

SUMMARY OF EXPRESS TERMS

These amendments are necessary for the Department to maintain full primacy for delivery, oversight and management of New York's public drinking water supply supervision program and to ensure consistency with federally enacted drinking water regulations promulgated by the United States Environmental Protection Agency (EPA), including: amendments to the Lead and Copper Rule (LCR), including the LCR Minor Revisions (LCRMR) and LCR Short-Term Revisions (LCRSTR); the Long Term 2 Enhanced Surface Water Treatment Rule (LT2); the Stage 2 Disinfectant and Disinfection Byproducts Rule (Stage 2 DBPR); and the Variances and Exemptions (V&E) Rule. Several revisions incorporate requirements related to recent amendments to the New York State Public Health Law (PHL), while other amendments update and clarify references to approved analytical methods, update tables for consistency with federal and State law, update outdated references, and correct typographical errors.

The amendments that conform to the revised federal regulations include:

- Minor and Short-Term Revisions to the Lead and Copper Rule (LCRMR and LCRSTR)
 - The EPA promulgated the LCRMR to eliminate unnecessary requirements in the LCR, reduce the reporting burden, and promote consistent national implementation of the LCR. In addition, language was added to clarify requirements and correct oversights in the original rule. The revisions are called “minor” because they do not affect the lead and copper maximum contaminant level goals, action levels, or other basic regulatory requirements to monitor for lead and copper at the tap and to optimize corrosion control. The lead action level remains at 0.015 milligrams per liter (mg/L) and the copper action level remains at 1.3 mg/L.

- The LCRSTR enhances the implementation of the LCR in the areas of monitoring, treatment, customer awareness, lead service line replacement, and public education requirements, to ensure that drinking water consumers receive meaningful, timely, and useful information needed to help them limit their exposure to lead in drinking water.

- Stage 2 Disinfectant and Disinfection Byproducts Rule (Stage 2 DBPR)
 - The EPA promulgated the Stage 2 DBPR to increase public health protection by reducing the potential risk of adverse health effects associated with disinfection byproducts (DBPs) in drinking water distribution systems. The Stage 2 DBPR builds on the Stage 1 Disinfectant and Disinfection Byproducts Rule (Stage 1 DBPR) by focusing on monitoring for and reducing concentrations of two classes of DBPs:

Total

Trihalomethanes (TTHM) and Haloacetic Acids (HAA5) in drinking water.
 - The Stage 2 DBPR required some public water systems to complete an Initial Distribution System Evaluation (IDSE) to characterize DBP levels in their distribution systems and identify locations to monitor DBPs for Stage 2 DBPR compliance. The Stage 2 DBPR bases TTHM and HAA5 compliance on locational running annual average (LRAA) calculated at each monitoring location.
 - All Community Water Systems (CWSs) and Non-Transient Non-Community Water Systems (NTNCWSs) that either add a primary or residual disinfectant, other than

ultraviolet light, or deliver water that has been treated with a primary or residual disinfectant, other than ultraviolet light, must meet the requirements of this rule.

- Long Term 2 Enhanced Surface Water Treatment Rule (LT2)

- The EPA promulgated the Long Term 2 Enhanced Surface Water Treatment Rule (LT2) to reduce disease incidence associated with *Cryptosporidium* and other disease causing microorganisms in drinking water. LT2 builds upon earlier drinking water regulations to address public water systems (PWS) at a higher risk for *Cryptosporidium*, which is very resistant to treatment by chlorine and other common disinfectants.

- The rule bolsters existing federal regulations to provide a higher level of drinking water protection by targeting treatment requirements to higher risk systems, reducing risks associated with uncovered finished water storage facilities, ensuring that systems maintain microbial protection as they reduce the formation of disinfection byproducts; and requiring unfiltered water systems to provide at least 99 or 99.9 percent (2- or 3-log) inactivation of *Cryptosporidium*.

- Variations and Exemptions (V&E) Rule

- The EPA promulgated the V&E Rule to provide eligible systems with options for achieving compliance with regulations. Variations allow eligible systems to provide

drinking water that does not comply with a National Primary Drinking Water Regulation (NPDWR), premised on the condition that the PWS installs appropriate treatment technology to achieve regulatory compliance and the quality of the drinking water delivered is still protective of public health. Exemptions allow eligible systems additional time to build capacity in order to achieve and maintain regulatory compliance with newly promulgated NPDWRs, while continuing to provide acceptable levels of public health protection.

- The amendments allow for two types of variances: a general variance for PWSs that are not able to comply with a drinking water standard due to their source water quality; and variances for small PWSs serving populations of 3,300 or fewer that cannot afford to comply with a drinking water standard (these variances may be allowed for systems serving up to 10,000 persons).

Two categories of revisions are required to make regulations consistent with Public Health Law, those pertaining to cross-connection control and to water supply emergency plans:

Cross-Connection Control

Pursuant to amendments to section 225 of the PHL, the Department discontinued the issuance of backflow tester certifications. In order to make the regulation consistent with the amended PHL, the following changes to the cross-connection control regulations are being proposed:

- A Department-approved entity will issue backflow tester certifications.
- Backflow testers will be required to take initial training courses if certification has lapsed for more than one year.

- Enforcement provisions are clarified.

Water Supply Emergency Plans

Pursuant to amendments to section 1125 of the PHL, the Department is proposing the following amendments:

- Base the requirement for submittal of a water supply emergency plan on the population served rather than a minimum operational revenue. All PWSs serving a population of more than 3,300 will be required to submit a water supply emergency plan.
- Specify the statutory penalty for disclosing confidential information about a water system emergency plan.
- Clarify that resistance to cyber attack must be included in the vulnerability analysis of the water supply emergency plan.

The final category of changes addresses updates to portions of Subpart 5-1. The listing of approved laboratory analytical methods for drinking water have been removed from Appendix 5-C and replaced with a statement that requires the use of analytical methods approved by the EPA or the New York State Environmental Laboratory Approval Program (ELAP). Additional revisions to Appendix 5-C include incorporating provisions to allow for the limited use of test strips to test for chlorine residual in drinking water, correction of typographical errors, and minor editorial revisions for consistency throughout the regulation. The tables in Subpart 5-1 have also been updated for consistency with federal and State law.

Pursuant to the authority vested in the Public Health and Health Planning Council and the Commissioner of Health by section 225 of the Public Health Law, Subpart 5-1 of Title 10 (Health) of the Official Compilation of Codes, Rules and Regulations of the State of New York is amended, to be effective upon publication of a Notice of Adoption in the New York State Register, as follows:

Subdivision (a) of section 5-1.1 is amended as follows:

(a) [*Log*] *-log treatment* means the reduction of a specified proportion of viruses, bacteria, protozoa or other organisms present in drinking water expressed as factors of ten, through disinfection (inactivation) and/or removal. For example, 3-log treatment removes or inactivates 999 out of 1000 organisms or 99.9 percent.

Existing section 5-1.1, Definitions, is being relettered and amended to be in alphabetical and sequential order, as noted below.

Existing subdivision (c) of section 5-1.1 is relettered to be subdivision (d). A new subdivision (c) is added to section 5-1.1 to read as follows:

(c) *Approved method* means an analytical method, including sample preparation, of proven reliability which has been approved, or given similar recognition by the United States Environmental Protection Agency (EPA) or a New York State regulatory program in environmental or public health protection, for the specific purpose for which the method is to be used. Methods approved by the department pursuant to section 10 NYCRR 55-2.5 shall be deemed approved methods.

Existing subdivision (d) of section 5-1.1 is relettered to be subdivision (j). New subdivisions (e)-(i) are added to section 5-1.1 to read as follows:

(e) *Backflow* means a flow condition, induced by a pressure differential, which causes the reversal of flow of water or other liquids, solids, and/or gases into the distribution pipes of a potable water supply from any source other than the intended potable water source.

(f) *Backflow prevention device tester (or “tester”)* means a person who has met the certification requirements and been issued a certification as specified in section 5-1.31.

(g) *Bag filter* means a pressure-driven separation device that removes particulate matter larger than 1 micrometer using an engineered porous filtration media.

(h) *Bank filtration* means a water treatment process that uses a well to recover surface water that has naturally infiltrated into ground water through a river bed or bank(s). Infiltration is typically enhanced by the hydraulic gradient imposed by a nearby pumping water supply or other well(s).

(i) *Cartridge filter* means a pressure-driven separation device that removes particulate matter larger than one micrometer using an engineered porous filtration media.

Existing subdivision (e) of section 5-1.1 is relettered to be subdivision (l). A new subdivision (k) is added to section 5-1.1 to read as follows:

(k) *Combined distribution system* means the interconnected distribution system consisting of the distribution systems of wholesale systems and of the consecutive systems that receive finished water.

Existing subdivisions (f)-(l) of section 5-1.1 are relettered to be subdivisions (m)-(s), and existing subdivision (m) of section 5-1.1 is relettered to be subdivision (u). Existing subdivisions (n)-(p) of section 5-1.1 are relettered to be subdivisions (x)-(z). Subdivision (q) of section 5-1.1 is relettered to be subdivision (w). New subdivisions (t) and (v) are added to section 5-1.1 to read as follows:

(t) *Cross-connection* means an actual or potential connection between a potable water system and any other source or system through which a water supply could be contaminated.

(v) *Cyber attack* means deliberate actions to target computer information systems, infrastructures, computer networks, computer controlled mechanical devices and/or personal computers by various means of malicious acts that either steal, alter, disrupt or damage a target by gaining access into a susceptible electronic or electromechanical device.

Existing subdivisions (r)-(t) of section 5-1.1 are relettered to be subdivisions (aa)-(ac). A new subdivision (ad) is added to section 5-1.1 to read as follows:

(ad) *Dual sample set* means a set of two samples collected at the same time and same location, with one sample analyzed for total trihalomethanes (TTHM) and the other sample analyzed for haloacetic acids (five) (HAA5).

Existing subdivisions (u)-(ab) of section 5-1.1 are relettered to be subdivisions (ae)-(al). A new subdivision (am) is added to section 5-1.1 to read as follows:

(am) *Finished water* means water that is introduced into the distribution system of a public water system and is intended for distribution and consumption without further treatment, except as necessary to maintain water quality in the distribution system (e.g., booster disinfection, addition of corrosion control chemicals).

Existing subdivisions (ac)-(ad) of section 5-1.1 are relettered to be subdivisions (an)-(ao).

Existing subdivision (ao) of section 5-1.1 is relettered (ap) and amended to read as follows:

[(ae)](ap) *GAC10* means granular activated carbon filter beds with an empty-bed contact time of 10 minutes based on average daily flow and a carbon reactivation or replacement frequency of every 180 days, [and is the] except that the reactivation frequency for GAC10 used as a best available technology for compliance with total trihalomethanes (TTHM) and haloacetic acids (five) (HAA5) maximum contaminant levels (MCLs) shall be 120 days.

A new subdivision (aq) is added to section 5-1.1 to read as follows:

(aq) *GAC20* means granular activated carbon filter beds with an empty-bed contact time of 20 minutes based on average daily flow and a carbon reactivation frequency of every 240 days.

Existing subdivisions (af)-(ak) of section 5-1.1 are relettered to be subdivisions (ar)-(aw). A new subdivision (ax) is added to section 5-1.1 to read as follows:

(ax) *Internal protection* means isolation of a fixture, area or zone which requires backflow prevention at the source of the cross-connection or potential hazard, in accordance with the New York State Uniform Fire Prevention and Building Code and/or the local plumbing and building codes.

Existing subdivisions (al)-(an) of section 5-1.1 are relettered to be subdivisions (ay)-(ba). A new subdivision (bb) is added to section 5-1.1 to read as follows:

(bb) *Locational running annual average or LRAA* means the average of sample analytical results during the previous four calendar quarters for samples taken at a particular monitoring location.

Existing subdivisions (ao)-(as) of section 5-1.1 are relettered to be subdivisions (bc)-(bg). New subdivisions (bh) and (bi) are added to section 5-1.1 to read as follows:

(bh) *Membrane filtration* means a pressure- or vacuum-driven separation process in which particulate matter larger than 1 micrometer is rejected by an engineered barrier, primarily through a size-exclusion mechanism, and which has a measurable removal efficiency of a target organism that can be verified through the application of a direct integrity test. This definition

includes the common membrane technologies of microfiltration, ultrafiltration, nanofiltration, and reverse osmosis.

(bi) *Method Detection Limit (MDL)* means the minimum concentration of a substance that can be measured and reported with 99 percent confidence that the analyte concentration is greater than zero and is determined from analysis of a sample in a given matrix containing the analyte.

Existing subdivisions (at)-(ax) of section 5-1.1 are relettered to be subdivisions (bj)-(bn). A new subdivision (bo) is added to section 5-1.1 to read as follows:

(bo) *Plant intake* means the works or structures at the head of a conduit through which water is diverted from a source, such as a river or lake, into the treatment plant.

Existing subdivisions (ay) and (az) of section 5-1.1 are relettered to be subdivisions (bp) and (bq). New subdivisions (br) and (bs) are added to section 5-1.1 to read as follows:

(br) *Practical Quantitation Limit (PQL)* means the practical and routinely achievable method-specific measurable concentration limit achieved by a laboratory with a high degree of certainty (>99.9 per cent confidence) in the results.

(bs) *Presedimentation* means a preliminary treatment process used to remove gravel, sand, and other particulate material from the source water through settling before the water enters the primary clarification and filtration processes in a treatment plant.

Existing subdivisions (ba) and (bb) of section 5-1.1 are relettered to be subdivisions (bt) and (bu). A new subdivision (bv) is added to section 5-1.1 to read as follows:

(bv) *Protective device* means an approved double check valve assembly, reduced pressure zone assembly, air gap or other type or method of backflow protection accepted by the department.

Existing subdivisions (bc)-(bm) of section 5-1.1 are relettered to be subdivisions (bw)-(cg). A new subdivision (ch) is added to section 5-1.1 to read as follows:

(ch) *Service protection* means the installation of a protective device or method of backflow protection at the service connection, commensurate with the degree of hazard of the consumer's potable water system. Service protection is also known as containment.

Existing subdivisions (bn)-(cd) of section 5-1.1 are relettered to be subdivisions (ci)-(cy). New subdivisions (cz) and (da) are added to section 5-1.1 to read as follows:

(cz) *Two-stage lime softening* means a process in which chemical addition and hardness precipitation occur in each of two distinct unit clarification processes in series prior to filtration.

(da) *Uncovered finished water storage facility* means a tank, reservoir, or other facility used to store water that will undergo no further treatment to reduce microbial pathogens except residual disinfection and is directly open to the atmosphere.

Existing subdivisions (ce)-(cl) of section 5-1.1 are relettered to be subdivisions (db)-(di).

Section 5-1.13 is amended to read as follows:

5-1.13 Sampling and analytical requirements.

The supplier of water shall collect raw water samples at a frequency prescribed by the State and analyze such samples for contaminants [in accordance with requirements set forth in "Acceptable Methods for the Analyses of Contaminants in Water"¹ and] using an approved method, with method exceptions as listed in the Tables in section 5-1.52 of this Subpart, and by an approved laboratory as described in section 5-1.74 of this Subpart.

[_____]

¹See Appendix 5-C, *infra*.]

Subdivision 5-1.22 (a) is amended to read as follows:

5-1.22 Approval of plans and completed works.

(a) No supplier of water shall make, install or construct, or allow to be made, installed or constructed, a public water system or any addition or deletion to or modification of a public water system until the plans and specifications have been submitted to and approved by the State. Materials used in the design, construction and repair of a public water system shall be lead-free.

For this Subpart, lead-free shall mean:

(1) [~~solder~~] Solder or flux which contains no more than 0.2 percent lead [~~and pipes,~~].

(2) ~~Pipes, pipe fittings,~~ [~~or any appurtenances~~] plumbing fittings and fixtures which contain no more than [~~eight percent~~] a weighted average of 0.25 percent lead with respect to the wetted surfaces.

The weighted average lead content of a pipe, pipe fitting, plumbing fitting, or fixture shall be calculated by using the following formula: For each wetted component, the percentage of lead is multiplied by the ratio of the wetted surface area of that component to the total wetted surface area of the entire product to arrive at the weighted percentage of lead of the component. The weighted percentage of lead of each wetted component is added together, and the sum of these weighted percentages constitutes the weighted average lead content of the product. The lead content of the material used to produce wetted components is used to determine compliance with subdivision (a)(2) of this section. For lead content of materials that are provided as a range, the maximum content of the range must be used for calculating the weighted average lead content.

The opening paragraph of section 5-1.30 is amended to read as follows:

5-1.30 Providing treatment for public water systems.

The supplier of water shall provide such treatment as necessary to deliver to the consumer a water conforming to the requirements of this section and determined [in accordance with the analytical methods contained in Appendix 5-C and] using an approved method, with method modifications as listed in the Tables in section 5-1.52 of this Subpart, and by an approved laboratory as described in section 5-1.74 of this Subpart.

