, effective _____)

SUBPART Z: ENHANCED TREATMENT FOR CRYPTOSPORIDIUM

Section 611.1004 Source Water Monitoring Requirements: Analytical Methods

- a) Cryptosporidium. A supplier must analyze for Cryptosporidium using USEPA OGWDW Methods, Method 1623 (05) or USEPA OGWDW Methods, Method 1622 (05), or alternative methods approved by the Agency pursuant to Section 611.480, each incorporated by reference in Section 611.102, or alternative methods approved by the Agency pursuant to Section 611.480.
 - 1) The supplier must analyze at least a 10 ℓ sample or a packed pellet volume of at least 2 mℓ as generated by the methods listed in subsection (a) of this Section. A supplier unable to process a 10 ℓ sample must analyze as much sample volume as can be filtered by two filters approved by USEPA for the methods listed in subsection (a) of this Section, up to a packed pellet volume of at least 2 mℓ.
 - 2) Matrix spike (MS) samples.
 - A) MS samples, as required by the methods in subsection (a) of this Section, must be spiked and filtered by a laboratory approved for Cryptosporidium analysis pursuant to Section 611.1005.
 - B) If the volume of the MS sample is greater than 10 ℓ, the supplier may filter all but 10 ℓ of the MS sample in the field, and ship the filtered sample and the remaining 10 ℓ of source water to the laboratory. In this case, the laboratory must spike the remaining 10 ℓ of water and filter it through the filter used to collect the balance of the sample in the field.
 - 3) Flow cytometer-counted spiking suspensions must be used for MS samples and ongoing precision and recovery samples.
- b) E. coli. A supplier must use methods for enumeration of E. coli in source water approved in 40 CFR 136.3(a), or alternative methods approved by the Agency pursuant to Section 611.480, incorporated by reference in Section 611.102, or alternative methods approved by the Agency pursuant to Section 611.480.

- 9356 1) The time from sample collection to initiation of analysis may not exceed
9357 30 hours, unless the supplier meets the condition of subsection (b)(2) of
9358 this Section.
9359
- 9360 2) The Agency may, by a SEP issued pursuant to Section 611.110, approve
9361 on a case-by-case basis the holding of an E. coli sample for up to 48 hours
9362 between sample collection and initiation of analysis if it determines that
9363 analyzing an E. coli sample within 30 hours is not feasible. E. coli
9364 samples held between 30 to 48 hours must be analyzed by the
9365 Autoanalysis Colilert System reagent version of Standard Methods, 18th,
9366 19th, or 20th ed., Method 9223 B, as listed in 40 CFR 136.3(a),
9367 incorporated by reference in Section 611.102.
9368
- 9369 3) A supplier must maintain the temperature of its samples between 0°C and
9370 10°C during storage and transit to the laboratory.
9371
- 9372 4) The supplier may use the membrane filtration, two-step procedure
9373 described in Standard Methods, 20th ed., Method 9222 D and G,
9374 incorporated by reference in Section 611.102.
9375

9376 BOARD NOTE: On June 3, 2008 (at 73 Fed. Reg. 31616), USEPA added
9377 appendix A to subpart C of 40 CFR 141-~~of 40 CFR 141~~, which authorized
9378 alternative methods to those listed for E. coli by multiple-tube technique at
9379 corresponding 40 CFR 141.402(c)(2) to allow the use of Standard
9380 Methods for the Examination of Water and Wastewater, 20th ed., Method
9381 9222 D and G.
9382

- 9383 c) Turbidity. A supplier must use methods for turbidity measurement approved in
9384 Section 611.531(a).
9385

9386 BOARD NOTE: Derived from 40 CFR 141.704 (2007) and appendix A to 40 CFR 141
9387 (2009), as added at 73 Fed. Reg. 31616 (June 3, 2008).
9388

9389 (Source: Amended at 35 Ill. Reg. _____, effective _____)
9390

9391 SUBPART AA: AIRCRAFT DRINKING WATER RULE
9392

9393 Section 611.1100 Applicability and Compliance Date
9394

- 9395 a) Applicability. The requirements of this Subpart AA constitute the NPDWRs for
9396 AWs that are PWSs and that board only finished water for human consumption.
9397 AWs are considered transient non-community non-CWSs. To the extent there is

9398 a conflict between the requirements in this Subpart AA and the regulatory
9399 requirements established elsewhere in this Part, this Subpart AA governs.

9400
9401 b) Compliance Date. AWSs must comply, unless otherwise noted, with the
9402 requirements of this Subpart AA beginning October 19, 2011. Until this
9403 compliance date, air carriers remain subject to existing NPDWRs.
9404

9405 BOARD NOTE: Derived from 40 CFR 141.800, as added at 74 Fed. Reg. 53590 (Oct. 19,
9406 2009). AWSs are transient non-CWSs. Public Health regulates non-CWSs, including transient
9407 non-CWSs. DPH has incorporated this Part into its regulations at 77 Ill. Adm. Code
9408 900.15(a)(2)(A) and 900.20(k)(2).

9409
9410 (Source: Added at 35 Ill. Reg. _____, effective _____)
9411

9412 **Section 611.1101 Definitions**

9413
9414 As used in this Subpart AA, the following terms have the given meanings:

9415
9416 "Air carrier" means a person who undertakes directly by lease, or other
9417 arrangement, to engage in air transportation. The air carrier is responsible for
9418 ensuring all of the aircraft it owns or operates that are PWSs comply with all
9419 provisions of this Subpart AA.

9420
9421 "Aircraft" means a device that is used or intended to be used for flight in the air.

9422
9423 "Aircraft water system" or "AWS" means an aircraft that qualifies as a PWS
9424 under the SDWA and the NPDWRs, as defined in Section 611.102. The
9425 components of an AWS include the water service panel, the filler neck of the
9426 aircraft finished water storage tank, and all finished water storage tanks, piping,
9427 treatment equipment, and plumbing fixtures within the aircraft that supply water
9428 for human consumption to passengers or crew.

9429
9430 "Aircraft Water System Operations and Maintenance Plan" or "AWSOMP" means
9431 the schedules and procedures for operating, monitoring, and maintaining an AWS
9432 that is included in an aircraft operation and maintenance program accepted by the
9433 Federal Aviation Administration.

9434 BOARD NOTE: See Section 611.1104. The definition in corresponding 40 CFR
9435 141.801, as added at 74 Fed. Reg. 53618 includes a parenthetical citation to "14
9436 CFR 43, 14 CFR 91, 14 CFR 121."

9437
9438 "Finished water" means water that is introduced into the distribution system of a
9439 PWS and is intended for distribution and consumption without further treatment,
9440 except that treatment which is necessary to maintain water quality in the

9441 distribution system (e.g., supplemental disinfection, addition of corrosion control
9442 chemicals).

9443
9444 "Human consumption" means drinking, bathing, showering, hand washing, teeth
9445 brushing, food preparation, dishwashing, and maintaining oral hygiene.

9446
9447 "Self inspection" means an onsite review of the AWS, including the water service
9448 panel; the filler neck of the aircraft finished water storage tank; all finished water
9449 storage tanks, piping, treatment equipment, and plumbing fixtures; and a review
9450 of the aircraft operations, maintenance, monitoring, and recordkeeping for the
9451 purpose of evaluating the adequacy of such water system components and
9452 practices for providing safe drinking water to passengers and crew.