* * *

Subdivision (b) of Section 5-1.30 is amended to read as follows:

(b) Minimum treatment for surface water sources or [groundwater] ground water sources directly influenced by surface water shall be filtration and disinfection techniques, approved by the State in accordance with section 5-1.22 of this Subpart, capable of at least 99 percent removal of *Cryptosporidium* oocysts, 99.9 percent removal and/or inactivation of *Giardia lamblia* cysts, and 99.99 percent removal and/or inactivation of viruses, between a point where the raw water is no longer subject to recontamination by surface water runoff and a point downstream before or at the first consumer. Compliance with this treatment technique [requirement shall be no later than June 29, 1993] is required for surface water sources or within 18 months [for groundwater] after ground water sources are determined to be directly influenced by surface water [sources], unless the department determines that the supplier of water can meet specific avoidance criteria as defined in subdivision (c) of this section. Required performance monitoring shall be conducted in accordance with section 5-1.52 [table] Table 10A of this Subpart. Compliance with these treatment technique requirements shall also include:

* * *

Paragraph (3) of subdivision (c) of section 5-1.30 is amended to read as follows:

(3) Disinfection must be sufficient to ensure at least 99.9 percent inactivation of *Giardia lamblia* cysts [and], 99.99 percent inactivation of viruses, and 99 or 99.9 percent inactivation of *Cryptosporidium* (per section 5-1.83(c)(2) of this Subpart), between a point where the raw water is no longer subject to recontamination by surface water runoff and a point downstream before or at the first consumer. Actual CT values must be equal to or greater than the required values found in section 5-1.52 [tables] Tables 14A through [14G] 14I of this Subpart, except for one day in each month that the system served water to the public, or except where the State determines

that an additional failure in one month in the previous 12 months was caused by circumstances that were unusual and unpredictable. The supplier of water must calculate the CT values of the system for each day the system is in operation to document satisfactory disinfection. The necessary parameters and related monitoring frequencies to conduct this evaluation include:

Paragraph (9) of subdivision (c) of section 5-1.30 is amended to read as follows:

(9) The public water system [must] shall comply with the trihalomethane, haloacetic acid, bromate, and chlorite maximum contaminant levels and the maximum residual disinfectant levels in accordance with section 5-1.52 of this Subpart.

Subdivision (d) of section 5-1.30 is amended to read as follows:

(d) Notwithstanding anything to the contrary in sections 5-1.12, 5-1.23, 5-1.51 or 5-1.77 of this Subpart, if the public water system fails to comply with the treatment technique and/or the monitoring requirements of subdivision (a), (b), (c) or (g) of this section, fails to install the filtration and/or disinfection treatment required by this section or fails to comply with the avoidance criteria requirements contained in subdivision (c) of this section, the system violates this Subpart and shall make State and public notification, including mandatory health effects language. Pursuant to subdivision (c) of this section, if at any time the raw water turbidity exceeds five nephelometric turbidity units, the system shall consult with the State within 24 hours of learning of the exceedance. Based on this consultation, the State may determine that the

exceedance constitutes a public health hazard, as found in section [5-1.1(bc)(4)] 5-1.1(bw)(4) of this Subpart, which requires a Tier 1 notification.

* * *

Section 5-1.31 is repealed and new section 5-1.31 is added to read as follows:

5-1.31 Cross-Connection Control.

(a) The supplier of water shall implement a service protection program (also known as containment) which includes the following:

- (1) requiring a protective device commensurate with the degree of hazard posed by any service connection;
- (2) requiring the user of such connections to submit plans for the installation of protective devices to the supplier of water and/or the State for approval; and
- (3) assuring all protective devices are inspected and tested by a certified backflow prevention device tester, as prescribed in subdivision (b) of this section, at the time of initial installation, after each repair, and annually thereafter. Records of such tests shall be made available to, reviewed by, and maintained by the supplier of water. All protective device tests and inspections shall be conducted by a certified backflow prevention device tester (“tester”).

(b) A certified backflow prevention device tester shall meet the following requirements:

- (1) Initial certification and renewal requirements. Initial and/or renewal certifications for a certified backflow prevention device tester will be issued by a department-approved entity,

when the applicant provides proof of satisfactory completion of a department-approved certified backflow prevention training course. The certification shall be valid for a period of three years.

(2) Conditions of certification.

(i) Upon issuance of a certification by a department-approved entity, the tester shall inform the department and the department-approved entity, within 30 days, of any changes in address or employment.

(ii) The department has the authority to require any individual applying for certification or renewal certification as a certified backflow prevention device tester or any certified backflow prevention device tester to take a written, oral and/or practical skills validated examination, if the department deems such examination to be reasonably necessary to determine the applicant's qualifications or to determine the certified tester's knowledge, skills, ability and judgment. The results of the examination may be the sole basis for approval, disapproval or suspension of such certification or the basis for additional requirements, deemed appropriate by the department, before certification will be issued or reinstated.

(3) Recertification requirements.

(i) An individual that allows his or her certification renewal to lapse after the expiration date is no longer certified to test applicable protective devices as outlined in this Subpart. If the individual meets the requirements outlined in this subdivision, within one year of the expiration date, the certification will be reinstated with a renewal period starting upon the date of expiration of the original certification and ending three years later.

(ii) An individual that allows his or her certification renewal to lapse for more than one year after the expiration date will be required to repeat the initial certification requirements set forth in subdivision (b)(1) of this section.

(c) Enforcement

Upon notice and opportunity for a hearing, a tester's certification may be suspended or revoked. Revocation or suspension may be based on, but not limited to, fraud or misrepresentation by the certified tester; gross incompetence or gross negligence on a particular occasion; or negligence or incompetence on more than one occasion. Examples of such conduct include, but are not limited to:

- (1) making false statements or notations on legal or official records required by the department; or
- (2) providing misleading statements to government officials or agents of the government regarding protective device testing/certification.

(d) The supplier of water may not allow a user to establish a separate source of water. However, if a user justifies the need for a separate source of water, the supplier of water shall protect the public water system from such separate source of water by ensuring that such source does not pose a hazard in the following manner:

- (1) by requiring the user to regularly examine the quality of the separate water source;
- (2) by approving the use of only those separate water sources which are properly developed, constructed, protected and found to meet the requirements of sections 5-1.51 and 5-1.52 of this Subpart; and
- (3) by filing such approvals with the State annually.

(e) All users of a public water system shall prevent cross-connections between the potable water piping system and any other piping system within the premises by installing internal protection in accordance with the New York State Uniform Fire Prevention and Building Code and/or the local plumbing and building codes.

(f) Any installation, service, maintenance, testing, repair or modification of a protective device shall be performed in accordance with the provisions of any relevant county, city, town or village plumbing code. All individuals who perform testing of protective devices shall be certified in accordance with subdivision (b) of this section.

Section 5-1.32 is amended to read as follows:

5-1.32: Protection of [equalizing and distribution reservoirs] finished water storage facilities.

[Equalizing and distribution reservoirs] Finished water storage facilities which deliver water to the user without later treatment shall be covered, or the water from an uncovered [reservoir must] finished water storage facility shall be continuously [disinfected] treated to achieve inactivation or removal of at least 99.99 percent virus, 99.9 percent *Giardia lamblia*, and 99 percent *Cryptosporidium* in a manner approved by the State, in accordance with section 5-1.22(b) of this Subpart, before being discharged to the distribution system.

Section 5-1.33 is repealed and a new section 5-1.33 is added to read as follows:

5-1.33 Water supply emergency plans.

(a) All community water systems that supply drinking water to more than 3,300 people shall submit a water supply emergency plan to the State. The plan shall identify and outline the steps necessary to ensure that potable water is available during all phases of a water supply emergency.

(b) The water supply emergency plan shall include:

(1) Procedures to notify consumers during all phases of a water supply emergency.

(2) Criteria and procedures for determining, and the subsequent reporting of, critical water levels or safe yield of the source or sources of water.

(3) The identification of existing and future sources of water available during normal nonemergency and water supply emergency conditions.

(4) The identification of all available water storage. Available water storage includes source, transmission and distribution system storage.

(5) The identification, capacity and location of existing inter-connections. Identification of additional inter-connections needed to provide potable water during a water supply emergency.

- (6) A specific action plan outlining all the steps to be carried out, taken or followed during a water supply emergency. The plan shall include a process for State notification, emergency notification rosters of key water supply personnel with current telephone numbers both business and home, and details of the follow-up corrective action process to minimize the reoccurrence of an emergency.
- (7) The identification and implementation of procedures for water conservation and water use restrictions to be put in place during a water supply emergency.
- (8) The identification of and the procedures for prioritization of potable water users during a water supply emergency.
- (9) The identification and availability of emergency equipment needed during a water supply emergency.
- (10) The system's capacity and ability to meet peak water demands and fire-flow conditions concurrently during a water supply emergency.
- (c) An all-hazard vulnerability analysis, including an analysis of vulnerability to terrorist attack and cyber attack, shall be performed on all components of the water system. System components include but are not limited to: the source or sources of water supply; water treatment plants; disinfection stations; pipes and valves; storage tanks; and system operations and

management. The system shall take whatever steps are necessary to ensure that potable water can be and is available during a water supply emergency.

(d) Before the final submission of the water supply emergency plan to the State, the system shall publish a notice in a newspaper of general circulation in the area served by the community water system stating that the proposed water supply emergency plan is available for review and comment. The notice shall be printed at least once in each of two successive weeks. Public comment shall be accepted for at least fourteen days following the date of first publication. All public comment shall be submitted with the water supply emergency plan to the State.

(e) The water supply emergency plan shall be submitted to the State for review at least once every five years and within thirty days after major water facility infrastructure changes have been made. The system shall keep the emergency plan up to date, and shall provide updated communication and notification information to the State by December thirty-first of each year.

(f) Community water systems that supply drinking water to 3,300 or fewer people, non-transient noncommunity water systems, and noncommunity water systems may be required to prepare, update and submit to the State, a written water supply emergency plan for providing potable water during a water supply emergency.

(g) If more than one system is responsible for providing potable water to a community water system, the water supply emergency plan shall be prepared and submitted jointly by the systems.

(h) Information shall be exempt from public disclosure for public review and comment if it is determined by the water supplier that the information will pose a security risk to the operation of the water system. Upon the Commissioner's request, the system shall provide a copy of the exempt information and justification for why said information should not be subject to public review and comment. A person who, without authorization, discloses any such assessment or information to another person who has not been authorized to receive such assessment or information shall be subject to criminal penalties pursuant to section 1125 of the Public Health Law.

Sections 5-1.40 through 5-1.49 are repealed and new sections 5-1.40 through 5-1.48 are added to read as follows:

Control of Copper and Lead in Drinking Water

5-1.40 General Requirements and Action Levels.

(a) Applicability. The requirements of sections 5-1.40 through 5-1.48 of this Subpart shall apply to all community water systems and nontransient, noncommunity water systems serving 15 or more service connections or serving 25 or more persons.

(b) Lead and copper action levels.

(1)

| Analyte | Action Level ^{1,2} |
|---------|-----------------------------|
| Lead | 0.015 mg/L |

| | |
|--------|----------|
| Copper | 1.3 mg/L |
|--------|----------|

Notes:

¹ Analysis of lead and copper samples must be done by an approved laboratory as prescribed in section 5-1.74(a), that demonstrates the ability to achieve a Practical Quantitation Level (PQL) for lead equal to 0.0005 milligrams/Liter (mg/L) and a PQL for copper equal to 0.050 mg/L.

² All lead and copper levels measured between the PQL and Method Detection Level (MDL) must be either reported as measured or one-half the PQL specified in note 1. All levels below the lead and copper MDLs must be reported as zero.

(2) The lead action level is exceeded if the concentration of lead in more than ten percent (90th percentile) of the tap water samples collected in accordance with section 5-1.42 during any monitoring period exceeds 0.015 mg/L.

(3) The copper action level is exceeded if the concentration of copper in more than ten percent (90th percentile) of the tap water samples collected in accordance with section 5-1.42 during any monitoring period exceeds 1.3 mg/L.

(4) The 90th percentile lead and copper levels shall be computed as follows:

(i) Place the results of all lead and copper samples taken during a monitoring period in ascending order from the sample with the lowest concentration to the sample with the highest concentration. Each sampling result will be assigned a number, ascending by single integers beginning with the number one for the sample with the lowest contaminant level. The number

assigned to the sample with the highest contaminant level will be equal to the total number of samples taken.

(ii) Multiply the number of samples taken during the monitoring period by 0.9.

(iii) The contaminant concentration of the numbered sample obtained by the calculation in subdivision (b)(4)(ii) of this section is the 90th percentile contaminant level.

(iv) For water systems serving fewer than 100 people that collect 5 samples per monitoring period, the 90th percentile is computed by taking the average of the highest and second highest concentration.

(v) For a public water system that has been allowed by the State to collect fewer than five samples under section 5-1.42(a)(3), the sample result with the highest concentration is considered the 90th percentile value.

5-1.41 Corrosion Control Treatment Steps and Requirements.

(a) Each system shall complete the applicable corrosion control treatment requirements found in subdivision (c) of this section unless it is deemed to have optimized corrosion control as provided under subdivision (b) of this section.

(b) Optimized corrosion control. A system is deemed to have optimized corrosion control and is not required to complete the applicable corrosion control treatment steps identified in this section if the water system satisfies the criteria specified in one of the paragraphs (1) through (3) of this subdivision. Any such system deemed to have optimized corrosion control under this subdivision, and which has treatment in place, shall continue to operate and maintain optimal

corrosion control treatment and meet any requirements that the State determines appropriate to ensure optimal corrosion control treatment is maintained.

(1) Any water system that serves 50,000 or fewer people is considered to have optimal corrosion control treatment if the water system meets the lead and copper action levels during each of two consecutive six-month monitoring periods conducted in accordance with section 5-1.42.

(2) Any water system may be deemed by the State to have optimized corrosion control treatment if the system demonstrates to the satisfaction of the State that it has conducted activities equivalent to applicable corrosion control steps. Water systems deemed to have optimized corrosion control under this paragraph shall operate in compliance with State-designated optimal water quality parameters and continue to conduct lead and copper tap and water quality parameter sampling in accordance with sections 5-1.42(b)(3) and 5-1.43(b)(3). A system shall provide information to the State to support a determination under this subdivision which includes, but is not limited to:

(i) the results of all samples collected for each of the water quality parameters in section 5-1.43;

(ii) a report explaining the test methods used by the water system to evaluate the corrosion control treatments listed in subdivision (c)(3)(ii) of this section, the results of all tests conducted, and the basis for the system's selection of optimal corrosion control treatment;

- (iii) a report explaining how corrosion control has been installed and how it is being maintained to insure minimal lead and copper concentrations at consumers' taps; and
- (iv) the results of first draw lead and copper tap water samples collected in accordance with section 5-1.42 for two consecutive six-month monitoring periods after corrosion control has been installed.

(3) A water system is deemed to have optimized corrosion control if it meets the copper action level and can demonstrate:

- (i) the difference between the results of the 90th percentile tap water lead level and the highest source water lead level is less than 0.005 mg/L for two consecutive six-month monitoring periods. The 90th percentile tap water lead level shall be sampled in accordance with section 5-1.42 and source water lead level shall be sampled in accordance with section 5-1.44; and

- (ii) a system's highest source water lead level is below the Method Detection Limit, and the 90th percentile tap water lead level is less than or equal to 0.005 mg/L for two consecutive 6-month monitoring periods.

(4) Any water system deemed to have optimized corrosion control in accordance with this section shall continue monitoring for lead and copper in tap water no less frequently than once every three calendar years using the reduced number of sites specified in section 5-1.42(a)(3)

and collecting the samples at times and locations specified in section 5-1.42(c), unless it meets the requirements for a nine year waiver as specified in section 5-1.42(f).

(5) Any system triggered into corrosion control because it is no longer deemed to have optimized corrosion control under this section shall implement corrosion control treatment in accordance with the deadlines in subdivision (c)(2) of this section. Any such system serving more than 50,000 persons shall adhere to the schedule specified in subdivision (c)(2) of this section for systems serving 50,000 or fewer persons, with the time periods for completing each step being triggered by the date the system is no longer deemed to have optimized corrosion control under this section.

(6) Any water system deemed to have optimized corrosion control shall notify the State in writing, pursuant of section 5-1.48(i), of any upcoming long-term change in treatment or addition of a new source. The water system shall obtain approval from the State before implementing the addition of a new source or long-term change in water treatment. The State may require any such system to conduct additional monitoring or to take other action the State deems appropriate to ensure that such systems maintain minimal levels of corrosion in the distribution system.

(c) Corrosion control treatment steps and deadlines.

(1) A system serving more than 50,000 persons shall complete the following corrosion control treatment steps, unless it is deemed to have optimized corrosion control as provided in subdivisions (b)(2) and (b)(3) of this section:

- (i) Step 1: The water system shall conduct initial first draw lead and copper tap sampling and water quality parameter sampling in accordance with sections 5-1.42 and 5-1.43. If the lead or copper action level exceeds the 90th percentile, the water system shall conduct source water sampling in accordance with section 5-1.44 within a schedule specified by the State.

- (ii) Step 2: The water system shall complete corrosion control studies as specified by the State within 18 months after the end of the monitoring period during which the system exceeds one of the action levels.

- (iii) Step 3: The water system shall install optimal corrosion control treatment within 24 months after the State designates such treatment.

- (iv) Step 4: After installation of optimal corrosion control treatment, the water system shall complete first draw lead and copper tap sampling and water quality parameter follow-up sampling in accordance with sections 5-1.42(b)(2) and 5-1.43(b)(2) during the two consecutive six-month monitoring periods immediately following installation of treatment.

- (v) Step 5: After State designation of water quality parameters for optimal corrosion control treatment, the water system shall operate in compliance with State-designated optimal water quality parameter values in accordance with subdivision (g) of this section; and continue to conduct first draw lead and copper tap sampling and water quality parameter sampling in accordance with sections 5-1.42(b)(3) and 5-1.43(b)(3).

(2) Systems serving 50,000 or fewer persons. Except as provided in subdivision (b) of this section, a system that serves 50,000 or fewer persons shall complete the following corrosion control treatment steps:

(i) Step 1: The water system shall conduct initial first draw lead and copper tap sampling in accordance with section 5-1.42 within a schedule specified by the State. If the lead or copper action level is exceeded at the 90th percentile the water system shall conduct water quality parameter sampling and source water sampling in accordance with sections 5-1.43 and 5-1.44.

(ii) Step 2: The water system shall recommend optimal corrosion control treatment within six months after the end of the monitoring period during which the system exceeds one of the action levels. Within 12 months after the end of the monitoring period during which a system exceeds the lead or copper action level, the State may designate optimal corrosion control treatment or require the system to perform corrosion control studies. If the State requires corrosion control studies to be conducted, the water system shall complete corrosion control studies as specified in subdivision (c)(3) of this section.

(a) Systems serving populations greater than 3,300 but less than 50,000 shall perform such studies within 18 months after the end of the monitoring period during which the system exceeds the lead or copper action level.

(b) Systems serving 3,300 or fewer persons shall perform such studies within 24 months after the end of the monitoring period during which the system exceeds the lead or copper action level.

(iii) Step 3: The water system shall install optimal corrosion control treatment within 24 months after the State designates such treatment.

(iv) Step 4: After installation of optimal corrosion control treatment, the water system shall complete first draw lead and copper tap sampling and water quality parameter follow-up sampling in accordance with sections 5-1.42(b)(2) and 5-1.43(b)(2) during the two consecutive six-month monitoring periods immediately following installation of treatment.

(v) Step 5: After State designation of water quality parameters for optimal corrosion control treatment, the water system shall operate in compliance with State-designated optimal water quality parameter values in accordance with subdivision (g) of this section; and continue to conduct first draw lead and copper tap sampling and water quality parameter sampling in accordance with sections 5-1.42(b)(3) and 5-1.43(b)(3).

(3) Content of corrosion control studies. Corrosion control studies shall follow methods that include but are not limited to the following:

(i) an evaluation of the effectiveness of each of the following treatments, and, if appropriate, combinations of the following treatments using standard engineering tests on other systems of similar size, water chemistry and distribution system configuration:

(a) alkalinity and pH adjustment;

(b) calcium hardness adjustment; and

(c) the addition of a phosphate or silicate based corrosion inhibitor at a concentration sufficient to maintain an effective residual concentration in all test tap samples;

(ii) measurements of appropriate water quality parameters to assess performance of corrosion control including: lead; copper; pH; alkalinity; calcium; conductivity; temperature; silica or orthophosphate;

(iii) an assessment of effectiveness of treatment including the potential for adverse effects on other water quality treatment processes; and

(iv) identification of the optimal corrosion control treatment(s) for the system, including a rationale of the treatment steps for consideration by the State.

(4) Conditions for ceasing treatment steps. Any water system that serves 50,000 or fewer people and that is required to complete the corrosion control steps due to its exceedance of the lead or copper action level, may cease completing the treatment steps whenever the water system meets both action levels during each of two consecutive six-month monitoring periods. The lead and copper results from both monitoring periods shall be submitted to the State for approval for ceasing treatment steps. If an action level is exceeded in a later monitoring period the water system shall complete the remaining applicable treatment steps.

(d) Designation of optimal corrosion control treatment. Based upon consideration of available information including, where applicable, corrosion control studies performed under subdivision

(c) of this section and a system's proposed treatment alternative, the State will either:

(1) approve the corrosion control treatment option recommended by the system; or

(2) require alternative corrosion control treatment(s) as specified by the State. The State may also ask for additional information or modifications.

(e) Installation of optimal corrosion control. Each system shall properly install and operate throughout its distribution system the optimal corrosion control treatment(s) approved by the State under subdivision (d) of this section.

(f) State review of treatment and designation of optimal water quality control parameters. Based upon a review of the results of lead and copper tap water samples and water quality parameter samples submitted to the State by the water system from both before and after the installation of optimal corrosion control treatment, the State shall determine whether the system has properly installed and operated the optimal corrosion control treatment, and designate water quality parameter values, or a range of values, within which the system must operate. Such water parameters shall include:

(1) A minimum value or a range of values for pH measured at each entry point to the distribution system;

(2) A minimum pH value, measured in all tap samples. Such value shall be equal to or greater than 7.0, unless the State determines that meeting a pH level of 7.0 is not technologically feasible or is not necessary for the system to optimize corrosion control;

(3) If a corrosion inhibitor is used, a minimum concentration or a range of concentrations for the inhibitor, measured at each entry point to the distribution system and in all tap samples, that

the State determines is necessary to form a passivating film on the interior walls of the pipes of the distribution system;

(4) If alkalinity is adjusted as part of optimal corrosion control treatment, a minimum concentration or a range of concentrations for alkalinity, measured at each entry point to the distribution system and in all tap samples; and

(5) If calcium carbonate stabilization is used as part of corrosion control, a minimum concentration or a range of concentrations for calcium, measured in all tap samples.

The values for the applicable water quality control parameters listed above shall be those that the State determines to reflect optimal corrosion control treatment for the system. The State may designate values for additional water quality control parameters determined by the State to reflect optimal corrosion control for the system. The State shall notify the system in writing of these determinations and explain the basis for its decisions.

(g) Continued operation and maintenance.

(1) All systems optimizing corrosion control shall continue to operate and maintain optimal corrosion control treatment, including maintaining water quality parameters at or above minimum values or within ranges designated by the State under subdivision (f) of this section for all samples collected in accordance with section 5-1.43(b)(3) and section 5-1.43(c). Compliance with the requirements of this paragraph shall be determined every six months, as specified in section 5-1.42(b)(3). A water system is out of compliance with the requirements of this

paragraph if it has excursions for any State-designated parameter on more than nine (9) days during any six-month period. An excursion occurs whenever the daily value for one or more of the water quality parameters measured at a sampling location is below the minimum value or outside the range designated by the State. The State has the discretion to delete results of obvious sampling errors from this calculation. Daily values are calculated as follows:

(i) On days when more than one measurement for the water quality parameter is collected at the sampling location, the daily value shall be the average of all results collected during the day regardless of whether they are collected through continuous monitoring, grab sampling, or a combination of both.

(ii) On days when only one measurement for the water quality parameter is collected at the sampling location, the daily value shall be the result of that measurement.

(iii) On days when no measurement is collected for the water quality parameter at the sampling location, the daily value shall be the daily value calculated on the most recent day on which the water quality parameter was measured at the sample site.

(2) Modification of State treatment decisions. A water system may request a modification of its State designated optimal corrosion control treatment. The request shall be submitted in writing and include the reason for the modification along with supporting data.

5-1.42 Monitoring Requirements for Lead and Copper in Tap Water.

(a) Sample Requirements.

(1) Sample site location.

(i) Each water system shall complete a materials evaluation of its distribution system in order to identify a pool of targeted sampling sites that meets the requirements of this section, and which is sufficiently large to ensure that the water system can collect the number of lead and copper tap samples required in subdivision (a)(3) of this section. All sites from which first draw samples are collected shall be selected from this pool of targeted sampling sites. Sampling sites may not include faucets that have point-of-use or point-of-entry treatment devices designed to remove inorganic contaminants.

(ii) The public water system shall review sources of information listed below in order to identify a sufficient number of sampling sites. In addition, the system shall seek to collect such information, where possible, in the course of its normal operations (e.g., checking service line material when reading water meters or performing maintenance activities):

(a) All plumbing codes, permits, and records in the files of the building department(s) which indicate the plumbing materials that are installed within publicly and privately owned structures connected to the distribution system;

(b) All inspections and records of the distribution system that indicate the material composition of the service connections that connect a structure to the distribution system; and

(c) All existing water quality information which includes the results of all prior analyses of the system or individual structures connected to the system indicating locations that may be particularly susceptible to high lead or copper concentrations.

(iii) The pool of targeted sampling sites for community water systems shall consist of:

(a) Structures containing lead pipes, copper pipes with lead solder installed after 1982; and/or served by a lead service line. Sampling sites shall be selected from the following building types, in this order, until each building type is exhausted before moving to the next building type:

(1) residential single family (Tier 1 sample sites);

(2) multiple-family residence where at least 20 percent of the structures served by the water system are multiple-family residences (Tier 1 sample sites);

(3) any community water system with insufficient tier 1 sampling sites shall complete its sampling pool with “Tier 2 sampling sites”, consisting of buildings, including multiple-family residences that contain copper pipes with lead solder installed after 1982 or lead pipes; and/or served by a lead service line: (Tier 2 sample sites).

(b) Where insufficient sites are available meeting the criteria of clause (a), the sampling pool shall be completed using single family residences that contain copper pipes with lead solder installed before 1983 (Tier 3 samples sites).

(c) Where insufficient sampling sites are available meeting the criteria of clauses (a) and (b), the sampling pool shall be completed using representative sites that contain plumbing materials commonly found throughout the water system’s distribution system.

(d) Any water system whose distribution system contains lead service lines shall draw 50 percent of the samples it collects during each monitoring period from sites that contain lead pipes, or copper pipes with lead solder, and 50 percent of the samples from sites served by a lead service line. A water system that cannot identify a sufficient number of sampling sites served by a lead service line shall collect first-draw samples from all of the sites identified as being served by such lines.

(iv) The pool of targeted sampling sites for a nontransient noncommunity water system shall consist of structures that:

(a) contain copper pipes and leaded solder joints installed after 1982 or contain lead pipes; and/or (b) are served by a lead service line.

(v) A nontransient noncommunity water system with insufficient Tier 1 sampling sites shall complete its sampling pool with sampling sites having copper pipes with lead solder joints installed before 1983. If additional sites are needed to complete the sampling pool, the nontransient non-community water system shall use representative sites throughout the distribution system.

(2) Sample collection methods.

Samples shall be collected in a manner that will reasonably reflect potential lead levels delivered to user taps in accordance with 40 CFR 141.86(b)(2).

(i) All samples for lead and copper shall be collected from user taps and shall be first draw samples with the following exceptions: lead service line samples collected under section 5-1.45(b)(2); or, if a system meets the criteria in section 5-1.47(g) (e.g., prisons and hospitals).

(ii) Each first-draw tap sample for lead and copper shall be one liter in volume and have stood motionless in the plumbing system of each sampling site for at least six hours. First-draw samples from residential housing shall be collected from the cold water kitchen tap or bathroom sink tap. First-draw samples from a nonresidential building shall be one liter in volume and shall be collected at an interior tap from which water is typically drawn for consumption. Non-first-draw samples collected in lieu of first-draw samples pursuant to subdivision (a)(2)(iii) of this section shall be one liter in volume and shall be collected at an interior tap from which water is

typically drawn for consumption. First-draw samples may be collected by the system or the system may allow residents to collect first-draw samples after instructing the residents of the sampling procedures specified in this paragraph. To avoid problems of residents handling nitric acid, acidification of first-draw samples may be done up to 14 days after the sample is collected. After acidification to resolubilize the metals, the sample must stand in the original container for the time specified in the approved EPA method before the sample can be analyzed. If a system allows residents to perform sampling, the system may not challenge, based on alleged errors in sample collection, the accuracy of sampling results.

(iii) Each service line sample shall be one liter in volume and have stood motionless in the lead service line for at least six hours. Lead service line samples shall be collected in one of the following three ways:

(a) At the tap after flushing the volume of water between the tap and the lead service line. The volume of water shall be calculated based on the interior diameter and length of the pipe between the tap and the lead service line;

(b) Tapping directly into the lead service line; or

(c) If the sampling site is a building constructed as a single-family residence, allowing the water to run until there is a significant change in temperature which would be indicative of water that has been standing in the lead service line.

(iv) A water system shall collect each first draw tap sample from the same sampling site from which it collected a previous sample. If, for any reason, the water system cannot gain entry to a sampling site to collect a follow-up tap sample, the system may collect the follow-up tap sample from another sampling site in its sampling pool as long as the new site meets the same targeting criteria, and is within reasonable proximity of the original site.

(v) A non-transient non-community water system, or a community water system that meets the criteria of 40 CFR 141.85(b)(7), that does not have enough taps that can supply first draw samples, as defined in 40 CFR 141.2, may apply to the State in writing to substitute non-first-draw samples. Such systems must collect as many first-draw samples from appropriate taps as possible and identify sampling times and locations that would likely result in the longest standing time for the remaining sites. The State has the discretion to waive the requirement for prior State approval of non-first-draw sample sites selected by the system, either through State regulation or written notification to the system.

(3) Number of samples. A water system conducting standard monitoring shall collect at least one lead and copper tap sample during each monitoring period specified in subdivision (b) of this section from the number of sampling sites listed in the table below under “Standard Monitoring.” A water system conducting reduced monitoring shall collect at least one lead and copper tap sample during each monitoring period specified in subdivision (c) of this section from the number of sampling sites listed in the table below under “Reduced Monitoring.” Such reduced monitoring sites shall be representative of the sites required for standard monitoring.

If a public water system has fewer than five drinking water taps that can be used for human consumption and that meet the sample site criteria of subdivision (a)(1)(iii) of this section to reach the required number of sample sites listed in the following table, the system may collect at least one sample from each tap and then collect additional samples from those taps on different days during the monitoring period to meet the required number of sites; or, with written State approval, collect fewer samples provided that all taps that can be used for human consumption are sampled. The State must approve this reduction of the minimum number of samples in

writing based on a request from the system or onsite verification by the State. The State must specify sampling locations when a system is conducting reduced monitoring. A public water system may also apply to the State in writing to substitute non-first-draw samples. Such systems must collect as many first-draw samples from appropriate taps as possible and identify sampling times and locations that would likely result in the longest standing time for the remaining sites.

| Population Served | Standard Monitoring | Reduced Monitoring |
|--------------------------|----------------------------|---------------------------|
| | Number of Sites | Number of Sites |
| >100,000 | 100 | 50 |
| 10,001 to 100,000 | 60 | 30 |
| 3,301 to 10,000 | 40 | 20 |
| 501 to 3,300 | 20 | 10 |
| 101 to 500 | 10 | 5 |
| ≤100 | 5 | 5 |

(b) Standard Monitoring. Required samples shall be collected during six-month monitoring periods, beginning January 1 or July 1 of each calendar year.

(1) All systems shall monitor during each six-month monitoring period until:

(i) the system exceeds the lead or copper action level and is therefore required to implement the corrosion control treatment requirements under section 5-1.41, in which case the system shall continue standard monitoring; or

(ii) the system is deemed to have optimized corrosion control in accordance with section 5-1.41(b) in which case the system may reduce monitoring in accordance with subdivision (c) of this section.

(2) Monitoring after installation of corrosion control and/or source water treatment. Any system which installs corrosion control treatment or source water treatment shall monitor during each six-month monitoring period following the installation of treatment with the first monitoring period to begin either January 1 or July 1, whichever comes first.

(i) Any system which installs source water treatment pursuant to section 5-1.45(a)(2)(i) shall monitor during two consecutive six-month monitoring periods by the date specified in section 5-1.45(a)(2)(ii).

(3) Monitoring after State designates water quality parameter values for optimal corrosion control. After the State designates the values for water quality parameters under section 5-1.41(f), the system shall monitor during each six-month monitoring period following designation of water quality parameter values with the first monitoring period to begin either January 1 or July 1, whichever comes first.

(c) Reduced monitoring.