9453
9454 "Watering point" means the water supply, methods, and facilities used for the
9455 delivery of finished water to the aircraft. These facilities may include water
9456 trucks, carts, cabinets, and hoses.

9457
9458 BOARD NOTE: Derived from 40 CFR 141.801, as added at 74 Fed. Reg. 53590 (Oct. 19,
9459 2009). The Board has not included definitions of "Agency" and "finished water" in this Section
9460 because nearly identical definitions of these terms appear in Section 611.102 (based on 40 CFR
9461 141.2). AWSs are transient non-CWSs. Public Health regulates non-CWSs in Illinois. Public
9462 Health has incorporated this Part 611 into its regulations at 77 Ill. Adm. Code 900.15(a)(2)(A)
9463 and 900.20(k)(2).

9464
9465 (Source: Added at 35 Ill. Reg. _____, effective _____)

9466
9467 **Section 611.1102 Coliform Sampling Plan**

- 9468
9469 a) Each air carrier under this Subpart AA must develop a Coliform Sampling Plan
9470 that identifies the following for each AWS owned or operated by the air carrier:
9471
9472 1) Coliform sample collection procedures that are consistent with the
9473 requirements of Section 611.1103(a) and (b).
9474
9475 2) Sample tap locations representative of the AWS, as specified in Section
9476 611.1103(b)(2) and (b)(4).
9477
9478 3) The frequency and number of routine coliform samples to be collected, as
9479 specified in Section 611.1103(b)(3).
9480
9481 4) The frequency of routine disinfection and flushing, as specified in the
9482 AWSOMP pursuant to Section 611.1104.
9483

- 9484 5) Procedures that the air carrier will use for communicating sample results
9485 promptly, so that the air carrier can assure that any required actions,
9486 including repeat and follow-up sampling, corrective action, and
9487 notification of passengers and crew, occur in a timely manner.
9488
- 9489 b) Each air carrier must develop a Coliform Sampling Plan before April 19, 2011 for
9490 each aircraft with an AWS that meets the definition of a PWS.
9491
- 9492 c) The Coliform Sampling Plan must be included in the AWSOMP required by
9493 Section 611.1104. The air carrier must include any subsequent changes to the
9494 Coliform Sampling Plan in the AWSOMP required in Section 611.1104.
9495

9496 BOARD NOTE: Derived from 40 CFR 141.802, as added at 74 Fed. Reg. 53590 (Oct.
9497 19, 2009).
9498

9499 (Source: Added at 35 Ill. Reg. _____, effective _____)
9500

9501 **Section 611.1103 Coliform Sampling**
9502

- 9503 a) Analytical methodology. An air carrier must follow the sampling and analysis
9504 requirements set forth in this Section.
9505
- 9506 1) The standard sample volume required for total coliform analysis,
9507 regardless of analytical method used, is 100 mL.
9508
- 9509 2) An air carrier needs to determine only the presence or absence of total
9510 coliforms or E. coli; a determination of density of these organisms is not
9511 required.
9512
- 9513 3) An air carrier must conduct analyses for total coliform and E. coli in
9514 accordance with the analytical methods approved in Section 611.526(c)
9515 and (f).
9516
- 9517 4) The time from sample collection to initiation of analysis must not exceed
9518 30 hours.
9519
- 9520 BOARD NOTE: USEPA included the following statement in
9521 corresponding 40 CFR 141.803(a)(4): "Systems are encouraged but not
9522 required to hold samples below 10°C during transit."
9523
- 9524 5) The invalidation of a total coliform sample result can be made only by the
9525 Agency in accordance with Section 611.523(a)(1), (a)(2), or (a)(3) or by
9526 the certified laboratory in accordance with Section 611.523(b).

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6) Certified laboratories. For the purpose of determining compliance with this Subpart AA, samples may be considered only if they have been analyzed by a laboratory that is certified by the Agency, USEPA, or a sister state that is authorized by USEPA pursuant to 40 CFR 142 and 42 USC 300g-2.

b) Routine monitoring. The air carrier must determine the sampling frequency for each AWS based on the disinfection and flushing frequency recommended by the AWS manufacturer, when available, and the air carrier must identify the sampling frequency in the AWSOMP required by Section 611.1104.

1) Except as provided in subsection (b)(2) of this Section, the air carrier must collect two 100 ml total coliform routine samples at the frequency specified in the sampling plan specified in Section 611.1102 and in accordance with subsection (b)(3) of this Section;

2) The air carrier may collect one 100 ml total coliform routine sample at the frequency specified in the sampling plan in Section 611.1102 for aircraft with a removable or portable tank that is drained every day of passenger service, and the aircraft has only one tap. Aircraft that meet the requirements of this subsection (b)(2) need not comply with subsection (b)(4) of this Section.

3) Air carriers must perform routine monitoring for total coliform at a frequency corresponding to the frequency of routine disinfection and flushing that is specified in the table in this subsection (b)(3) (Routine Disinfection and Flushing and Routine Sample Frequencies) based on the minimum routine sample frequency. An air carrier must follow the disinfection and flushing frequency recommended by the AWS manufacturer, when available. Where the AWS manufacturer has not specified a recommended routine disinfection and flushing frequency, the air carrier must choose a frequency from the following table:

Routine Disinfection and Flushing
 and Routine Sample Frequencies

<u>If the minimum routine disinfection and flushing per aircraft is as follows:</u>	<u>The required minimum frequency of routine samples per aircraft is as follows:</u>
<u>At least four times per year = At least once within every three-month period (quarterly)</u>	<u>At least once per year = At least once within every 12-month period (annually)</u>

<u>At least three times per year = At least once within every four-month period</u>	<u>At least twice per year = At least once within every six-month period (semi-annually)</u>
<u>At least twice per year = At least once within every six-month period (semi-annually)</u>	<u>At least four times per year = At least once within every three-month period (quarterly)</u>
<u>At least once per year or less = At least once within every 12-month period (annually) or less</u>	<u>At least 12 times per year = At least once every month (monthly)</u>

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- 4) The AWS supplier must take one sample from a lavatory and one from a galley; each sample must be analyzed for total coliform. If only one water tap is located in the AWS due to aircraft model type and construction, then the supplier may use a single tap to collect two separate 100 ml samples.
 - 5) If any routine, repeat, or follow-up coliform sample is total coliform-positive, the air carrier must analyze that total coliform-positive culture medium to determine if E. coli is present.
 - 6) Routine total coliform samples must not be collected within 72 hours after completing routine disinfection and flushing procedures.
- c) Routine coliform sample results.
- 1) Negative routine coliform sample results. If all routine sample results are total coliform-negative, then the air carrier must maintain the routine monitoring frequency for total coliform, as specified in the Coliform Sampling Plan required by Section 611.1102.
 - 2) Positive routine E. coli sample results. If any routine sample is E. coli-positive, the air carrier must perform all of the following:
 - A) Restrict public access. The air carrier must restrict public access to the AWS in accordance with subsection (d) of this Section as expeditiously as possible, but in no case later than 24 hours after the laboratory notifies the air carrier of the E. coli-positive result or discovery of the applicable failure, as specified in subsections (g) and (h) of this Section. All public access restrictions, including applicable public notification requirements, must remain in-place until the AWS has been disinfected and flushed and a complete set of follow-up samples is total coliform-negative;