(1) A system serving 50,000 or fewer persons that meets the lead and copper action levels during each of two consecutive six-month monitoring periods may reduce the number of samples in accordance with subdivision (a)(3) of this section, and reduce the frequency of

sampling to once per year. A system serving 50,000 or fewer persons that meets the lead and copper action levels during three consecutive years under reduced monitoring may reduce the frequency of monitoring for lead and copper from annually to once every three years. Samples collected during the initial two six-month monitoring periods may be accepted as monitoring for the first year of a three-year reduced monitoring frequency. A system serving 50,000 or fewer persons collecting fewer than five samples as specified in subdivision (a)(3) of this section that meets the lead and copper action levels during each of two consecutive six-month monitoring periods may reduce the frequency of sampling to once per year. The system may not reduce the number of samples required to below the minimum of one sample per available tap. This sampling shall begin during the calendar year immediately following the end of the second consecutive six-month monitoring period.

(2) Any water system that has optimal corrosion control treatment installed that meets the lead action level and maintains the range of values for optimal corrosion control treatment during each of two consecutive six-month monitoring periods may reduce the frequency of monitoring to once per year and reduce the number of lead and copper samples in accordance with subdivision (a)(3) of this section if it receives written approval from the State. This sampling shall begin during the calendar year immediately following the end of the second consecutive six-month monitoring period. Samples collected during the initial two six-month monitoring periods can be applied to the first year of a three-year reduced monitoring frequency.

Upon written approval from the State, any water system that has optimal corrosion control treatment installed that meets the lead action level and maintains the range of values for the water quality control parameters reflecting optimal corrosion control treatment during three

consecutive years of monitoring may reduce the frequency of monitoring for lead and copper from annually to once every three years. Samples collected once every three years shall be collected no later than every third calendar year.

(3) A water system on a reduced monitoring schedule shall collect these samples from representative sites included in the pool of targeted sampling sites identified in subdivision (a) of this section. Systems sampling annually or less frequently shall conduct the lead and copper tap sampling during the months of June, July, August, or September unless the State has approved a different sampling period in accordance with subdivision (c)(3)(i) of this section.

(i) The State, upon request by a water system, may approve a different period for conducting the lead and copper tap sampling for systems on a reduced monitoring schedule. Such a period shall be no longer than four consecutive months and shall represent a time of normal operation where the highest levels of lead are most likely to occur. This sampling shall begin during the calendar year immediately following the end of the second consecutive six-month monitoring period for systems initiating annual monitoring and during the three-year period following the end of the third consecutive calendar year of annual monitoring for systems initiating triennial monitoring.

(ii) Systems monitoring annually, that have been collecting samples during the months of June through September and that receive State approval to alter their sample monitoring period under subdivision (c)(3)(i) of this section, shall collect their next round of samples during a time period that ends no later than 21 months after the previous round of sampling. Systems monitoring triennially that have been collecting samples during the months of June through

September, and receive State approval to alter the sampling collection period as per subdivision (c)(3)(i) of this section, shall collect their next round of samples during a time period that ends no later than 45 months after the previous round of sampling. Subsequent rounds of sampling shall be collected annually or triennially, as required by this section. Water systems with waivers that serve 50,000 or fewer persons that have been collecting samples during the months of June through September and choose to alter their sample collection period under subdivision (c)(3)(i) of this section shall collect their next round of samples before the end of the 9 year period.

(4) Any water system that demonstrates for two consecutive 6-month monitoring periods that the tap water lead level is less than or equal to 0.005 mg/L and the tap water copper level is less than or equal to 0.65 mg/L, at the 90th percentile calculated in accordance with section 5-1.41(c), may reduce the number of samples in accordance with subdivision (a)(3) of this section and reduce the frequency of sampling to once every three calendar years.

(5) Conditions requiring a return to standard monitoring.

(i) A system serving 50,000 or fewer persons subject to reduced monitoring that does not have corrosion control treatment installed and that exceeds the lead or copper action level shall resume standard monitoring at the standard number of sampling sites every six months in accordance with subdivision (b) of this section. Such a system shall also conduct water quality parameter monitoring in accordance with section 5-1.43(b). This monitoring shall begin during the six-month monitoring period immediately following the lead or copper action level exceedance with the first monitoring period to begin either January 1 or July 1, whichever comes

first. Any such system may resume reduced monitoring if it meets the reduced monitoring criteria as specified in subdivision (c)(1) of this section.

(ii) Any water system that has optimal corrosion control treatment installed that fails to meet the lead action level during any four-month monitoring period, or that fails to operate at or above the minimum value or within the range of values for the water quality parameters specified by the State under section 5-1.41(f) for more than nine days in any six-month monitoring period specified in section 5-1.43(b)(3) shall resume standard monitoring at the standard number of sampling sites every six months in accordance with subdivision (b) of this section, and resume standard monitoring for water quality parameters in accordance with section 5-1.43(b). This standard monitoring shall begin during the six-month monitoring period immediately following the water quality parameter excursion or lead action level exceedance with the first monitoring period to begin either January 1 or July 1, whichever comes first. Any such system may resume reduced monitoring if it meets the reduced monitoring criteria as specified in subdivision (c)(1) of this section.

(6) Any water system subject to reduced monitoring that either adds a new source of water or changes any water treatment shall notify the State in writing within 60 days of any proposed changes. The State may require any system that makes treatment or source changes to resume standard monitoring in accordance with subdivision (b) of this section or take other appropriate steps such as increased water quality parameter monitoring or re-evaluation of its corrosion control treatment given the potentially different water quality considerations. Any proposed changes to add a new source or long-term change in treatment must be consistent with section 5-1.22(a) and approved by the State prior to implementation.

(d) Additional monitoring by systems. The results of any monitoring conducted in addition to the minimum requirements of this section shall be considered by the system and the State in making any determinations (i.e., calculating the 90th percentile lead or copper level) under sections 5-1.40 through 5-1.48.

(e) Invalidation of lead or copper tap water samples. The State may invalidate a lead or copper tap water sample if one of the following conditions is met. (1) The laboratory establishes that improper sample analysis caused erroneous results.

(2) The State determines that the sample was taken from a site that did not meet the site selection criteria of this section.

(3) The sample container was damaged in transit.

(4) There is substantial reason to believe that the sample was subject to tampering.

If a sample is invalidated, it does not count toward determining lead or copper 90th percentile levels or toward meeting the minimum monitoring requirements for that system. To invalidate a sample, the decision and the rationale for the decision must be documented in writing.

The system shall submit to the State, for invalidation determination, the results it believes should be invalidated along with supporting documentation and the rationale for supporting invalidation of the samples. If after invalidation of sample results, the system has too few samples to meet minimum sampling requirements, replacement samples shall be taken as soon as possible, but no

later than 20 days after invalidation or by the end of the applicable monitoring period, whichever is later. Replacement samples apply only to the monitoring period associated with the original sample, and shall be taken from the same location. If resampling from the same location is not possible or the sample site was invalidated, the resample may be taken from other sites in the sampling pool not already used for sampling during that monitoring period.

(f) Monitoring waivers for systems serving 3,300 or fewer persons. Any water system that serves 3,300 or fewer persons and meets the criteria in this subdivision may be eligible for a waiver to reduce monitoring of lead and copper to once every nine years (“full waiver”), or only for lead, or only for copper (“partial waiver”). The system must demonstrate that its distribution system and service lines and all drinking water supply plumbing, including plumbing conveying drinking water within all residences and buildings connected to the system, are free of lead-containing materials and/or copper-containing materials as those terms are defined as follows:

(1) Lead. To qualify for a full waiver or a waiver of the tap water monitoring requirements of lead (i.e. a “lead waiver”), the water system must provide certification and supporting documentation to the State that the system is free of all lead-containing materials, as follows:

(i) It contains no plastic pipes which contain lead plasticizers, or plastic service lines which contain lead plasticizers; and

(ii) It is free of lead service lines, lead pipes, lead soldered pipe joints, and leaded brass or bronze alloy fittings and fixtures, unless such fittings and fixtures meet the specifications of any standard established pursuant to section 5-1.22(a) (Approval of Plans and Completed Works).

(2) Copper. To qualify for a full waiver or a waiver of the tap water monitoring requirements of copper (i.e. a “copper waiver”), the water system must provide certification and supporting documentation to the State that the system contains no copper pipes or copper service lines.

(3) Approval of waiver application. The system will be notified of the State’s determination in writing, setting forth the basis for its decision and any condition of the waiver. The System may be required to perform specific activities (e.g., limited monitoring, periodic outreach to customers to remind them to avoid installation of materials that might void reduced monitoring) to avoid the risk of lead or copper concentration of concern in tap water. A system serving fewer than 3,300 persons must continue monitoring for lead and copper at the tap as required in subdivision (f)(1)-(4) of this section, as appropriate, until it receives written notification that the reduced monitoring has been approved.

(4) Monitoring frequency for systems with waivers. (i) A system with a full waiver must conduct tap water monitoring for lead and copper in accordance with subdivision (c)(4) of this section at the reduced number of sampling sites identified in subdivision (a)(3) of this section at least once every nine years and provide the materials certification specified in subdivision (f) of this section for both lead and copper to the State along with the monitoring results. Samples collected every nine years must be collected no later than every ninth calendar year.

(ii) A system with a partial waiver monitoring for a single contaminant must conduct tap water monitoring for that contaminant in accordance with subdivision (c)(4) of this section at the reduced number of sampling sites specified in subdivision (a)(3) of this section at least once every nine years and provide the materials certification specified in subdivision (f) of this section

pertaining to the contaminant along with the monitoring results. Such systems must also continue to monitor for the contaminant not on reduced monitoring in accordance with requirements of subdivisions (b)(1) through (b)(3) and (c) of this section, as appropriate.

(iii) Any water system with a full or partial waiver must notify the State in writing in accordance with section 5-1.48(a)(3) of any upcoming long-term change in treatment or addition of a new source. The State must review and approve the addition of a new source or change in water treatment before it is implemented by the water system. The State has the authority to require the system to add or modify waiver conditions (e.g., require recertification that the system is free of lead-containing and/or copper-containing materials require additional round(s) of monitoring), if it deems such modifications are necessary to address treatment or source water changes at the system.

(iv) If a system with a full or partial waiver becomes aware that it is no longer free of lead-containing or copper-containing materials, as appropriate, (e.g., as a result of new construction or repairs), the system must notify the State in writing no later than 60 days after becoming aware of such a change.

(5) Continued eligibility. Systems may continue to be eligible for a waiver, and such waiver will renew automatically, unless any of the conditions listed in subparagraphs (i)-(iii) of this paragraph occurs. If a waiver is not renewed, the system shall meet the requirements for action level exceedances or for the three-year reduced monitoring cycle, as appropriate. A system whose waiver has been revoked may re-apply for a waiver at such time as it again meets the appropriate materials and monitoring criteria of subdivisions (f)(1) and (f)(2) of this section.

(i) A system with a full waiver or a lead waiver no longer satisfies the materials criteria of subdivision (f)(1)(i) of this section or has a 90th percentile lead level greater than 0.005 mg/L.

(ii) A system with a full waiver or a copper waiver no longer satisfies the materials criteria of subdivision (f)(2) of this section or has a 90th percentile copper level greater than 0.65 mg/L.

(iii) The State notifies the system, in writing, that the waiver has been revoked, setting forth the basis of its decision.

(6) Requirements following waiver revocation. A system whose full or partial waiver has been revoked by the State is subject to the corrosion control treatment and lead and copper tap water monitoring requirements, as follows:

(i) If the system exceeds the lead and/or copper action level, the system must implement corrosion control treatment as specified in section 5-1.41(c)(2), and any other applicable requirements.

(ii) If the system meets both the lead and the copper action level, the system must monitor for lead and copper at the tap no less frequently than once every three years using the reduced number of sample sites specified in section 5-1.43(a)(2).

(7) Any water system with a full or partial waiver shall notify the State in writing of any upcoming long-term change in treatment or addition of a new source, consistent with section 5-1.22(a) and approved by the State prior to implementation. The State must review and approve the addition of a new source or long-term change in water treatment before it is implemented by the water system. The State may require the system to add or modify waiver conditions (e.g., require recertification that the system is free of lead-containing and/or copper-containing materials, require additional round(s) of monitoring), if it deems such modifications are necessary to address treatment or source water changes at the system.

5-1.43 Monitoring requirements for water quality parameters.

All systems serving over 50,000 persons and systems that exceed the lead or copper action level shall monitor water quality parameters in addition to lead and copper in tap water in accordance with this section.

(a) Sample requirements.

(1) Sample collection method.

(i) Distribution system (tap) samples shall be representative of water quality throughout the distribution system, taking into account the number of persons served, the different sources of water, the different treatment methods employed by the system, and seasonal variability.

Distribution system sampling under this section is not required to be conducted at taps targeted for lead and copper sampling under section 5-1.42(a).

(ii) Entry point samples to the distribution system shall be from locations representative of each source after treatment. If a system draws water from more than one source and the sources are combined before distribution, the system shall sample at entry point(s) representative of normal operating conditions.

(2) Number of samples.

(i) A water system conducting standard monitoring shall collect two samples for applicable water quality parameters during each monitoring period specified in subdivision (b) of this section from the number of distribution system sampling sites listed in the table below under “Standard Monitoring.” A water system conducting reduced monitoring shall collect two samples for applicable water quality parameters during each monitoring period specified in subdivision (c) of this section from the number of distribution system sampling sites listed in the table below under “Reduced Monitoring.” Such reduced monitoring sites shall be representative of the sites required for standard monitoring.

| Population Served | Standard Monitoring | Reduced Monitoring |
|-------------------|---------------------|--------------------|
| | (Sample Sites) | (Sample Sites) |
| >100,000 | 25 | 10 |
| 10,001 to 100,000 | 10 | 7 |
| 3,301 to 10,000 | 3 | 3 |
| 501 to 3,300 | 2 | 2 |
| 101 to 500 | 1 | 1 |
| <101 | 1 | 1 |

(ii) A water system conducting monitoring in accordance with subdivision (b)(1) of this section shall collect two entry point samples for each applicable water quality parameter at each entry point to the distribution system during each six-month monitoring period. A water system conducting monitoring in accordance with subdivisions (b)(2), (b)(3), and (c) of this section shall collect one entry point sample for each applicable water quality parameter at each entry point to the distribution system, or each applicable entry point in accordance with subdivision (b)(2)(iii), at the frequency specified in subdivision (b)(2)(ii).

(b) Standard Monitoring. Required samples shall be collected during six-month monitoring periods, beginning January 1 or July 1 of each calendar year.

(1) Initial sampling. All systems serving more than 50,000 persons shall measure the applicable water quality parameters during each six-month monitoring period specified in section 5-1.42(b)(1). All systems serving 50,000 or fewer persons shall measure the applicable water quality parameters during each six-month monitoring period during which the system exceeds the lead or copper action level. Applicable water quality parameters at taps and entry points include: pH; alkalinity; conductivity; water temperature; calcium; and orthophosphate or silica, as appropriate to the corrosion control treatment used.

(2) Monitoring after installation of corrosion control. Any system which installs optimal corrosion control treatment shall measure the water quality parameters at the locations and frequencies specified below during each six-month monitoring period specified in section 5-1.42(b)(2).

(i) two samples shall be collected at taps in the distribution system for the following parameters: pH; alkalinity; calcium; and orthophosphate or silica, as appropriate to the corrosion control treatment used.

(ii) one sample shall be collected at each entry point: Except as provided in subdivision (b)(2)(iii) of this section, at least one sample no less frequently than every two weeks (biweekly) for pH; alkalinity (and a reading of the dosage rate of the chemical used to adjust alkalinity, when alkalinity is adjusted); calcium; orthophosphate or silica, as appropriate to the corrosion control treatment used; and a reading of the dosage rate of the corrosion control treatment chemical used.

(iii) A ground water system may limit entry point sampling described in subdivision (b)(2)(ii) of this section to those entry points that are representative of water quality and treatment conditions throughout the system. If water from untreated ground water sources mixes with water from treated ground water sources, the system shall monitor for water quality parameters both at representative entry points receiving treatment and representative entry points receiving no treatment. Prior to the start of any monitoring under this paragraph, the system shall provide to the State written information identifying the selected entry points and documentation, including information on seasonal variability, sufficient to demonstrate that the sites are representative of water quality and treatment conditions throughout the system.

(3) Monitoring after State specifies water quality parameter values for optimal corrosion control. After the State specifies the values for applicable water quality control parameters reflecting optimal corrosion control treatment, all systems serving more than 50,000 persons and any

system serving 50,000 or fewer persons that has optimal corrosion control treatment installed shall measure the applicable water quality parameters during each six-month monitoring period specified in section 5-1.42(b)(3), in accordance with subdivisions (b)(2)(i)-(iii) of this section, and determine compliance with the requirements of section 5-1.41(g) during each six-month monitoring period specified in section 5-1.42(b)(3).

(c) Reduced monitoring.

(1) Reducing the number of sampling sites. Any water system that maintains the range of State specified values for the water quality parameters reflecting optimal corrosion control treatment during each of two consecutive six-month monitoring periods under subdivision (b)(3) of this section shall continue monitoring at the entry point(s) to the distribution system as specified in subdivision (b)(2)(ii)-(iii) of this section. Such system may collect two distribution system samples for applicable water quality parameters from the reduced number of sites in accordance with subdivision (a)(2)(i) of this section during each six-month monitoring period.

(2) Reducing sampling frequency.

(i) Any water system that maintains the range of State-specified values for the water quality parameters reflecting optimal corrosion control treatment during three consecutive years of monitoring in accordance with subdivision (c)(1) of this section may reduce the frequency with which it collects the number of distribution system samples for applicable water quality parameters specified in subdivision (c)(1) of this section from every six months to annually. This

sampling shall begin during the calendar year immediately following the end of the monitoring period in which the third consecutive year of six-month monitoring occurs. Any water system that maintains the range of State-specified values for the water quality parameters reflecting optimal corrosion control treatment during three consecutive years of annual monitoring under this paragraph may reduce the frequency with which it collects the number of distribution system samples for applicable water quality parameters specified in subdivision (c)(1) of this section from annually to every three years.

(ii) A water system may reduce the frequency with which it collects the number of distribution system samples for applicable water quality parameters specified in subdivision (c)(1) of this section to every three years if it demonstrates during two consecutive monitoring periods that its tap water lead level at the 90th percentile is less than or equal to the PQL for lead specified in section 5-1.40(b)(1), that its tap water copper level at the 90th percentile is less than or equal to 0.65 mg/L for copper, and that it also has maintained the range of values for the water quality parameters reflecting optimal corrosion control treatment specified by the State under section 5-1.41(f).

(iii) Monitoring conducted every three years shall be done no later than every third calendar year.

(3) A water system that conducts reduced sampling frequency shall collect these samples evenly throughout monitoring period in which samples are taken so as to reflect seasonal variability.

(4) Any water system subject to the reduced monitoring frequency that fails to operate at or above the minimum value or within the range of values for the water quality parameters specified by the State under section 5-1.41(f) for more than nine days in any six-month period shall resume distribution system tap water sampling in accordance with the number and frequency requirements in subdivision (b)(3) of this section. The water system may resume annual monitoring for water quality parameters at the tap at the reduced number of sites specified in subdivision (a)(2)(i) of this section after it has completed two subsequent consecutive six-month rounds of monitoring that meet the criteria of that subdivision and/or may resume triennial monitoring for water quality parameters at taps in the distribution system at the reduced number of sites after it demonstrates through subsequent rounds of monitoring that it meets the criteria of either subdivision (c)(2)(i) or (c)(2)(ii) of this section.

(d) Additional monitoring by systems. The results of any monitoring conducted in addition to the minimum requirements of this section shall be considered by the system and the State in making any compliance determinations (i.e., determining concentrations of water quality parameters).

5-1.44 Monitoring Requirements for Lead and Copper in Source Water.

A water system that exceeds the lead or copper action level based on first draw tap water samples collected in accordance with section 5-1.42 shall collect lead and copper source water samples in accordance with the following requirements:

(a) Sample Requirements.

(1) Water systems shall take a minimum of one sample at every entry point to the distribution system which is representative of each source after treatment. The system shall collect each sample at the same sampling point unless conditions make another sampling point more representative of each source or treatment plant. If a system draws water from more than one source and the sources are combined before distribution, the system shall sample at entry point(s) to be representative of normal operating conditions, when water is representative of all sources being used.

(2) The State may reduce the total number of samples which shall be analyzed by allowing the use of compositing. Compositing of samples shall be done by certified laboratory personnel. Composite samples from a maximum of five samples are allowed, provided that the method detection limit (MDL) for lead of 0.001 mg/L is achieved. If the lead concentration in the composite sample is greater than or equal to 0.001 mg/L, or the copper concentration is greater than or equal to 0.160 mg/L, then either:

(i) A follow-up sample shall be taken and analyzed within 14 days at each sampling point included in the composite; or

(ii) If duplicates of or sufficient quantities from the original samples from each sampling point used in the composite are available, the system may use these instead of resampling.

(3) Where the results of sampling indicate an exceedance of State-specified maximum permissible source water levels established under section 5-1.45(a)(4), the State may require that one follow-up sample be collected as soon as possible after the initial sample was taken (but not

to exceed two weeks) at the same sampling point. If a State-required follow-up sample is taken for lead or copper, then the results of the initial and follow-up samples shall be averaged to determine compliance with the State-specified maximum permissible levels. Any sample value below the detection limit shall be considered to be zero. Any value above the detection limit but below the practical quantitation limit (PQL) shall either be considered as the measured value or be considered one-half the PQL.

(b) Standard Monitoring.

(1) Monitoring frequency after system exceeds tap water action level. Any system which exceeds the lead or copper action level shall collect one source water sample from each entry point to the distribution system no later than six months after the end of the monitoring period during which the lead or copper action level was exceeded. For monitoring periods that are annual or less frequent, the end of the monitoring period is September 30 of the calendar year in which the sampling occurs, or if the State has established an alternate monitoring period, the last day of that period.

(2) Monitoring frequency after installation of source water treatment. Any system which installs source water treatment pursuant to section 5-1.45 shall collect an additional source water sample from each entry point to the distribution system during the two consecutive six-month monitoring periods immediately following the installation of treatment with the first monitoring period to begin either January 1 or July 1, whichever comes first.

(3) Monitoring frequency after State specifies maximum permissible source water levels or determines that source water treatment is not needed.

(i) A system shall monitor at the frequency specified below in cases where the State specifies maximum permissible source water levels or determines that the system is not required to install source water treatment under section 5-1.45.

(a) A water system using only ground water shall collect samples once every three years with the first three year monitoring period to begin January 1 of the year in which the State determination is made under subdivision (b)(3)(i) of this section. Such systems shall collect samples once during each subsequent compliance period. Triennial samples shall be collected in the third calendar year.

(b) A water system using surface water (or a combination of surface and ground water) shall collect samples once during each calendar year with the first annual monitoring period to begin January 1 of the year in which the applicable State determination is made under subdivision (b)(3)(i) of this section.

(ii) A system is not required to conduct source water sampling for lead and/or copper if the system meets the action level for the specific contaminant in tap water samples during the entire source water sampling period applicable to the system under subdivision (b)(3)(i)(a) or (b) of this section.

(c) Reduced monitoring.

(1) A water system using only ground water may reduce the monitoring frequency for lead and copper in source water to once every nine-years provided that the samples are collected no later than every ninth calendar year and the system meets one of the following criteria:

(i) The system demonstrates that finished drinking water entering the distribution system has been maintained below the maximum permissible lead and copper concentrations specified by the State under section 5-1.45(a) during at least three consecutive years in which sampling was conducted under subdivision (b)(3)(i) of this section; or

(ii) The State has determined that source water treatment is not needed and the system demonstrates that the concentration of lead in source water was less than or equal to 0.005 mg/L and the concentration of copper in source water was less than or equal to 0.65 mg/L during at least three consecutive applicable monitoring periods in which sampling was conducted under subdivision (b)(3)(i) of this section.

(2) A water system using surface water (or a combination of surface water and ground water) may reduce the monitoring frequency for lead and copper in source water to once during each nine-year compliance cycle provided that the samples are collected no later than every ninth calendar year and if the system meets one of the following criteria:

(i) The system demonstrates that finished drinking water entering the distribution system has been maintained below the maximum permissible lead and copper concentrations specified by the State for at least three consecutive years; or

(ii) The State has determined that source water treatment is not needed and the system demonstrates that, during at least three consecutive years, the concentration of lead in source water was less than or equal to 0.005 mg/L and the concentration of copper in source water was less than or equal to 0.65 mg/L.

(3) A water system that uses a new source of water is not eligible for reduced monitoring for lead and/or copper until concentrations in samples collected from the new source during three consecutive monitoring periods in accordance with subdivision (b)(2) or (3) of this section are below the maximum permissible lead and copper concentrations specified by the State.

5-1.45 Source Water Treatment Requirements

A water system that exceeds the lead or copper action level based on first draw tap water samples collected in accordance with section 5-1.42 shall complete the applicable source water monitoring and treatment requirements and operate appropriate treatment to maintain lead and copper below levels specified by the State in accordance with the following requirements.

(a) Source water treatment requirements.

(1) A water system exceeding the lead or copper action level shall complete required lead and copper source water monitoring in accordance with section 5-1.44(b)(1) and make an appropriate treatment recommendation to the State no later than 180 days after the end of the monitoring period during which the system exceeds the lead or copper action level. A system

may recommend that no treatment be installed based upon a demonstration that source water treatment is not necessary to minimize lead and copper levels at users' taps.

(2) Based on an evaluation of the results of all required source water sampling, the State shall make a determination if source water treatment is necessary and may require:

(i) source water treatment as recommended by the system; or

(ii) alternative source water treatment that would minimize lead and copper levels at user's taps. Completion of proper installation and operation of the State specified source water treatment shall occur within 24 months of State determination and notification of the specified treatment to the water system.

(3) The water system shall complete standard monitoring for tap water in accordance with section 5-1.42(b) and source water in accordance with subdivision (b)(2) of this section following installation of source water treatment.

(4) Based on a review of the source water samples taken by the water system both before and after the system installs source water treatment, the State shall:

(i) determine whether the system has properly installed and operated the source water treatment designated by the State; and

(ii) specify maximum permissible source water concentrations for water entering the distribution system. Such levels shall reflect the contaminant removal capability of the treatment when properly operated and maintained.

(b) Operation and maintenance requirements.

(1) Each water system shall operate in a manner that minimizes lead and copper levels at user's taps by maintaining lead and copper levels below State-specified maximum permissible concentrations at each of the required source water sampling locations in accordance with section 5-1.44. The system is out of compliance with this paragraph if the level of lead or copper at any sampling point is greater than the State-specified maximum permissible concentration.

(2) The State may modify its determination of the source water treatment under subdivision (a)(2) of this section, or maximum permissible lead and copper concentrations for finished water entering the distribution system under subdivision (a)(4) of this section where it concludes that such change is necessary to ensure that the system continues to minimize lead and copper concentrations in source water.

5-1.46 Lead Service Line Replacement.

(a) Water systems that fail to meet the lead action level in tap samples collected after installing corrosion control treatment and/or source water treatment (whichever occurs later) shall replace lead service lines in accordance with the requirements of this section. Water systems that fail to install optimal corrosion control treatment in accordance with section 5-1.41(c) or

source water treatment in accordance with section 5-1.45(a)(2) by the date(s) specified by the State may be required to begin replacement of lead service lines.

(b) Determining number of lead service lines for replacement.

(1) A water system shall replace annually at least 7 percent of the initial number of lead service lines in its distribution system. The initial number of lead service lines is the number of lead lines in place at the time the replacement program begins. The system shall identify the initial number of lead service lines in its distribution system, including an identification of the portion(s) owned by the system, based on materials evaluation, including the evaluation required under section 5-1.42(a) and relevant legal authorities (e.g. contracts, local ordinances) regarding the portion owned by the system. The first year of lead service line replacement shall begin on the first day following the end of the monitoring period in which the action level was exceeded in tap sampling referenced in subdivision (a) of this section. If monitoring is required annually or less frequently, the end of the monitoring period is September 30 of the calendar year in which the sampling occurs. If an alternate monitoring period applies, then the end of the monitoring period will be the last day of that period.

(2) A water system is not required to replace an individual lead service line if the results of all samples representative of water in the lead service line, collected in accordance with section 5-1.42(a)(2)(iii) of this Subpart, are less than or equal to 0.015 mg/L.

(3) The total number of lines replaced, either entirely or partially per subdivision (c) of this section, shall equal at least 7 percent of the initial number of lead lines identified under

subdivision (b)(1) of this section or the percentage specified by the State as per subdivision (d) of this section.

(4) Any water system resuming a lead service line replacement program after the cessation of its lead service line replacement program as allowed by subdivision (f) of this section shall update its inventory of lead service lines to include those sites that were previously determined not to require replacement through the sampling provision under subdivision (c) of this section. The system will then divide the updated number of remaining lead service lines by the number of remaining years in the program to determine the number of lines that shall be replaced per year (7-percent lead service line replacement is based on a 15-year replacement program). For those systems that have completed a 15-year lead service line replacement program, the State will determine a schedule for replacing or re-testing lines that were previously tested under the replacement program if the system re-exceeds the action level.

(c) A water system shall replace the portion of the lead service line that it owns. In cases where the system does not own the entire lead service line, the system shall notify the owner of the line, or the owner's authorized agent, that the system will replace the portion of the service line that it owns and shall offer to replace the owner's portion of the line. A system is not required to bear the cost of replacing the privately-owned portion of the line, where the owner chooses not to pay the cost of replacing the privately-owned portion of the line, or where replacing the privately-owned portion would be precluded by State, local or common law. A water system that does not replace the entire length of the service line also shall complete the following tasks:

(1) At least 45 days prior to commencing with partial replacement of a lead service line, the water system shall provide notice to the resident(s) of all buildings served by the line explaining that they may experience a temporary increase of lead levels in their drinking water, along with guidance on measures consumers can take to minimize their exposure to lead. The State may allow the water system to provide notice of less than 45 days prior to commencing partial lead service line replacement, if such replacement is done in conjunction with emergency repairs. In addition, the water system shall inform the resident(s) served by the line that the system will, at the system's expense, collect a sample from each partially-replaced lead service line that is representative of the water in the service line for analysis of lead content, as prescribed in section 5-1.42(a)(2)(iii) of this Subpart, within 72 hours after the completion of the partial replacement of the service line. The system shall collect the sample and report the results of the analysis to the owner and the resident(s) served by the line within three business days of receiving the results. Mailed notices post-marked within three business days of receiving the results shall be considered "on time."

(2) The water system shall provide the information required by subdivision (c)(1) of this section to the residents of individual dwellings by mail or by other methods approved by the State. In instances where multi-family dwellings are served by the service line, the water system shall have the option to post the information at a conspicuous location.

(d) The State shall require a system to replace lead service lines on a shorter schedule than that required by this section, taking into account the number of lead service lines in the system, where a shorter replacement schedule is feasible. The State shall make this determination in writing and notify the system of its finding within 6 months after the system is triggered into

lead service line replacement based on monitoring results referenced in subdivision (a) of this section.

(e) Any water system may cease replacing lead service lines whenever first draw tap water samples meet the lead action level during each of two consecutive six-month monitoring periods. If subsequent rounds of first draw tap water sampling exceed the lead action level the water system shall recommence replacing lead service lines in accordance with subdivision (b) of this section.

(f) To demonstrate compliance with subdivisions (a) through (d) of this section, a system shall report to the State the information specified and no later than the schedule described in 40 CFR 141.90(e).

5-1.47 Notification and Public Education Requirements.

(a) Notification of results to consumers. All water systems shall provide notice of the individual tap results from lead tap water monitoring carried out under the requirements of section 5-1.42 to the persons served by the water system at the specific sampling site from which the sample was taken (i.e., the occupants of the residence where the tap was tested). Water systems that exceed the lead action level shall sample the tap water of any customer who requests it in accordance with subdivision (i) of this section.

(1) Notice shall be provided as soon as practical, but no later than 30 days after the system learns of the tap monitoring results.

(2) Notice shall be provided either by mail or by another method approved by the State.

(3) Notice shall include the lead levels for the tap that was tested, an explanation of the health effects of lead, a list of steps consumers can take to reduce exposure to lead in drinking water, and contact information for the water utility. The notice shall also provide the maximum contaminant level goal and the action level for lead and the definitions for these two terms from section 5-

1.72(f).

(b) Public education material content and delivery. A water system that exceeds the lead action level based on tap water samples collected in accordance with section 5-1.42 shall deliver public education materials in accordance with paragraphs (1) and (2) of this subdivision.

(1) Content of public education materials.

(i) Community water systems and nontransient noncommunity water systems. Water systems shall include the following elements in printed materials (e.g., brochures and pamphlets) in the same order as listed below. In addition, language in subdivision (b)(1)(i)(a) through (b) and (b)(1)(i)(f) of this section shall be included in the materials, exactly as written, except for the text in brackets in these clauses for which the water system shall include system-specific information.

Any additional information presented by a water system shall be consistent with the information below and be in plain language that can be understood by the general public. Water systems shall submit all written public education materials to the State for approval prior to delivery.