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- B) Disinfect and flush. The air carrier must conduct disinfection and flushing in accordance with Section 611.1104(b)(2). If the AWS cannot be physically disconnected or shut off, or the flow of water otherwise prevented through the taps, then the air carrier must disinfect and flush the system no later than 72 hours after the laboratory notifies the air carrier of the E. coli-positive result or discovery of the applicable failure, as specified in subsections (g) and (h) of this Section; and

 - C) Follow-up sampling. The air carrier must collect follow-up samples in accordance with subsection (e) of this Section. A complete set of follow-up sample results must be total coliform-negative before the air carrier provides water for human consumption from the AWS and returns to the routine monitoring frequency, as specified in the Coliform Sampling Plan required by Section 611.1102.
- 3) Positive routine total coliform sample results. If any routine sample is total coliform-positive and E. coli-negative, then the air carrier must perform at least one of the following three corrective actions and continue through with that action until a complete set of follow-up or repeat samples is total coliform-negative:
- A) Disinfect and flush. In accordance with Section 611.1104(b)(2), the air carrier must conduct disinfection and flushing of the system no later than 72 hours after the laboratory notifies the air carrier of the total coliform-positive and E. coli-negative result. After disinfection and flushing is completed, the air carrier must collect follow-up samples in accordance with subsection (e) of this Section prior to providing water for human consumption from the AWS. A complete set of followup sample results must be total coliform-negative before the air carrier may return to the routine monitoring frequency specified in the sampling plan required by Section 611.1102;

 - B) Restrict public access. In accordance with subsection (d) of this Section, the air carrier must restrict public access to the AWS as expeditiously as possible, but in no case later than 72 hours after the laboratory notifies the air carrier of the total coliform-positive and E. coli-negative result or discovery of the applicable failure, as specified in subsections (f), (g), and (i) of this Section. All public access restrictions, including applicable public notification requirements, must remain in-place until the AWS has been

9640 disinfected and flushed, and a complete set of follow-up samples
 9641 has been collected. The air carrier must conduct disinfection and
 9642 flushing in accordance with Section 611.1104(b)(2). After
 9643 disinfection and flushing is completed, the air carrier must collect
 9644 follow-up samples in accordance with subsection (e) of this
 9645 Section prior to providing water for human consumption from the
 9646 AWS. A complete set of followup sample results must be total
 9647 coliform-negative before the air carrier returns to the routine
 9648 monitoring frequency specified in the sampling plan required by
 9649 Section 611.1102; or

9650
 9651 C) Repeat sampling. The air carrier must collect three 100 mℓ repeat
 9652 samples no later than 24 hours after the laboratory notifies the air
 9653 carrier of the routine total coliform-positive and E. coli-negative
 9654 result. Repeat samples must be collected and analyzed from three
 9655 taps within the aircraft as follows: the tap which resulted in the
 9656 total coliform-positive sample, one other lavatory tap, and one
 9657 other galley tap. If fewer than three taps exist, then a total of three
 9658 100 mℓ samples must be collected and analyzed from the available
 9659 taps within the AWS.

9660
 9661 i) If all repeat samples are total coliform-negative, then the air
 9662 carrier must maintain the routine monitoring frequency for
 9663 total coliform specified in the sampling plan in Section
 9664 611.1102.

9665
 9666 ii) If any repeat sample is E. coli-positive, the air carrier must
 9667 perform all the corrective actions specified in subsections
 9668 (c)(2)(A), (c)(2)(B), and (c)(2)(C) of this Section.

9669
 9670 iii) If any repeat sample is total coliform-positive and E. coli-
 9671 negative, then the air carrier must perform the corrective
 9672 actions specified in subsection (c)(3)(A) or (c)(3)(B) of this
 9673 Section, and continue that action until a complete set of
 9674 follow-up samples is total coliform-negative.

9675
 9676 d) Restriction of public access. Restriction of public access to the AWS includes,
 9677 but need not be limited to, the following:

9678
 9679 1) Physically disconnecting or shutting off the AWS, where feasible, or
 9680 otherwise preventing the flow of water through the taps;
 9681

- 9682 2) Providing public notification to passengers and crew in accordance with
 9683 Section 611.1105;
 9684
 9685 3) Providing alternatives to water from the AWS, such as bottled water for
 9686 drinking and coffee or tea preparation; antiseptic hand gels or wipes that
 9687 comply with the requirements of 21 CFR 333, incorporated by reference
 9688 in Section 611.102, in the galleys and lavatories; and other feasible
 9689 measures that reduce or eliminate the need to use the AWS during the
 9690 limited period before public use of the AWS is unrestricted.
 9691
 9692 e) Post disinfection and flushing follow-up sampling. Following corrective action
 9693 disinfection and flushing, an air carrier must comply with post-disinfection and
 9694 flushing follow-up sampling procedures that, at a minimum, consist of the
 9695 following:
 9696
 9697 1) For each AWS, the air carrier must collect a complete set of total coliform
 9698 follow-up samples consisting of two 100 mL total coliform samples at the
 9699 same routine sample locations that are identified in subsections (b)(2) and
 9700 (b)(4) of this Section.
 9701
 9702 2) The air carrier must collect follow-up samples prior to providing water to
 9703 the public for human consumption from the AWS.
 9704
 9705 3) If a complete set of follow-up samples is total coliform-negative, the air
 9706 carrier must return to the routine monitoring frequency for total coliform
 9707 that is specified in the Coliform Sampling Plan required by Section
 9708 611.1102.
 9709
 9710 4) If any follow-up sample is E. coli-positive, the air carrier must perform all
 9711 the corrective actions that are specified in subsections (c)(2)(A), (c)(2)(B),
 9712 and (c)(2)(C) of this Section.
 9713
 9714 5) If any follow-up sample is total coliform-positive and E. coli-negative, the
 9715 air carrier must restrict public access to the AWS in accordance with
 9716 subsection (d) of this Section as expeditiously as possible, but in no case
 9717 later than 72 hours after the laboratory notifies the air carrier of the total
 9718 coliform-positive and E. coli-negative result. All public access
 9719 restrictions, including applicable public notification requirements, must
 9720 remain in-place until the AWS has been disinfected and flushed in
 9721 accordance with Section 611.1104(b)(2) and a complete set of follow-up
 9722 samples is total coliform-negative. The air carrier must collect follow-up
 9723 samples in accordance with subsection (e) of this Section. A complete set
 9724 of follow-up sample results must be total coliform-negative before the air

9725 carrier provides water for human consumption from the AWS and returns
 9726 to the routine monitoring frequency for coliform that is specified in the
 9727 Coliform Monitoring Plan required by Section 611.1102.
 9728

9729 f) Failure to perform required routine disinfection and flushing or failure to collect
 9730 required routine samples. If the air carrier fails to perform routine disinfection
 9731 and flushing or fails to collect and analyze the required number of routine
 9732 coliform samples, the air carrier must perform all the corrective actions that are
 9733 specified in subsection (c)(3)(B) of this Section.
 9734