(a) IMPORTANT INFORMATION ABOUT LEAD IN YOUR DRINKING WATER. [Insert Name of Water System] found elevated levels of lead in drinking water in some homes/buildings. Lead can cause serious health problems, especially for pregnant women and young children. Please read this information closely to see what you can do to reduce lead in your drinking water.

(b) Health effects of lead. Lead can cause serious health problems if too much enters your body from drinking water or other sources. It can cause damage to the brain and kidneys, and can interfere with the production of red blood cells that carry oxygen to all parts of your body. The greatest risk of lead exposure is to infants, young children, and pregnant women. Scientists have linked the effects of lead on the brain with lowered IQ in children. Adults with kidney problems and high blood pressure can be affected by low levels of lead more than healthy adults. Lead is stored in the bones, and it can be released later in life. During pregnancy, the child receives lead from the mother's bones, which may affect brain development.

(c) Provide information on sources of lead.

(1) Explain what lead is.

(2) Explain possible sources of lead in drinking water and how lead enters drinking water.

Include information on home/building plumbing materials and service lines that may contain lead.

(3) Discuss other important sources of lead exposure in addition to drinking water (e.g., lead-based paint).

(d) Discuss the steps consumers can take to reduce their exposure to lead in drinking water.

(1) Encourage running the water to flush out lead.

(2) Explain concerns with using hot water from the tap and specifically caution against the use of hot water for preparing baby formula.

(3) Explain that boiling water does not reduce lead levels.

(4) Discuss other options consumers can take to reduce exposure to lead in drinking water, such as alternative sources or treatment of water.

(5) Suggest that parents have their child's blood tested for lead.

(e) Explain why there are elevated levels of lead in the system's drinking water (if known) and what the water system is doing to reduce the lead levels in homes/buildings in this area.

(f) For more information call us at [Insert Your Number] [(If Applicable), or visit our website at [Insert Your website Here]]. For more information on reducing lead exposure around your home/building and the health effects of lead, visit EPA's website at <http://www.epa.gov/lead> or contact your health care provider.

(ii) Community water systems. In addition to including the elements specified in subdivision (b)(1) of this section, community water systems shall:

(a) Tell consumers how to get their water tested.

(b) Discuss lead in plumbing components, the difference between low lead and lead free, the requirement to use lead-free materials, and the standards that materials shall meet in order to be considered lead free.

(iii) Each water system required to deliver public education materials through additional means specified in subdivision (b)(2)(i) through (ii) of this section shall include additional content as determined in consultation with the State.

(2) Delivery of public education materials.

(i) For public water systems serving a large proportion of non-English speaking consumers, as determined by the State, the public education materials shall contain information in the appropriate language(s) regarding the importance of the notice or contain a telephone number or

address where persons served may contact the water system to obtain a translated copy of the public education materials or to request assistance in the appropriate language.

(ii) A community water system that exceeds the lead action level and that is not already conducting public education tasks under this section, shall conduct the following public education tasks within 60 days after the end of the monitoring period in which the exceedance occurred. For systems that are required to conduct monitoring annually or less frequently, the end of the monitoring period is September 30 of the calendar year in which the sampling occurs or, if the State has established an alternate monitoring period, the last day of that period:

(a) Deliver printed materials meeting the content requirements of subdivision (a) of this section to all bill paying customers.

(b) Contact consumers who are most at risk by delivering education materials that meet the content requirements of subdivision (a) of this section as follows:

(1) Contact the State for information regarding community based organizations serving target populations and deliver education materials to all appropriate organizations along with an informational notice that encourages distribution to all the organization's potentially affected customers or community water system's users as determined in consultation with the State.

(2) Contact customers who are most at risk by delivering materials to the following organizations that are located within the water system's service area, along with an informational

notice that encourages distribution to all the organization's potentially affected customers or community water system's users:

- (i) Public and private schools or school boards.
- (ii) Women, Infants and Children (WIC) and Head Start programs.
- (iii) Public and private hospitals and medical clinics.
- (iv) Pediatricians.
- (v) Family planning clinics.
- (vi) Local welfare agencies.

(3) Make a good faith effort to locate the following organizations within the service area and deliver materials, along with an informational notice that encourages distribution to all potentially affected customers or users. The good faith effort to contact at-risk customers may include requesting a specific contact list of these organizations from the State:

- (i) Licensed childcare centers.
- (ii) Public and private preschools.

(iii) Obstetricians-Gynecologists and Midwives.

(c) No less often than quarterly, provide information on or in each water bill as long as the system exceeds the action level for lead. The message on the water bill shall include the following statement exactly as written except for the text in brackets for which the water system shall include system-specific information: [Insert Name of Water System] found high levels of lead in drinking water in some homes. Lead can cause serious health problems. For more information please call [Insert Name of Water System] [or visit (Insert Your website Here)]. The message or delivery mechanism can be modified in consultation with the State; specifically, the State may allow a separate mailing of public education materials to customers if the water system cannot place the information on water bills.

(d) Post material meeting the content requirements of subdivision (a) of this section on the water system's website if the system serves a population greater than 100,000 or if the water system maintains a publicly accessible website.

(e) Submit a press release to newspaper, television and radio stations.

(f) In addition to the other requirements of this section, systems shall implement at least three activities from one or more categories listed below. The educational content and selection of these activities must be determined in consultation with the State.

(1) Public service announcements.

(2) Paid advertisements.

(3) Public area informational displays.

(4) E-mails to customers.

(5) Public meetings.

(6) Household deliveries.

(7) Targeted individual customer contact.

(8) Direct material distribution to all multi-family homes and institutions.

(9) Other methods approved by the State.

(c) As long as a community water system exceeds the action level, it shall repeat the activities pursuant to subdivision (c)(1) through (4) of this section.

(1) A community water system shall repeat the tasks contained in subdivisions (a), (b) and (f) of this section every 12 months.

(2) A community water system shall repeat tasks contained in subdivision (c) of this section with each billing cycle.

(3) A community water system serving a population greater than 100,000 shall post and retain material on a publicly accessible website pursuant to subdivision (d) of this section.

(4) The community water system shall repeat the tasks in subdivision (b)(2)(ii)(a),(b) and (d) of this section twice every 12 months on a schedule agreed upon with the State. The State may allow activities in subdivision (b)(2)(ii)(b) of this section to extend beyond the 60-day requirement if needed for implementation purposes on a case-by-case basis; however, this extension must be approved in writing by the State in advance of the 60-day deadline.

(d) A nontransient noncommunity water system that exceeds the lead action level and that is not already conducting public education tasks under this section shall conduct the following public education tasks within 60 days after the end of the monitoring period in which the exceedance occurred. For systems that are required to conduct monitoring annually or less frequently, the end of the monitoring period is September 30 of the calendar year in which the sampling occurs or, if the State has established an alternate monitoring period, the last day of that period:

(1) post informational posters on lead in drinking water in a public place or common area in each of the buildings served by the system; and

(2) distribute informational pamphlets and/or brochures on lead in drinking water to each person served by the nontransient noncommunity water system. The State may allow the system to utilize electronic transmission in lieu of or combined with printed materials as long as it achieves at least the same coverage.

(e) A nontransient noncommunity water system shall repeat the tasks contained in subdivision (d) of this section at least once during each calendar year in which the system exceeds the lead action level. The State may allow activities in this section to extend beyond the 60-day requirement if needed for implementation purposes on a case-by-case basis; however, this extension must be approved in writing by the State in advance of the 60-day deadline.

(f) A water system may discontinue delivery of public education materials if the system has met the lead action level during the most recent six-month monitoring period. Such a system shall recommence public education in accordance with this section if it exceeds the lead action level during any subsequent monitoring period.

(g) A community water system may use only the text specified in subdivisions (b)(1)(i) and (b)(1)(ii) of this section in lieu of the text in subdivisions (b)(1)(i) through (b)(1)(iii) of this section, and to perform the tasks listed in subdivisions (d) and (e) of this section in lieu of the tasks in subdivisions (b)(2)(ii) and (b)(3) of this section if:

(1) the system is a facility, such as a prison or a hospital, where the population served is not capable of or is prevented from making improvements to plumbing or installing point of use treatment devices;

(2) the system provides water as part of the cost of services provided and does not separately charge for water consumption; and

(3) the State has not directed the water system to conduct broader distribution of education material as needed if in its judgment education materials are not reaching the system's consumers.

(h) A community water system serving 3,300 or fewer people may limit certain aspects of their public education programs as follows:

(1) With respect to the requirements of subdivision (b)(2)(ii)(f) of this section, a system serving 3,300 or fewer shall implement at least one of the activities listed in that clause.

(2) With respect to the requirements of subdivision (b)(2)(ii)(b) of this section, a system serving 3,300 or fewer people may limit the distribution of the public education materials required under that clause to facilities and organizations served by the system that are most likely to be visited regularly by pregnant women and children.

(3) With respect to the requirements of subdivision (b)(2)(ii)(e) of this section, the State may waive this requirement for systems serving 3,300 or fewer persons as long as system distributes notices to every household served by the system.

(i) Consumer requests for lead sampling. A water system that fails to meet the lead action level on the basis of tap samples collected in accordance with section 5-1.42 shall provide assistance in determining lead levels at the tap of any customer who requests it. Systems may collect and analyze the samples, but are not obligated to incur expenses. Systems are also not obligated to

collect and analyze samples itself, but shall provide information about laboratories providing this service.

5-1.48 Reporting and Record Keeping Requirements.

(a) Reporting requirements for tap water monitoring for lead and copper and for water quality parameter monitoring.

(1) Unless the State has specified a more frequent reporting requirement, a water system shall report the following information for all tap water samples specified in section 5-1.42 and for all water quality parameter samples specified in section 5-1.43 to the State within the first ten days following the end of each applicable monitoring period; for monitoring periods with a duration of less than six months, the end of the monitoring period is the last date samples can be collected during that period as specified in sections 5-1.42 and 5-1.43:

(i) results of all first draw lead and copper tap samples collected in accordance with section 5-1.42, including site locations and the criteria used in selecting the site in accordance with section 5-1.42(a)(1);

(ii) documentation for each tap water lead or copper sample for which the water system requests invalidation in accordance with section 5-1.42(e);

(iii) the 90th percentile lead and copper concentrations measured from among all lead and copper tap water samples collected during each monitoring period and calculated in accordance

with section 5-1.41(c), unless the State calculates the system's 90th percentile under subdivision (h) of this section;

(iv) with the exception of initial tap sampling conducted pursuant to section 5-1.42(b)(1)-(3), the system shall identify any site which was not sampled during previous monitoring periods, and include an explanation of changes in sampling sites if any; and

(v) the results of all tap samples for applicable water quality parameters collected in accordance with section 5-1.43(b)-(d).

(vi) The results of all samples collected at the entry point(s) to the distribution system for applicable water quality parameters under section 5-1.43(b)-(d).

(2) For a nontransient noncommunity water system, or a community water system meeting the criteria of section 5-1.47(b)(2)(g) that does not have enough taps that can provide first-draw samples, the system shall provide written documentation to the State identifying standing times and locations for enough first-draw samples to make up its sampling pool by the start of the first applicable monitoring period in accordance with section 5-1.42(a)(3) or, identify in writing, each site that did not meet the six-hour minimum standing time and the length of time for that particular substitute sample collected, and include this information with the lead and copper tap sample results that are required to be submitted pursuant to subdivision (a)(1)(i) of this section.

(3) At a time specified by the State, or if no specific time is designated by the State, then as early as possible prior to the addition of a new source or any long-term change in water

treatment, a water system deemed to have optimized corrosion control, a water system subject to reduced monitoring pursuant, or a water system subject to a monitoring waiver pursuant, shall submit written documentation to the State describing the change or addition as required under section 5-1.22(a). A water system shall obtain approval from the State before implementing the addition of a new source or long-term change in water treatment. Examples of long-term treatment changes include the addition of a new treatment process or modification of an existing treatment process. Examples of modifications include switching secondary disinfectants, switching coagulants (e.g., alum to ferric chloride), and switching corrosion inhibitor products (e.g., orthophosphate to blended phosphate). Long-term changes can include dose changes to existing chemicals if the system is planning long-term changes to its finished water pH or residual inhibitor concentration. Long-term treatment changes would not include chemical dose fluctuations associated with daily raw water quality changes.

(4) Any system serving 3,300 or fewer persons applying for a monitoring waiver pursuant to section 5-1.42(f), shall provide the following information to the State in writing by the specified deadline:

(i) By the start of the first applicable monitoring period, any system serving 3,300 or fewer persons applying for a monitoring waiver shall provide the documentation required to demonstrate that it meets the requirements of section 5-1.42(f).

(ii) No later than nine years after the monitoring previously conducted pursuant to section 5-1.42(b) or (c), each system serving 3,300 or fewer persons desiring to maintain its monitoring waiver shall provide the information required by section 5-1.42(f)(1)-(3).

(iii) No later than 60 days after it becomes aware that it is no longer free of lead-containing and/or copper containing material, as appropriate, each system serving 3,300 or fewer persons with a monitoring waiver shall provide written notification to the State, stating the circumstances resulting in the lead-containing and/or copper-containing materials being introduced into the system and what corrective action, if any, the system plans to remove these materials.

(4) Each ground water system that limits water quality parameter monitoring to a subset of entry points under section 5-1.43(b)(2)(iii) shall provide by the commencement of such monitoring, written correspondence to the State that identifies the selected entry points and includes information sufficient to demonstrate that the sites are representative of water quality and treatment conditions throughout the system.

(b) Source water monitoring reporting requirements.

(1) A water system shall report the sampling results for all source water samples collected in accordance with section 5-1.44 within the first 10 days following the end of each source water monitoring period.

(2) With the exception of the first round of source water sampling conducted, the system shall specify any site which was not sampled during previous monitoring periods, and include an explanation of why the sampling point has changed.

(c) Corrosion control treatment reporting requirements. By the applicable dates under section 5-

1.41(c) or a date specified by the State, systems shall report the following:

(1) For systems demonstrating that they have already optimized corrosion control, information required in section 5-1.41(b).

(2) For systems required to optimize corrosion control, their recommendation regarding optimal corrosion control treatment in accordance with section 5-1.41(c)(3).

(3) For systems required to evaluate the effectiveness of corrosion control treatments, the information required for corrosion control studies in accordance with section 5-1.41(c)(3).

(4) For systems required to install optimal corrosion control designated by the State, a letter certifying that the system has completed installing that treatment in accordance with section 5-1.41(e).

(d) Source water treatment reporting requirements. In accordance with section 5-1.45, systems shall report the following:

(1) For systems required to make a source water treatment recommendation in accordance with section 5-1.45(a)(1), the information required by that section.

(2) For systems required to install source water treatment in accordance with section 5-1.45(a)(2), a letter certifying that the system has completed installing the treatment designated by the State within 24 months after the State designated the treatment.

(e) Lead service line replacement reporting requirements. Water systems subject to the requirements of section 5-1.46 shall report the following to demonstrate compliance with that section:

(1) No later than 12 months after the end of a monitoring period in which a system exceeds the lead action level in sampling referred to in section 5-1.46(a), the system shall submit written documentation to the State of the material evaluation conducted as required in section 5-1.42(a), identify the initial number of lead service lines in its distribution system at the time the system exceeds the lead action level, and provide the system's schedule for annually replacing at least 7 percent of the initial number of lead service lines in its distribution system.

(2) No later than 12 months after the end of a monitoring period in which a system exceeds the lead action level in sampling referred to in section 5-1.46(a), and every 12 months thereafter, the system shall demonstrate to the State in writing that the system has either:

(i) replaced in the previous 12 months at least 7 percent of the initial lead service lines in its distribution system; or

(ii) conducted sampling which demonstrates that the lead concentration in all service line samples from an individual line(s), meeting the requirements of section 5-1.46(b)(2), is less than or equal to 0.015 mg/L. In such cases, the total number of lines replaced and/or which meet the criteria in section 5-1.46(b)(2) shall equal at least 7 percent of the initial number of lead lines identified under subdivision (e)(1) of this section or the percentage specified by the State under section 5-1.46(d).

(3) The annual letter submitted to the State under subdivision (e)(2) of this section shall contain the following information:

(i) the number of lead service lines replaced during the previous year of the system's replacement schedule;

(ii) the number and location of each lead service line replaced during the previous year of the system's replacement schedule; and

(iii) if measured, the lead concentration in the water and the location of each lead service line sampled, the sampling method, and the date of sampling.

(4) Any system which collects lead service line samples following partial lead service line replacement in accordance with section 5-1.46(c)(1) shall report the results to the State within the first ten days of the month following the month in which the system receives the laboratory results, or as specified by the State. Systems shall also report any additional information as specified by the State, and in a time and manner prescribed by the State, to verify that all partial lead service line replacement activities have taken place.

(f) Public education reporting requirements. Water systems shall report the following to demonstrate compliance with requirements of section 5-1.47:

(1) Each system shall mail a sample copy of the consumer notification of tap results to the State along with a certification that the notification has been provided no later than 3 months following the end of the monitoring period.