9735 g) Failure to collect repeat or follow-up samples. If the air carrier fails to collect and
 9736 analyze the follow-up samples required as a result of an E. coli-positive result,
 9737 then the air carrier must perform all the corrective actions specified in subsections
 9738 (c)(2)(A), (c)(2)(B), and (c)(2)(C) of this Section. If the air carrier fails to collect
 9739 and analyze the repeat samples or follow-up samples required as a result of a total
 9740 coliform-positive and E. coli-negative result, then the air carrier must perform all
 9741 the corrective actions that are specified in subsection (c)(3)(B) of this Section.
 9742

9743 h) Failure to board water from a safe watering point (E. coli-positive). The air
 9744 carrier must perform all the corrective actions that are specified for the AWS in
 9745 subsections (c)(2)(A), (c)(2)(B), and (c)(2)(C) of this Section when the air carrier
 9746 becomes aware of an E. coli-positive event resulting from any of the following
 9747 events:
 9748

- 9749 1) Boarding water from a watering point not in accordance with subpart E of
 9750 21 CFR 1240, incorporated by reference in Section 611.102;
- 9751
- 9752 2) Boarding water that does not meet the NPDWRs applicable to transient
 9753 non-CWS suppliers (Sections 611.301 (Revised MCLs for Inorganic
 9754 Chemical Contaminants) and 611.325 (Microbiological Contaminants), to
 9755 the extent that these provisions apply to a transient non-CWS); or
 9756
- 9757 3) Boarding water that is otherwise determined to be unsafe due to
 9758 noncompliance with the procedures specified in the air carrier's AWSOMP
 9759 pursuant to Section 611.1104(b)(6).
 9760

9761 i) Failure to board water from a safe watering point (non-E. coli-positive). The air
 9762 carrier must perform all the corrective actions that are specified for the AWS in
 9763 subsection (c)(3)(B) of this Section when the air carrier becomes aware of a non-
 9764 E. coli-positive event resulting from any of the following events:
 9765

- 9766 1) Boarding water from a watering point not in accordance with subpart E of
 9767 21 CFR 1240, incorporated by reference in Section 611.102;

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- 2) Boarding water that does not meet the NPDWRs applicable to transient non-CWS suppliers (Sections 611.301 (Revised MCLs for Inorganic Chemical Contaminants) and 611.325 (Microbiological Contaminants), to the extent that these provisions apply to a transient non-CWS); or
 - 3) Boarding water that is otherwise determined to be unsafe due to noncompliance with the procedures specified in the air carrier's AWSOMP pursuant to Section 611.1104(b)(6).

9778 BOARD NOTE: Derived from 40 CFR 141.803, as added at 74 Fed. Reg. 53590 (Oct.
9779 19, 2009).

9780
9781 (Source: Added at 35 Ill. Reg. _____, effective _____)

9782
9783 **Section 611.1104 Aircraft Water System Operations and Maintenance Plan**

- 9784
9785 a) Each air carrier must develop and implement an aircraft water system operation
9786 and maintenance plan (AWSOMP) for each AWS that it owns or operates. The
9787 air carrier must include this AWSOMP in a Federal Aviation Administration
9788 (FAA)-accepted air carrier operations and maintenance program.

9789
9790 BOARD NOTE: Corresponding 40 CFR 141.804(a), as added at 74 Fed. Reg.
9791 53618 includes a parenthetical citation to "14 CFR 43, 14 CFR 91, 14 CFR 121."

- 9792
9793 b) Each AWSOMP must include the following information and procedures:
9794
9795 1) Watering point selection requirements. The AWSOMP must include
9796 information and procedures which ensure that all watering points are
9797 selected in accordance with subpart E of 21 CFR 1240, incorporated by
9798 reference in Section 611.102.
9799
9800 2) Procedures for disinfection and flushing. The AWSOMP must include
9801 information and procedures for disinfection and flushing of the AWS that
9802 ensure compliance with the following requirements:
9803
9804 A) The air carrier must conduct disinfection and flushing of the AWS
9805 in accordance with, or that is consistent with, the AWS
9806 manufacturer's recommendations. The air carrier may conduct
9807 disinfection and flushing more frequently, but not less frequently,
9808 than the manufacturer recommends.
9809

- 9810 B) The AWSOMP must identify the disinfection frequency, type of
9811 disinfecting agent, disinfectant concentration that must be used,
9812 and disinfectant contact time, and flushing volume or flushing
9813 time.
- 9814
- 9815 C) Where a recommended routine disinfection and flushing frequency
9816 is not specified by the AWS manufacturer, the air carrier must
9817 choose a disinfection and flushing, and corresponding monitoring,
9818 frequency specified in Section 611.1103(b)(3).
- 9819
- 9820 3) Follow-up sampling. The AWSOMP must include the procedures for
9821 follow-up sampling that comply with Section 611.1103(e).
- 9822
- 9823 4) Training requirements. Training for all personnel involved with the AWS
9824 operation and maintenance provisions of this Section must include, but is
9825 not limited to, the following information and procedures:
- 9826
- 9827 A) Boarding water procedures;
- 9828
- 9829 B) Sample collection procedures;
- 9830
- 9831 C) Disinfection and flushing procedures; and
- 9832
- 9833 D) Explanation of public health and safety reasons for the
9834 requirements of this Subpart AA.
- 9835
- 9836 5) Procedures for conducting self-inspections of the AWS. Procedures must
9837 include, but are not limited to, inspection of storage tank, distribution
9838 system, supplemental treatment, fixtures, valves, and backflow prevention
9839 devices.
- 9840
- 9841 6) Procedures for boarding water. The AWSOMP must include the
9842 following requirements and procedures for boarding water:
- 9843
- 9844 A) Within the United States, the air carrier must board water from
9845 watering points in accordance with subpart E of 21 CFR 1240,
9846 incorporated by reference in Section 611.102;
- 9847
- 9848 B) A description of how the water must be transferred from the
9849 watering point to the aircraft in a manner which ensures that the
9850 water will not become contaminated during the transfer;
- 9851

- 9852 C) A description of how the air carrier will ensure that water boarded
9853 outside the United States is safe for human consumption; and
9854
- 9855 D) A description of emergency procedures that meet the requirements
9856 in Section 611.1103(h) and (i), which must be used when the air
9857 carrier becomes aware that water was boarded to operate essential
9858 systems, such as toilets, but was boarded from a watering point
9859 that does not comply with the requirements of subpart E of 21 CFR
9860 1240, incorporated by reference in Section 611.102; the boarded
9861 water does not meet NPDWRs applicable to transient non-CWS
9862 suppliers (Sections 611.301 (Revised MCLs for Inorganic
9863 Chemical Contaminants) and 611.325 (Microbiological
9864 Contaminants), to the extent that these provisions apply to a
9865 transient non-CWS); or the boarded water is otherwise unsafe.
9866
- 9867 7) Coliform Sampling Plan. The air carrier must include the Coliform
9868 Sampling Plan prepared pursuant to Section 611.1102.
9869
- 9870 8) AWS disconnect/shut-off, or preventing flow of water through the taps
9871 statement. An explanation of whether the AWS can be physically
9872 disconnected or shut off, or the flow of water otherwise prevented through
9873 the taps to the crew and passengers.
9874
- 9875 c) For existing aircraft, the air carrier must develop the AWSOMP required by this
9876 Section before April 19, 2011.
9877
- 9878 d) For new aircraft, the air carrier must develop the AWSOMP required by this
9879 Section within the first calendar quarter of initial operation of the aircraft.
9880
- 9881 e) Any changes to the AWSOMP must be included in the FAA-accepted air carrier
9882 operations and maintenance program.
9883