(2) Any water system that is subject to the public education requirements under section 5-1.47 shall, within ten days after the end of each period in which the system is required to perform public education, send written documentation to the State that contains:

(i) a demonstration that the system has delivered the public education materials that meet the content requirements in section 5-1.47(b)(1) and the delivery requirements in section 5-1.47(b)(2); and

(ii) a list of all newspapers, radio stations, television stations, and facilities and organizations to which the system delivered public education materials during the period in which the system was required to perform public education tasks.

(3) Unless required by the State, a system that previously has submitted the information required by subdivision (f)(2)(ii) of this section need not resubmit the information required, as long as there have been no changes in the distribution list and the system certifies that the public education materials were distributed to the same list submitted previously.

(g) Reporting of additional monitoring data. Any system which collects sampling data in addition to that required by this sections 5-1.40 through 5-1.48, including data collected in accordance with section 5-1.41(b)(6), and sections 5-1.42(d), and 5-1.43(d), shall report the results to the State within the first ten days following the end of the applicable monitoring period during which the samples were collected.

(h) Reporting the 90th percentile lead and copper concentration where the State calculates a system's 90th percentile concentrations. A water system is not required to report the 90th

percentile lead and copper concentration measured from among all lead and copper tap water samples collected during each monitoring period, as required by subdivision (a)(1)(iii) of this section if:

(1) The State has previously notified the water system that it will calculate the water system's 90th percentile lead and copper concentrations, based on the lead and copper tap results submitted pursuant to subdivision (h)(2)(i) of this section, and has specified a date before the end of the applicable monitoring period by which the system shall provide the results of lead and copper tap water samples; and

(2) The system has provided the following information to the State by the date specified in subdivision (h)(1) of this section:

(i) the results of all tap samples for lead and copper including the location of each site and the criteria under section 5-1.42(a)(1)(iii)-(iv) under which the site was selected for the system's sampling pool, pursuant to subdivision (a)(1)(i) of this section; and

(ii) an identification of sampling sites utilized during the current monitoring period that were not sampled during previous monitoring periods, and an explanation why sampling sites have changed; and

(3) The State has provided the results of the 90th percentile lead and copper calculations, in writing, to the water system before the end of the monitoring period.

(i) Prior to the addition of a new source or any long-term change in water treatment, a water system deemed to have optimized corrosion control under section 5-1.41(b), a water system subject to reduced monitoring under section 5-1.42(c), or a water system subject to a monitoring waiver under section 5-1.42(f) shall submit written documentation to the State describing the proposed change or addition within a timeframe specified by the State, or if no specific time is designated by the State, then as early as possible.

(j) Recordkeeping requirements. Any system subject to the requirements of sections 5-1.40 through 5-1.48 shall retain on its premises original records of all sampling data and analyses, reports, surveys, letters, evaluations, schedules, State approvals and determinations, and any other information required by section 5-1.41 through 5-1.48. Each water system shall retain the records required by this section for no fewer than 12 years.

Subdivision (c) of section 5-1.51 of this section is amended to read as follows:

(c) Each system [must] shall develop and implement a monitoring plan that includes all monitoring requirements specified in this Subpart. [This plan must be completed by January 31, 2012.] The system [must] shall maintain the plan and make it available for inspection by the State and the general public. After review, the State may require changes in any plan elements. Failure to monitor in accordance with the monitoring plan is a monitoring violation. Systems may only use data collected in accordance with the monitoring plan to qualify for reduced monitoring. The monitoring plan [must] shall include at least the following elements, as applicable:

Paragraph (1) of subdivision (c) of section 5-1.51 is amended to read as follows:

(1) specific locations and schedules for collecting samples for all applicable parameters listed in [sections] section 5-1.42, section 5-1.43, [5-1.52 tables] Tables 8A-12, 15 and 15A of section 5-1.52, section 5-1.61, and section 5-1.81 of this Subpart;

A new paragraph (5) of subdivision (c) of section 5-1.51 is added to read as follows:

(5) Disinfection Byproduct Monitoring.

(i) The following requirements of this subdivision apply to community and nontransient noncommunity water systems that use or deliver water that has been treated with a primary or residual disinfectant other than ultraviolet light, provided they serve 15 or more service connections or serve 25 or more persons:

(a) if a new community or nontransient noncommunity water system begins operation, or an existing community or nontransient noncommunity water system begins using a disinfectant other than ultraviolet light, the system shall consult with the State to identify compliance monitoring locations for disinfection byproducts to include in the system's monitoring plan, consistent with the requirements in 40 CFR 141.601 and 141.602, and for new systems that need an Initial Distribution System Evaluation (IDSE), consistent with 40 CFR 141.605; and

(b) if a community or nontransient noncommunity water system adds or removes compliance monitoring locations, the system shall identify additional locations by alternating selection of

locations representing high TTHM levels and high HAA5 levels until the required number of compliance monitoring locations have been identified, as specified in section 5-1.52 Table 9A. Systems shall also provide the rationale for identifying the locations as having high levels of TTHM or HAA5.

(ii) Systems shall revise monitoring plans to reflect changes in treatment, distribution system operations and layout (including new service areas), other factors that may affect TTHM or HAA5 formation or upon consultation with the State.

(a) If a system changes monitoring locations, it shall replace existing compliance monitoring locations with the lowest LRAA with new locations that reflect the current distribution system locations with expected high TTHM or HAA5 levels.

(b) The State may require modifications in the monitoring plan.

(c) Surface water or GWUDI systems serving more than 3,300 people shall submit a copy of their modified monitoring plan to the State prior to the date they are required to comply with the revised monitoring plan.

(iii) A system is in violation of the monitoring requirements for each quarter that a monitoring result would be used in calculating a LRAA if the system fails to monitor.

Subdivision (e) of section 5-1.51 is amended to read as follows:

(e) The CT values for inactivation of *Giardia lamblia* cysts by free chlorine at various pH and temperature levels are listed in section 5-1.52 [tables] Tables 14A through 14F of this Subpart.

The CT values for inactivation of *Giardia lamblia* cysts by chlorine dioxide and ozone at various temperature levels are listed in section 5-1.52 [table] Table 14G of this Subpart. The CT values for inactivation of *Giardia lamblia* cysts by chloramines at various temperature levels are listed in section 5-1.52 Table 14H of this Subpart. The CT values for inactivation of *Cryptosporidium* by chlorine dioxide at various temperature levels are listed in section 5-1.52 Table 14I. The CT values for inactivation of *Cryptosporidium* by ozone at various temperature levels are listed in section 5-1.52 Table 14J. The UV doses for *Cryptosporidium*, *Giardia lamblia*, and virus inactivation credit are listed in section 5-1.52 Table 14K.

New subdivision (o) is added to section 5-1.51 to read as follows:

(o) Disinfection Byproduct Monitoring. The requirements of this subdivision apply to community and nontransient noncommunity water systems that use a primary or residual disinfectant other than ultraviolet light, or deliver water that has been treated with a primary or residual disinfectant other than ultraviolet light in accordance with monitoring requirements in Table 9A of section 5-1.52.

(1) Systems required to conduct quarterly monitoring shall calculate compliance at the end of each quarter or earlier if the LRAA calculated based on fewer than four quarters of data would cause the MCL to be exceeded regardless of the monitoring results of subsequent quarters in accordance with Table 3 of section 5-1.52.

(2) Systems required to conduct monitoring at a frequency that is less than quarterly shall monitor in the calendar month identified in the monitoring plan developed under subdivision (c)

of this section. Compliance calculations shall be made beginning with the first compliance sample taken after the compliance date.

Tables 1, 2, 3, 3A, 4, 4A, 6, 7, 8B, 9A, 9B, 9C, 10 and 13 of section 5-1.52 are repealed. Footnote 6 for Table 8C of section 5-1.52 is amended and new Tables 1, 2, 3, 3A, 4, 4A, 6, 7, 8B, 9A, 9B, 9C, 10, 13, 14H, 14I, 14J, and 14K are added to section 5-1.52 to read as follows:

5-1.52 Tables.

Table 1. Inorganic Chemicals and Physical Characteristics Maximum Contaminant Level Determination

| Contaminants ^{1,2} | MCL (mg/l) ³ | Determination of MCL violations |
|---|--|--|
| Asbestos | 7.0 million fibers/liter (MFL) (longer than 10 microns) | If the results of a monitoring sample analysis exceed the MCL, the supplier of water shall collect one more sample from the same sampling point within 2 weeks or as soon as practical. |
| Antimony | 0.006 | |
| Arsenic | 0.010 | An MCL violation for all contaminants listed in this table, except for Arsenic, occurs when the average ⁴ of the initial sample and any confirmation sample exceeds the MCL. |
| Barium | 2.00 | |
| Beryllium | 0.004 | MCL violations for Arsenic will be determined as follows: |
| Cadmium | 0.005 | |
| Chromium | 0.10 | Compliance with the Arsenic MCL shall be determined based on the analytical result(s) obtained at each sampling point. |
| Cyanide(as free cyanide) ^{5,6} | 0.2 | |
| Mercury | 0.002 | For systems which are conducting monitoring at a frequency greater than annual, an Arsenic MCL violation occurs when the running annual average ^{8,9,10} at any sampling point is greater than the MCL. If any one sample would cause the annual average to exceed the MCL at any sampling point, the system is out of compliance with the MCL immediately. |
| Selenium | 0.05 | |
| Silver | 0.1 | |
| Thallium | 0.002 | |
| Fluoride | 2.2 | Systems monitoring annually or less frequently whose sample result exceeds the Arsenic MCL ⁸ must begin quarterly sampling ¹¹ . The system will not be considered in violation of the MCL until it has completed one year of quarterly sampling and the running annual average ^{8,9,10} at that sampling point is greater than the Arsenic MCL. If any one sample would cause the annual average to exceed the MCL at any sampling point, the system is out of compliance with the MCL immediately. |
| Chloride | 250.0 | |
| Iron | 0.3 ⁵ | |
| Manganese | 0.3 ⁵ | |
| Sodium | No designated limits ⁷ | |
| Sulfate | 250.0 | |
| Zinc | 5.0 | |
| Color | 15 Units | |
| Odor | 3 Units | |

| Contaminants ^{1,2} | MCL (mg/l) ³ | Determination of MCL violations |
|-----------------------------|-------------------------|---|
| Bromate ⁸ | 0.010 | Compliance is based on a running annual average of monthly samples, computed quarterly. If the average of samples covering any consecutive four-quarter period exceeds the MCL, the system is in violation of the MCL and must notify the public. |
| Chlorite ⁹ | 1.0 | Compliance is based on an average of each three-sample set taken in the distribution system in accordance with Table 8B. If the average exceeds the MCL, the system is in violation of the MCL and must notify the public. |

¹ If EPA Methods 200.7 or 200.9 are used, the MDLs determined when samples are analyzed by direct analysis (i.e., no sample digestion) will be higher, because they were determined using a 2x preconcentration step during sample digestion. Consider the need to preconcentrate, or the use of multiple in-furnace depositions to achieve required MDLs. For direct analysis of cadmium by Method 200.7, sample preconcentration using pneumatic nebulization may be required to achieve lower detection limits. Preconcentration may also be required for direct analysis of antimony, lead, and thallium by Method 200.9; antimony and lead by Standard Methods 3113 B; and lead by ASTM Method D3559-90D, unless multiple in-furnace depositions are made.

²When metals or nitrate samples are collected, they may be acidified with a concentrated acid or a dilute (50% by volume) solution of the applicable concentrated acid. This acidification may be done at the laboratory rather than at the time of sampling, provided the shipping time and other instructions in Section 8.3 of EPA Methods 200.7, 200.8, or 200.9 are followed.

³mg/L = milligrams per liter

⁴If iron and manganese are present, the total concentration of both should not exceed 0.5 mg/L. Higher levels may be allowed by the State when justified by the supplier of water.

⁵If Ligand Exchange and Amperometry is used for cyanide analysis; either ASTM Method D6888-04 or Method OIA-1677, DW, "Available Cyanide by Flow Injection, Ligand Exchange, and Amperometry," January 2004 are approved. EPA-821-R-04-001, is available from ALPKEM, A Division of OI Analytical, P.O. Box 9010, College Station, TX 77842-9010; sulfide levels below those detected using lead acetate paper may produce positive method interferences. Samples should be tested using a more sensitive sulfide method to determine if a sulfide interference is present, and samples shall be treated accordingly.

⁵Cyanide samples must be adjusted with sodium hydroxide to pH 12 at the time of collection. The sample must be shipped and stored at 4 °C or less. ⁶Rounded to the same number of significant figures as the MCL for the contaminant in question.

⁷Water containing more than 20 mg/L of sodium should not be used for drinking by people on severely restricted sodium diets. Water containing more than 270 mg/L of sodium should not be used for drinking by people on moderately restricted sodium diets.

⁸Community and nontransient noncommunity water systems using ozone for disinfection or oxidation must comply with the bromate standard.

⁹Community and nontransient noncommunity water systems using chlorine dioxide as a disinfectant or oxidant must comply with the chlorite standard.

¹⁰Arsenic sampling results shall be reported to the nearest 0.001 mg/L.

¹¹Any sample below the method detection limit shall be calculated at zero for the purpose of determining the annual average. If a system fails to collect the required number of samples, compliance (average concentration) will be based on the total number of samples collected.

¹²If confirmation samples are collected, the average of the initial sample and any confirmation samples will be used for the determination of compliance and future monitoring requirements.

¹³Systems are only required to conduct the increased monitoring frequency at the sampling point where the MCL was exceeded and for only the specific contaminant(s) that triggered the system into the increased monitoring frequency.

Table 2 - Nitrate, Nitrite, Total Nitrate/Nitrite Maximum Contaminant Level Determination

| Contaminants | MCL (mg/L) | Determination of MCL violation |
|---------------------------|-------------------------------|--|
| Nitrate ¹ | 10 (as Nitrogen) ² | If the results of a monitoring sample analysis exceed the MCL, the supplier of water shall collect another sample from the same sampling point, within 24 hours of the receipt of results or as soon as practical. ³ An MCL violation occurs when the average of the two results exceeds the MCL. |
| Nitrite | 1 (as Nitrogen) | |
| Total Nitrate and Nitrite | 10 (as Nitrogen) | |

¹Nitrate samples are to be shipped and stored at 4 °C or less and analyzed within 48 hours of collection. If the sample is chlorinated, the holding time for an unacidified sample kept at 4 °C is extended to 14 days.

²An MCL of 20 mg/L may be permitted at a noncommunity water system if the supplier of water demonstrates that:

- (a) the water will not be available to children under six months of age;
- (b) a notice that nitrate levels exceed 10 mg/L and the potential health effects of exposure will be continuously posted according to the requirements of a Tier 1 notification;
- (c) the State will be notified annually of nitrate levels that exceed 10 mg/L; and
- (d) no adverse health effects shall result.

³Systems unable to collect an additional sample within 24 hours must issue a Tier 1 notification and must collect the additional sample within two weeks of receiving the initial sample results.