9884 BOARD NOTE: Derived from 40 CFR 141.804, as added at 74 Fed. Reg. 53590 (Oct.
9885 19, 2009).
9886

9887 (Source: Added at 35 Ill. Reg. _____, effective _____)
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9889 **Section 611.1105 Notification to Passengers and Crew**
9890

- 9891 a) An air carrier must give public notice that satisfies the requirements of this
9892 Section for each aircraft in any of the following situations:
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- 1) Public access to the AWS is restricted in response to a routine, repeat or follow-up total coliform-positive or E. coli-positive sample result obtained pursuant to Section 611.1103(d);
 - 2) A failure to perform required routine disinfection and flushing or failure to collect required routine samples as required by Section 611.1103(f);
 - 3) A failure to collect the required follow-up samples in response to a sample result that is E. coli-positive in accordance with Section 611.1103(g);
 - 4) A failure to collect the required repeat samples or a failure to collect the required follow-up samples in response to a sample result that is total coliform-positive and E. coli-negative as required by Section 611.1103(g);
 - 5) A failure to board water from a safe watering point (E. coli-positive), as such is determined pursuant to Section 611.1103(h);
 - 6) A failure to board water from a safe watering point (non-E. coli-positive), as such is determined pursuant to Section 611.1103(i); or
 - 7) USEPA, the Agency, a sister state that USEPA has authorized pursuant to 40 CFR 142 and 42 USC 300g-2 to administer the requirements of the ADWR, the air carrier, or the crew otherwise determines that notification is necessary to protect public health.
- b) Public notification must fulfill the following requirements:
- 1) The public notification must be displayed in a conspicuous way when printed or posted;
 - 2) The public notification must not contain overly technical language or very small print;
 - 3) The public notification must not be formatted in a way that defeats the purpose of the notice;
 - 4) The public notification must not contain language that nullifies the purpose of the notice; and
 - 5) The public notification must contain information in the appropriate languages regarding the importance of the notice, reflecting a good faith effort to reach the non-English-speaking segments of the population

9936 served, including, where applicable, an easily recognized symbol for non-
9937 potable water.

9938
9939 c) Public notification given pursuant to subsection (a)(1) of this Section must fulfill
9940 the requirements of this subsection (c), in addition to those of subsection (b) of
9941 this Section:

9942
9943 1) Public notification must include a prominently displayed, clear statement
9944 in each lavatory indicating that the water is non-potable and should not be
9945 used for drinking, food or beverage preparation, hand washing, teeth
9946 brushing, or any other consumptive use; and

9947
9948 2) A prominent notice in the galley directed at the crew that includes the
9949 following information:

9950
9951 A) A clear statement that the water is non-potable and should not be
9952 used for drinking, food or beverage preparation, hand washing,
9953 teeth brushing, or any other consumptive use;

9954
9955 B) A description of the violation or situation triggering the notice,
9956 including the contaminants of concern;

9957
9958 C) A statement describing when the violation or situation occurred
9959 that gave rise to the notice;

9960
9961 D) A description of any potential adverse health effects that could
9962 result from the violation or situation, as appropriate to fulfill the
9963 requirements of subsection (g) of this Section;

9964
9965 E) A description of the population at risk, including a description of
9966 sensitive subpopulations particularly vulnerable if exposed to the
9967 contaminant in the drinking water;

9968
9969 F) A description of what the air carrier is doing to correct the
9970 violation or situation; and

9971
9972 G) A description of when the air carrier expects to return the system to
9973 unrestricted public access.

9974
9975 3) If passenger access to the water system is physically prevented through
9976 disconnecting or shutting off the water, or the flow of water prevented
9977 through the taps, or if water is supplied only to lavatory toilets, and not to

9978 any lavatory or galley taps, then only the notice specified in subsection
9979 (c)(2) of this Section is required.

9980
9981 4) An air carrier must initiate public notification when restriction of public
9982 access is initiated in accordance with Section 611.1103(d), and the air
9983 carrier must continue the public notification until the AWS is returned to
9984 unrestricted public access.

9985
9986 d) Public notification given pursuant to subsections (a)(2), (a)(4), and (a)(6) of this
9987 Section must fulfill the requirements of this subsection (d), in addition to those of
9988 subsection (b) of this Section:

9989
9990 1) Public notification must include a prominently displayed, clear statement
9991 in each lavatory indicating that the water is non-potable and should not be
9992 used for drinking, food or beverage preparation, hand washing, teeth
9993 brushing, or any other consumptive use; and

9994
9995 2) A prominent notice in the galley directed at the crew which includes:

9996
9997 A) A clear statement that the water is non-potable and should not be
9998 used for drinking, food or beverage preparation, hand washing,
9999 teeth brushing, or any other consumptive use;

10000
10001 B) A clear statement of the failure that gave rise to the requirement for
10002 public notification, i.e., that the air carrier does not know whether
10003 the water is contaminated because there was a failure to perform
10004 required routine disinfection and flushing; that there was a failure
10005 to perform required monitoring; that water was boarded from a
10006 watering point not in accordance with subpart E of 21 CFR 1240,
10007 incorporated by reference in Section 611.102; that water was
10008 boarded which does not meet NPDWRs applicable to transient
10009 non-CWS suppliers; or that boarded water is otherwise determined
10010 to be unsafe due to noncompliance with the procedures specified in
10011 Section 611.1104(b)(6);

10012
10013 C) A statement describing when and where the unsafe water was
10014 boarded or when the specific monitoring or disinfection and
10015 flushing requirement was not met;

10016
10017 D) A description of any potential adverse health effects from exposure
10018 to waterborne pathogens that might be in the water, as appropriate
10019 to fulfill the requirements of subsection (g) of this Section;
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- E) A description of the population at risk, including a description of sensitive subpopulations particularly vulnerable if exposed to the contaminant in the drinking water; and
 - F) A statement indicating when the system will be disinfected and flushed and returned to unrestricted public access.
- 3) If passenger access to the water system is physically prevented through disconnecting or shutting off the water, or the flow of water prevented through the taps, or if water is supplied only to lavatory toilets, and not to any lavatory or galley taps, then only the notice specified in subsection (d)(2) of this Section is required.
- 4) An air carrier must initiate public notification when restriction of public access is initiated in accordance with Section 611.1103(d), and the air carrier must continue the public notification until the AWS is returned to unrestricted public access.
- e) Public notification given pursuant to subsections (a)(3) and (a)(5) of this Section must fulfill the requirements of this subsection (e), in addition to those of subsection (b) of this Section:
- 1) Public notification must include a prominently displayed, clear statement in each lavatory indicating that the water is non-potable and should not be used for drinking, food or beverage preparation, hand washing, teeth brushing, or any other consumptive use; and
 - 2) A prominent notice in the galley directed at the crew which includes:
 - A) A clear statement that the water is non-potable and should not be used for drinking, food or beverage preparation, hand washing, teeth brushing, or any other consumptive use;
 - B) A clear statement that the water is contaminated and that there was a failure to conduct required monitoring; or a clear statement that the water is contaminated because water was boarded from a watering point not in accordance with subpart E of 21 CFR 1240, incorporated by reference in Section 611.102; that water was boarded which does not meet NPDWRs applicable to transient non-CWS suppliers; or that water boarded is otherwise determined to be unsafe due to noncompliance with the procedures specified in Section 611.1104(b)(6);

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- C) A description of the contaminants of concern;
 - D) A statement describing when and where the unsafe water was boarded or when the specific monitoring requirement was not met;
 - E) A description of any potential adverse health effects from the situation, as appropriate to fulfill the requirements of subsection (g) of this Section;
 - F) A description of the population at risk, including a description of sensitive subpopulations particularly vulnerable if exposed to the contaminant in the drinking water;
 - G) A statement indicating what the air carrier is doing to correct the situation; and
 - H) When the air carrier expects to return the system to unrestricted public access.
- 3) If passenger access to the water system is physically prevented through disconnecting or shutting off the water, or the flow of water prevented through the taps, or if water is supplied only to lavatory toilets, and not to any lavatory or galley taps, then only the notice specified in subsection (e)(2) of this Section is required.
- 4) An air carrier must initiate public notification when restriction of public access is initiated in accordance with Section 611.1103(d), and the air carrier must continue the public notification until a complete set of required follow-up samples are total coliform-negative.
- f) Public notification given pursuant to subsection (a)(7) of this Section must fulfill the requirements of this subsection (f), in addition to those of subsection (b) of this Section:
- 1) Notification must be in a form and manner reasonably calculated to reach all passengers and crew while on board the aircraft by using one or more of the following forms of delivery:
 - A) Broadcast over public announcement system on aircraft;
 - B) Posting of the notice in conspicuous locations throughout the area served by the AWS. These locations would normally be the galleys and in the lavatories of each aircraft requiring posting;

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- C) Hand delivery of the notice to passengers and crew; or
- D) Another delivery method approved in writing by the Agency.

2) An air carrier must initiate public notification within 24 hours after being informed by USEPA, the Agency, or a sister state that USEPA has authorized pursuant to 40 CFR 142 and 42 USC 300g-2 to administer the requirements of the ADWR to undertake notification, and the air carrier must continue the public notification for the duration determined by USEPA, the Agency, or a sister state.

g) In each public notice to the crew, air carriers must use the appropriate of the following standard health effects language in response to the situations described in subsections (a)(1) through (a)(6) of this Section.

1) Health effects language to be used when public notice is initiated due to the detection of total coliforms only (not E. coli) as described in subsection (a)(1) of this Section:

Coliforms are bacteria that are naturally present in the environment and are used as an indicator that other, potentially harmful, bacteria may be present. Coliforms were found in [insert number of samples detected] samples collected, and this is a warning of potential problems. If human pathogens are present, they can cause short-term health effects, such as diarrhea, cramps, nausea, headaches, or other symptoms. These microbes may pose a special health risk for infants, young children, some of the elderly, and people with severely compromised immune systems.

2) Health effects language to be used when public notice is initiated due to any E. coli-positive routine, repeat, or follow-up sample as required by subsection (a)(1) of this Section:

E. coli are bacteria whose presence indicates that the water may be contaminated with human or animal wastes. Microbes in these wastes can cause short-term health effects, such as diarrhea, cramps, nausea, headaches, or other symptoms. These microbes may pose a special health risk for infants, young children, some of the elderly, and people with severely compromised immune systems.

- 10149 3) Health effects language to be used when public notice is initiated due to a
10150 failure to conduct routine monitoring or routine disinfection and flushing
10151 as required by subsection (a)(2) of this Section; when there is a failure to
10152 conduct repeat or follow-up sampling as required by subsection (a)(4) of
10153 this Section; as required by subsection (a)(6) of this Section, when the air
10154 carrier becomes aware of a non-E. coli-positive event that is the result of
10155 water that was boarded from a watering point not in accordance with
10156 subpart E of 21 CFR 1240, incorporated by reference in Section 611.102;
10157 that water was boarded which does not meet NPDWRs applicable to
10158 transient non-CWS suppliers; or that water boarded is otherwise
10159 determined to be unsafe due to noncompliance with the procedures
10160 specified in Section 611.1104(b)(6):

10161
10162 Because [use the appropriate of the following alternative
10163 statements: required monitoring and analysis was not conducted,
10164 required disinfection and flushing was not conducted, water was
10165 boarded from a watering point not in accordance with subpart E of
10166 21 CFR 1240, or other appropriate explanation], we cannot be sure
10167 of the quality of the drinking water at this time. However, drinking
10168 water contaminated with human pathogens can cause short-term
10169 health effects, such as diarrhea, cramps, nausea, headaches, or
10170 other symptoms. They may pose a special health risk for infants,
10171 young children, some of the elderly, and people with severely
10172 compromised immune systems.

- 10173
10174 4) Health effects language to be used when public notice is initiated due to a
10175 failure to conduct required follow-up monitoring in response to a sample
10176 result that is E. coli-positive, as required by subsection (a)(3) of this
10177 Section; or when the air carrier becomes aware of an E. coli-positive event
10178 that is the result of water which was boarded from a watering point not in
10179 accordance with subpart E of 21 CFR 1240, incorporated by reference in
10180 Section 611.102; or water was boarded that does not meet NPDWRs
10181 applicable to transient non-CWS suppliers; or water was boarded that is
10182 otherwise determined to be unsafe due to noncompliance with the
10183 procedures specified in Section 611.1104(b)(6), as required by subsection
10184 (a)(5) of this Section:

10185
10186 Because required follow-up monitoring and analysis was not
10187 conducted after the AWS tested positive for E. coli, we cannot be
10188 sure of the quality of the drinking water at this time. E. coli are
10189 bacteria whose presence indicates that the water may be
10190 contaminated with human or animal wastes. Microbes in these
10191 wastes can cause short-term health effects, such as diarrhea,

cramps, nausea, headaches, or other symptoms. These microbes may pose a special health risk for infants, young children, some of the elderly, and people with severely compromised immune systems.

or

Water was boarded that is contaminated with E. coli because [use the appropriate of the following alternative statements: water was boarded from a watering point not in accordance with subpart E of 21 CFR 1240, or other appropriate explanation]. E. coli are bacteria whose presence indicates that the water may be contaminated with human or animal wastes. Microbes in these wastes can cause short-term health effects, such as diarrhea, cramps, nausea, headaches, or other symptoms. These microbes may pose a special health risk for infants, young children, some of the elderly, and people with severely compromised immune systems.

BOARD NOTE: Derived from 40 CFR 141.805, as added at 74 Fed. Reg. 53590 (Oct. 19, 2009).

(Source: Added at 35 Ill. Reg. _____, effective _____)

Section 611.1106 Reporting Requirements

a) The air carrier must comply with the following requirements regarding reporting of the development of the Coliform Sampling Plan, the AWSOMP, and the disinfection and flushing and coliform sampling frequencies.

1) Before April 19, 2011, the air carrier must report the following to the Agency:

A) The air carrier must report that it has developed a Coliform Sampling Plan, as required by Section 611.1102, which covers each existing AWS, as well as report the frequency for routine coliform sampling identified in the Coliform Sampling Plan; and

B) The air carrier must report to the Agency that it has developed its AWSOMP, as required by Section 611.1104, and report the frequency for routine disinfection and flushing.

- 10234 2) For each new aircraft meeting the definition of an AWS that becomes
10235 operational after October 19, 2009, the air carrier must report the
10236 following to the Agency within the first calendar quarter of initial
10237 operation of the aircraft:
- 10238
- 10239 A) The air carrier must report that it has developed a Coliform
10240 Sampling Plan, as required by Section 611.1102, as well as report
10241 the frequency for routine coliform sampling identified in the
10242 Coliform Sampling Plan; and
- 10243
- 10244 B) The air carrier must report to the Agency that it has developed the
10245 AWSOMP, as required by Section 611.1104, and report the
10246 frequency for routine disinfection and flushing.
- 10247
- 10248 b) The air carrier must report the following information to the Agency:
- 10249
- 10250 1) Before April 19, 2011 , the air carrier must report a complete inventory of
10251 its aircraft that are PWSs. The inventory information required includes, at
10252 a minimum, the following information:
- 10253
- 10254 A) The unique aircraft identifier number;
- 10255
- 10256 B) The status (active or inactive) of any aircraft as an AWS, as
10257 defined in Section 611.1101;
- 10258
- 10259 C) The type and location of any supplemental treatment equipment
10260 installed on the AWS; and
- 10261
- 10262 D) Whether the AWS can be physically disconnected or shut off, or
10263 the flow of water prevented through the taps.
- 10264
- 10265 2) The air carrier must report no later than 10 days following the calendar
10266 month in which the change occurred any changes in aircraft inventory.
10267 Changes in inventory information include, at a minimum, the following
10268 information:
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- 10270 A) Any change in the unique identifier number for any new aircraft,
10271 or for any aircraft removed from the air carrier's fleet;
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- 10273 B) Any change in status (active or inactive) of any aircraft as an
10274 AWS, as defined in Section 611.1101;
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- C) Any change to the type and location of any supplemental treatment equipment added to or removed from the AWS; and
 - D) Any change to whether the AWS can be physically disconnected or shut off, or the flow of water prevented through the taps.
 - 3) The air carrier must report all sampling results no later than 10 calendar days following the monitoring period in which the sampling occurred. The monitoring period is based on the monitoring frequency identified in the Coliform Sampling Plan required by Section 611.1102. Routine disinfection and flushing events must be reported no later than 10 calendar days following the disinfection and flushing period in which the disinfection and flushing occurred. The disinfection and flushing period is based on the frequency identified in the AWSOMP required by Section 611.1104.
 - 4) The air carrier must report within 10 days after any event (e.g., notification of positive sample result by laboratory) that requires notification to passengers or crew, non-routine disinfection and flushing, or non-routine sampling, including information as to whether required notification was provided to passengers or crew or both.
 - 5) The air carrier must report within 10 calendar days after discovery of any failure to comply with the monitoring or disinfection and flushing requirements of this Subpart AA.
 - 6) The air carrier must report no later than 10 days following the end of a calendar month in which any changes occurred in disinfection and flushing and coliform sampling frequencies. Changes to an aircraft's routine coliform sampling frequency and routine disinfection and flushing frequency must be included in the AWSOMP that is included in the air carrier operations and maintenance program accepted by FAA as required by Section 611.1104.
 - c) The air carrier must provide evidence to the Agency within 90 days after completion of a self-inspection required by Section 611.1108(b), including reporting whether the air carrier addressed all deficiencies as required by Section 611.1108(c). The air carrier must also report to the Agency within 90 days that any deficiency identified during a compliance audit conducted in accordance with Section 611.1108(a) has been addressed. If the air carrier has not addressed any deficiency within 90 days after identification of the deficiency, the report must also include a description of the deficiency, an explanation as to why the air

10318 carrier has not yet addressed the deficiency, and a schedule for addressing the
10319 deficiency as expeditiously as possible.

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10321 d) All information required to be reported to the Agency under this Subpart AA must
10322 be in an electronic format established or approved by the Agency. If an air carrier
10323 is unable to report electronically, the air carrier may use an alternative approach
10324 that the Agency has approved.

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10326 BOARD NOTE: Derived from 40 CFR 141.806, as added at 74 Fed. Reg. 53590 (Oct.
10327 19, 2009).

10328
10329 (Source: Added at 35 Ill. Reg. _____, effective _____)
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10331 **Section 611.1107 Recordkeeping Requirements**
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- 10333 a) The air carrier must keep records of bacteriological analyses for at least five years
10334 and must include the following information:
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10336 1) The date, time, and place of sampling, and the name of the person who
10337 collected the sample;
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10339 2) Identification of the sample as a routine, repeat, follow-up, or other special
10340 purpose sample;
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10342 3) The date of the analysis;
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10344 4) The laboratory and person responsible for performing the analysis;
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10346 5) The analytical technique or method used; and
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10348 6) The results of the analysis.
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10350 b) The air carrier must keep records of any disinfection and flushing for at least five
10351 years and must include the following information:
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10353 1) The date and time of the disinfection and flushing; and
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10355 2) The type of disinfection and flushing (i.e., routine or corrective action).
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10357 c) The air carrier must keep records of a self-inspection for at least 10 years and
10358 must include the following information:
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10360 1) The completion date of the self-inspection; and

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2) Copies of any written reports, summaries, or communications related to the self-inspection.

d) The air carrier must maintain sampling plans and make such plans available for review by the Agency upon request, including during compliance audits.

e) The air carrier must maintain AWSOMPs in accordance with FAA requirements, and make such plans available for review by the Agency upon request, including during compliance audits.

f) The air carrier must keep copies of public notices to passengers and crew issued as required by this Subpart AA for at least three years after issuance.

BOARD NOTE: Derived from 40 CFR 141.807, as added at 74 Fed. Reg. 53590 (Oct. 19, 2009).

(Source: Added at 35 Ill. Reg. _____, effective _____)

Section 611.1108 Audits and Inspections

a) The Agency may conduct routine compliance audits as deemed necessary in providing regulatory oversight to ensure proper implementation of the requirements in this Subpart AA. Compliance audits may include, but are not limited to the following:

1) Bacteriological sampling of AWSs;

2) Reviews and audits of records as they pertain to AWS operations and maintenance such as log entries, disinfection and flushing procedures, and sampling results; and

3) Observation of procedures involving the handling of finished water, watering point selection, boarding of water, operation, disinfection and flushing, and general maintenance and self-inspections of AWSs.

b) Air carriers or their representatives must perform a self-inspection of all water system components for each AWS no less frequently than once every five years.

c) The air carrier must address any deficiency identified during compliance audits or routine self-inspections within 90 days after identification of the deficiency, or where such deficiency is identified during extended or heavy maintenance, before the aircraft is put back into service. This includes any deficiency in the AWS's design, construction, operation, maintenance, or administration, as well as any

10405 failure or malfunction of any system component that has the potential to cause an
10406 unacceptable risk to health or that could affect the reliable delivery of safe
10407 drinking water.
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10409 BOARD NOTE: Derived from 40 CFR 141.808, as added at 74 Fed. Reg. 53590 (Oct.
10410 19, 2009).

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10412 (Source: Added at 35 Ill. Reg. _____, effective _____)
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10414 **Section 611.1109 Supplemental Treatment**
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10416 a) Any supplemental drinking water treatment units installed onboard existing or
10417 new aircraft must be acceptable to FAA and FDA; and must be installed,
10418 operated, and maintained in accordance with the manufacturer's plans and
10419 specifications and FAA requirements.
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10421 b) Water supplemental treatment and production equipment must produce water that
10422 meets the standards prescribed in this Part.
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10424 BOARD NOTE: Derived from 40 CFR 141.809, as added at 74 Fed. Reg. 53590 (Oct.
10425 19, 2009).

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10427 (Source: Added at 35 Ill. Reg. _____, effective _____)
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10429 **Section 611.1110 Violations**
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10431 An air carrier is in violation of this Subpart AA when, for any AWS it owns or operates, any of
10432 the following occurs:
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10434 a) The air carrier fails to perform any of the requirements set forth in Sections
10435 611.1103 and 611.1104;
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10437 b) The air carrier has an E. coli-positive sample in any monitoring period (routine
10438 and repeat samples are used in this determination);
10439

10440 c) The air carrier fails to provide notification to passengers and crew in accordance
10441 with Section 611.1105;
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10443 d) The air carrier fails to comply with the reporting and recordkeeping requirements
10444 of this Subpart AA;
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10446 e) The air carrier fails to conduct a self-inspection or address a deficiency in
10447 accordance with Section 611.1108; or

10448
10449 f) The air carrier fails to develop a Coliform Sampling Plan in accordance with
10450 Section 611.1102, or fails to have and follow an AWSOMP that is included in an
10451 FAA-accepted operation and maintenance program in accordance with Section
10452 611.1104.

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10454 BOARD NOTE: Derived from 40 CFR 141.810, as added at 74 Fed. Reg. 53590 (Oct.
10455 19, 2009).

10456
10457 (Source: Added at 35 Ill. Reg. _____, effective _____)

10458 **Section 611.APPENDIX F Mandatory Lead Public Education Information for Non-**
 10459 **Transient Non-Community Water Systems**

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10461 1) INTRODUCTION

10462

10463 The United States Environmental Protection Agency (USEPA) and (insert name of water
 10464 supplier) are concerned about lead in your drinking water. Some drinking water samples taken
 10465 from this facility have lead levels above the USEPA action level of 15 parts per billion (ppb), or
 10466 0.015 milligrams of lead per liter of water (mg/l). Under Federal law we are required to have a
 10467 program in place to minimize lead in your drinking water by (insert date when corrosion control
 10468 will be completed for your system). This program includes corrosion control treatment, source
 10469 water treatment, and public education. We are also required to replace the portion of each lead
 10470 service line that we own if the line contributes lead concentrations of more than 15 ppb after we
 10471 have completed the comprehensive treatment program. If you have any questions about how we
 10472 are carrying out the requirements of the lead regulation please give us a call at (insert water
 10473 system's phone number). This brochure explains the simple steps you can take to protect you
 10474 and your family by reducing your exposure to lead in drinking water.

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10476 2) HEALTH EFFECTS OF LEAD

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10478 Lead is found throughout the environment in lead-based paint; air; soil; household dust; food;
 10479 certain types of pottery, porcelain, and pewter; and water. Lead can pose a significant risk to
 10480 your health if too much of it enters your body. Lead builds up in the body over many years and
 10481 can cause damage to the brain, red blood cells, and kidneys. The greatest risk is to young
 10482 children and pregnant women. Amounts of lead that won't hurt adults can slow down normal
 10483 mental and physical development of growing bodies. In addition, a child at play often comes
 10484 into contact with sources of lead contamination – like dirt and dust – that rarely affect an adult.
 10485 It is important to wash children's hands and toys often, and to try to make sure they only put food
 10486 in their mouths.

10487

10488 3) LEAD IN DRINKING WATER

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10490 A) Lead in drinking water, although rarely the sole cause of lead poisoning, can
 10491 significantly increase a person's total lead exposure, particularly the exposure of
 10492 infants who drink baby formulas and concentrated juices that are mixed with
 10493 water. The EPA estimates that drinking water can make up 20 percent or more of
 10494 a person's total exposure to lead.

10495

10496 B) Lead is unusual among drinking water contaminants in that it seldom occurs
 10497 naturally in water supplies like rivers and lakes. Lead enters drinking water
 10498 primarily as a result of the corrosion, or wearing away, of materials containing
 10499 lead in the water distribution system and household plumbing. These materials
 10500 include lead-based solder used to join copper pipe, brass, and chrome plated brass

10501 faucets, and in some cases, pipes made of lead that connect houses and buildings
10502 to the water main (service lines). In 1986, Congress banned the use of lead solder
10503 containing greater than 0.2% lead, and restricted the lead content of faucets, pipes,
10504 and other plumbing materials to 8.0%.

- 10505 C) When water stands in lead pipes or plumbing systems containing lead for several
10506 hours or more, the lead may dissolve into your drinking water. This means the
10507 first water drawn from the tap in the morning, or later in the afternoon after
10508 returning from work or school, can contain fairly high levels of lead.
10509

10510 4) STEPS YOU CAN TAKE TO REDUCE EXPOSURE TO LEAD IN DRINKING
10511 WATER
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- 10513 A) Let the water run from the tap before using it for drinking or cooking any time the
10514 water in a faucet has gone unused for more than six hours. The longer water
10515 resides in plumbing the more lead it may contain. Flushing the tap means running
10516 the cold water faucet until the water gets noticeably colder, usually about 15-30
10517 seconds. Although toilet flushing or showering flushes water through a portion of
10518 the plumbing system, you still need to flush the water in each faucet before using
10519 it for drinking or cooking. Flushing tap water is a simple and inexpensive
10520 measure you can take to protect your family's health. It usually uses less than one
10521 gallon.
10522

- 10523 B) Do not cook with or drink water from the hot water tap. Hot water can dissolve
10524 more lead more quickly than cold water. If you need hot water, draw water from
10525 the cold tap and heat it.
10526

- 10527 C) The steps described above will reduce the lead concentrations in your drinking
10528 water. However, if you are still concerned, you may wish to use bottled water for
10529 drinking and cooking.
10530

- 10531 D) You can consult a variety of sources for additional information. Your family
10532 doctor or pediatrician can perform a blood test for lead and provide you with
10533 information about the health effects of lead. State and local government agencies
10534 that can be contacted include the following:
10535

10536 i) (Insert the name or title of facility official if appropriate) at (insert phone
10537 number) can provide you with information about your facility's water
10538 supply; and
10539

10540 ii) The Illinois Department of Public Health at 217-782-4977 or 312-814-
10541 2608 or the (insert the name of the city or county health department) at
10542 (insert phone number) can provide you with information about the health
10543 effects of lead.

10544
10545 BOARD NOTE: Derived from 40 CFR 141.85(a)(2) (~~2009~~)(2002). The Department of Public
10546 Health (Department) regulates non-community water supplies, including non-transient, non-
10547 community water supplies. The Department has incorporated this Part into its regulations at 77
10548 Ill. Adm. Code 900.15(a)(2)(A) and 900.20(k)(2). Thus, the Board has included the notice
10549 language of 40 CFR 141.85(a)(2) ~~in~~as this Section for the purposes of facilitating federal review
10550 and authorization of the Illinois drinking water regulations.

10551
10552 (Source: Amended at 35 Ill. Reg. _____, effective _____)