Table 3. Organic Chemicals Maximum Contaminant Level Determination

| Contaminants | MCL (mg/L) | Type of water system | Determination of MCL violation |
|--|------------|----------------------------------|--|
| General organic chemicals | | Community, NTNC and Noncommunity | If the results of a monitoring sample analysis exceed the MCL, the supplier of water shall collect one to three more samples from the same sampling point, as soon as practical, but within 30 days. An MCL violation occurs when at least one of the confirming samples is positive ¹ and the average of the initial sample and all confirming samples exceeds the MCL. |
| Principal organic contaminant (POC) | 0.005 | | |
| Unspecified organic contaminant (UOC) | 0.05 | | |
| Total POCs and UOCs | 0.1 | | |
| Disinfection byproducts ^{2,3} | | Community and NTNC | For systems required to monitor quarterly, the results of all analyses at each monitoring location per quarter shall be arithmetically averaged and shall be reported to the State within 30 days of the public water system's receipt of the analyses. A violation occurs if the average of the four most recent sets of quarterly samples at a particular monitoring location (12-month locational running annual average (LRAA)) exceeds the MCL. If a system collects more than one sample per quarter at a monitoring location, the system shall average all samples taken in the quarter at that location to determine a quarterly average to be used in the LRAA calculation. If a system fails to complete four consecutive quarters of monitoring, compliance with the MCL will be based on an average of the available data from the most recent four quarters. An MCL violation for systems on annual or less frequent monitoring that have been increased to quarterly monitoring as outlined in Table 9A, is determined after four quarterly samples are taken. |
| Total trihalomethanes | 0.080 | | |
| Haloacetic acids | 0.060 | | |
| | | Transient noncommunity | Not applicable |

Table 3. Organic Chemicals Maximum Contaminant Level Determination (continued)

| Contaminants | MCL (mg/L) | Type of Water System | Determination of MCL violation |
|--|-------------|----------------------------------|---|
| Specific Organic Chemicals | | Community, NTNC and Noncommunity | If the results of a monitoring sample analysis exceed the MCL, the supplier of water shall collect one to three more samples from the same sampling point, as soon as practical, but within 30 days. An MCL violation occurs when at least one of the confirming samples is positive ¹ and the average of the initial sample and all confirming samples exceeds the MCL. |
| Alachlor | 0.002 0.003 | | |
| Aldicarb | 0.002 0.004 | | |
| Aldicarb sulfone | 0.003 | | |
| Aldicarb sulfoxide | 0.0002 | | |
| Atrazine ⁴ | 0.04 | | |
| Benzo(a)pyrene | 0.002 | | |
| Carbofuran | 0.006 | | |
| Chlordane | 0.0002 | | |
| Di(2-ethylhexyl)phthalate | 0.05 | | |
| Dibromochloropropane(DBCP) | 0.007 | | |
| 2,4-D | 0.02 | | |
| Dinoseb | 0.002 | | |
| Diquat | 0.00005 | | |
| Endrin | 0.0004 | | |
| Ethylene dibromide(EDB) | 0.0002 | | |
| Heptachlor | 0.001 | | |
| Heptachlor epoxide | 0.0002 | | |
| Hexachlorobenzene | 0.04 | | |
| Lindane | 0.010 | | |
| Methoxychlor | 0.001 | | |
| Methyl-tertiary-butyl-ether(MTBE) | 0.0005 | | |
| Pentachlorophenol | 1.0 | | |
| Polychlorinated biphenyls(PCBs) ⁵ | 0.004 | | |
| Propylene glycol | 0.003 | | |
| Simazine | 0.01 | | |
| Toxaphene | 0.00000003 | | |
| 2,4,5-TP (Silvex) | 0.002 | | |
| 2,3,7,8-TCDD (dioxin) | | | |
| Vinyl chloride | | | |

¹A sample is considered positive when the quantity reported by the State approved laboratory is greater than or equal to the method detection limit.

²For systems monitoring yearly or less frequently, the sample results for each monitoring location is considered the LRAA for that monitoring location. Systems required to conduct monitoring at a frequency that is less than quarterly shall monitor in the calendar month identified in the monitoring plan developed under section 5-1.51(c). Compliance calculations shall be made beginning with the first compliance sample taken after the compliance date.

³ Systems that are demonstrating compliance with the avoidance criteria in section 5-1.30(c), shall comply with the TTHM and HAA5 LRAA MCLs; however the LRAA MCLs are not considered for avoidance purposes. For avoidance purposes, TTHMs and HAA5s are based on a running annual average of analyses from all monitoring locations.

⁴Syngenta Method AG-625, "Atrazine in Drinking Water by Immunoassay," February 2001, available from Syngenta Crop Protection, Inc., 410 Swing Road, P.O. Box 18300, Greensboro, NC 27419. Telephone: 336-632-6000, 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 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 Method AG-625 triggers such confirmatory testing, the confirmatory result is to be used to determine compliance.

⁵If PCBs (as one of seven Aroclors) are detected in any sample analyzed using EPA Method 505 or 508, the system shall reanalyze the sample using EPA Method 508A to quantitate PCBs (as decachlorobiphenyl). Compliance with the PCB MCL shall be determined based upon the quantitative results of analyses using Method 508A.

Table 3A. Maximum Residual Disinfectant Level (MRDL) Determination

| Disinfectant | MRDL (mg/L) | Type of water system ¹ | Determination of MRDL violation |
|--|----------------------------|---|---|
| Chlorine | 4.0 (as Cl ₂) | Community and NTNC using chlorine or chloramines as disinfectant or oxidant | Compliance is based on a running annual arithmetic average, computed quarterly, of monthly averages of all samples collected by the system. If the running annual average exceeds the MRDL, the system is in violation and must notify the public. |
| Chloramines ² | 4.0 (as Cl ₂) | | |
| Chlorine Dioxide | 0.8 (as ClO ₂) | Community, NTNC, and Transient Noncommunity using chlorine dioxide as disinfectant or oxidant | Public Health Hazard (Acute Violation) Compliance is based on daily samples collected by the system. If any daily sample taken at the entrance to the distribution system exceeds the MRDL, and on the following day one (or more) of the three samples taken in the distribution system exceeds the MRDL, the system is in violation. |
| | | | Nonacute Violation Compliance is based on daily samples collected by the system. If any two consecutive daily samples taken at the entrance to the distribution system exceed the MRDL, and all distribution system samples taken are below the MRDL, the system is in violation. |
| <p>¹ The monitoring and MRDL requirements for chlorine and chloramines in this column apply to community or nontransient noncommunity water systems that are consecutive systems that do not add a disinfectant, but deliver water that has been treated with primary or residual disinfection other than ultraviolet light.</p> <p>² In cases where systems switch between the use of chlorine and chloramines for residual disinfection during the year, compliance must be determined by including together all Cl₂ monitoring results of both chlorine and chloramines.</p> | | | |

Table 4. Entry Point Turbidity Maximum Contaminant Level Determination for Unfiltered Systems^{1, 2}

| Contaminant | MCL | Determination of MCL violation |
|---|---|--|
| Entry point turbidity (surface water and ground water directly influenced by surface water) | 1 NTU ^{3,5} (Monthly Average) 5 NTU ^{4,5} | A violation occurs when the average of all daily entry point analyses for the month exceeds the MCL rounded off to the nearest whole number. A violation occurs when the average of two consecutive daily entry point analyses exceeds the MCL rounded off to the nearest whole number. |

¹The requirements of this table apply to unfiltered systems that the State had determined, in writing pursuant to section 5-1.30 of this Subpart, must install filtration, until filtration is installed.

²If formazin is used for turbidity testing, styrene divinyl benzene beads (e.g., AMCO-AEPA-1 or equivalent) and stabilized formazin (e.g., Hach StablCalTMor equivalent) may be substituted for formazin.

³If the daily entry point analysis exceeds one NTU, a repeat sample must be taken as soon as practicable and preferably within one hour. If the repeat sample exceeds one NTU, the supplier of water must make State notification. The repeat sample must be used for the monthly average and the two consecutive day average.

⁴If the two consecutive day average exceeds the MCL, the supplier of water shall analyze for microbiological contamination at a point downstream of the first consumer, but as close to the first consumer as is feasible. The additional microbiological sample should be taken within one hour as soon as feasible after determining the two consecutive day average. The supplier of water shall report the result of this microbiological analysis to the State within 48 hours of obtaining the result. The result of this analysis shall not be used for monitoring purposes.

⁵NTU = Nephelometric Turbidity Units

Table 4A. Surface Water Turbidity Performance Standards ¹

| Contaminant | Filtration type | Performance standard ¹ | Determination of treatment technique violation | |
|---------------------------------------|---|-----------------------------------|---|--|
| Filtered water turbidity ² | Conventional filtration and Direct filtration | 0.3 NTU ^{3,5} | A treatment technique violation occurs if more than five percent of the composite filter effluent measurements taken each month exceed the performance standard values. | The turbidity level of representative samples of the filtered water must at no time exceed 1 NTU. ^{4,5} |
| | Slow sand filtration | 1.0 NTU ³ | A treatment technique violation occurs if more than five percent of the composite filter effluent measurements taken each month exceed the performance standard values. | The turbidity level of representative samples of the filtered water must at no time exceed 5 NTU. |
| | Diatomaceous earth filtration | 1.0 NTU ³ | | |
| | Alternative filtration | 1.0 NTU ^{3,4} | | |

¹The standards apply to systems with surface water sources or ground water sources directly influenced by surface water.

²If formazin is used for turbidity testing, styrene divinyl benzene beads (e.g., AMCO-AEPA-1 or equivalent) and stabilized formazin (e.g., Hach StablCalTMor equivalent) may be substituted for formazin.

³NTU= Nephelometric Turbidity Unit

⁴The performance standard applies to alternative filtration technologies capable of complying with requirement of section 5-1.30(b) of this Subpart as demonstrated to the department by pilot studies, unless the department sets a turbidity performance standard for a specific system.

⁵If the combined filter effluent turbidity exceeds 1 NTU, the system must consult with the State in accordance with section 5-1.78(d)(3) of this Subpart.

Table 6. Microbiological Contaminants Maximum Contaminant Level (MCL)/Treatment Technique (TT) Violation Determination

| Contaminant | Sample Location | MCL or TT | Performance Standard ^{1,2} | Determination of MCL/TT violation ³ |
|---|--|-----------|--|---|
| Total coliform ⁴ | Distribution Sample Sites | MCL | No positive sample ⁵ | An MCL violation occurs at systems collecting 40 or more samples per month when more than 5.0 percent of the total coliform samples are positive. |
| | | MCL | | An MCL violation occurs at systems collecting less than 40 samples per month when two or more samples are total coliform positive. |
| <i>Escherichia coli</i> (<i>E. coli</i>) | | MCL | No positive sample ⁵ | An MCL violation occurs when a total coliform positive sample is positive for <i>E. coli</i> and a repeat total coliform sample is positive or when a total coliform positive sample is negative for <i>E. coli</i> but a repeat total coliform sample is positive and the sample is also positive for <i>E. coli</i> . ⁶ |
| Fecal indicator: <i>E. coli</i> , and/or enterococci, and/or coliphage ⁷ | Untreated Water from a Ground Water Source | TT | No fecal indicator in samples collected from raw source water from a ground water source. ⁸ | A TT violation occurs when a raw water sample is positive for the fecal indicator contaminant and system does not provide and document, through process compliance monitoring, 4-log virus treatment during peak flow at first customer. If repeat sampling of the raw water is directed by the State and all additional samples are negative for fecal indicator, there is no TT violation. ⁸ |

¹A public water system must comply with the MCL for total coliform each month the system is required to monitor for total coliform.

²All samples collected in accordance with Table 11 footnotes 1, and 2 and Table 11B of this section, and samples collected in accordance with section 5-1.51(g) of this Subpart shall be included in determining compliance with the MCL unless any of the samples have been invalidated by the State.

³For notification purpose, an *E. coli* MCL violation in the distribution system is a public health hazard requiring Tier 1 notification.

⁴Total coliform method additions or modifications to approved methods:

- For total coliform (TC) samples collected from untreated surface water or GWUDI sources, the time from sample collection to initiation of analysis may not exceed 8 hours and the samples must be held below 10 degrees C during transit to the laboratory. For other TC samples, the time from collection to initiation of analysis may not exceed 30 hours. Systems are encouraged, but not required, to hold TC samples below 10 degrees C during transit.
- If the Total Coliform Fermentation Technique using standard methods 9221A or B is used, and if inverted tubes are used to detect gas production, the media should cover these tubes at least one half to two-thirds after the sample is added. Also, no requirement exists to run the completed phase on 10 percent of all TC-positive confirmed tubes. Additionally, lactose broth, as commercially available, may be used in lieu of lauryl tryptose broth, if the system conducts at least 25 parallel tests between this medium and lauryl tryptose broth using the water normally tested, and this comparison demonstrates that the false-positive rate and false-negative rate for TC, using lactose broth, is less than 10 percent.

- If Membrane Filter Technique Standard Methods 9222A, B, and optionally C are used, MI agar also may be used. Verification of colonies is not required.
- If the Standard Methods Presence-Absence (P-A) Coliform Test, 9221D is used, six-times formulation strength may be used if the medium is filter-sterilized rather than autoclaved.
- If the Total Coliform Membrane Filter Technique, Standard Methods 9222 A, B, C is used, MI agar also may be used. Verification of colonies is not required.
- For any TC testing it is strongly recommended that laboratories evaluate the false-positive and negative rates for the method(s) they use for monitoring TC. Laboratories are also encouraged to establish false-positive and false-negative rates within their own laboratory and sample matrix (drinking water or source water) with the intent that if the method they choose has an unacceptable false-positive or negative rate, another method can be used. It is suggested that laboratories perform these studies on a minimum of 5% of all TC-positive samples, except for those methods where verification/ confirmation is already required. Methods for establishing false-positive and negative-rates may be based on lactose fermentation, the rapid test for β -galactosidase and cytochrome oxidase, multi-test identification systems, or equivalent confirmation tests. False-positive and false-negative information is often available in published studies and/or from the manufacturer(s).

⁵See Table 13 for public notification requirements.

⁶If any total coliform or *E. Coli* sample is positive, repeat samples must be collected in accordance with Table 11B of this section.

⁷For any fecal indicator sample collected as described in section 5-1.52, Table 6, the time from sample collection to initiation of analysis may not exceed 30 hours. The system is encouraged but is not required to hold samples below 10 °C during transit.

⁸If raw water source sample is fecal indicator positive, the water system, in consultation with the State, may collect an additional 5 samples within 24 hours at each source that tested fecal indicator positive. If none of the additional samples are fecal indicator positive, then there is no TT violation. Note that Tier 1 notification must be made after the initial raw water fecal indicator positive sample, even if it is not confirmed.

Table 7. Radiological Maximum Contaminant Level Determination¹

| Contaminant | MCL | Type of water system | Determination of MCL violation² |
|---|---|---|--|
| Combined radium-226 and radium-228 | 5 picocuries per liter | Community | A violation occurs when a sample or the annual average of samples at any sampling point exceeds the MCL ^{3,4,5,6,7} |
| Gross alpha activity (including radium-226 but excluding radon and uranium) | 15 picocuries per liter | Community | |
| Uranium ⁸ | 30 micrograms per liter | Community | |
| Beta particle and photon radioactivity from manmade radionuclides | Four millirems (mrem) per year as the annual dose equivalent to the total body or any internal organ ⁹ . | Community Water Systems designated by the State as vulnerable | A violation occurs when a sample or the annual average of samples at any sampling point exceeds the MCL ^{3,4,5,7,10,11} |
| | | Community systems designated by the State as utilizing waters contaminated by effluents from nuclear facilities | A violation occurs when a sample or the annual average of samples at any sampling point exceeds the MCL ^{3,4,5,7,10,11} |

¹The Radionuclides Rule including the MCLs and minimum monitoring requirements applies to only community water systems.

²To judge compliance with the maximum contaminant levels, averages of data shall be used and shall be rounded to the same number of significant figures as the maximum contaminant level for the substance in question.

³For systems monitoring more than once per year, compliance with the MCL is determined by a running annual average at each sampling point. If the average of any sampling point is greater than the MCL, then the system is out of compliance with the MCL.

⁴For systems monitoring more than once a year, if any sample result will cause the running average to exceed the MCL at any sample point, e.g., a single sample result is greater than four times of the MCL, the system is out of compliance with the MCL immediately.

⁵If a system does not collect all required samples when compliance is based on a running annual average of quarterly samples, compliance will be based on the running average of the samples collected.

⁶If a sample result is less than the detection limit, zero will be used to calculate the annual average, unless a gross alpha particle activity is being used in lieu of radium-226 and/or uranium. If the gross alpha particle activity result is less than detection and is substituted for radium-226 and/or uranium, ½ the detection limit will be used to calculate the annual average.

⁷If the MCL for radionuclides in this Table is exceeded, the community water system must give notice to the State.

⁸If uranium (U) is determined by mass-type methods (i.e., fluorometric or laser phosphorimetry), a 0.67 pCi/μg of uranium conversion factor must be used.

⁹A system must determine compliance with the MCL for beta particle and photon radioactivity by using the calculation described below:

$$\frac{[\text{pCi/L found in sample (from laboratory results)} / \text{pCi/L equivalent of 4 mrem of exposure}]}{\text{fraction of the maximum 4 mrem/year exposure limit}} = \text{fraction of the maximum 4 mrem/year exposure limit}$$
¹⁰To determine compliance with the MCL, a system must monitor at a frequency as described in Table 12.

¹¹If the results show an MCL violation for any of the constituents, the system must conduct monthly monitoring for all species at any sampling point that exceeds the MCL. Monitoring must be conducted in accordance with Table 12 in this section. A system can resume quarterly monitoring if the rolling average of three months of samples is at or below the MCL.

Table 8B. Inorganic Chemicals and Physical Characteristics Minimum Monitoring Requirements

| Contaminant | Type of water system | Initial frequency by source type ¹ | | Accelerated sampling ² |
|---|---|---|---|---|
| | | Ground water only | Surface only or surface and ground water | |
| Antimony Arsenic Barium Beryllium Cadmium Chromium Cyanide Mercury Nickel Selenium Thallium Fluoride | Community and NTNC ^{3,4,5} | One sample per entry point every 3 years | One sample per entry point per year | If GT MCL, one sample quarterly. ^{6,7} If LT MCL, maintain initial frequency. |
| | Transient noncommunity | State discretion ⁸ | State discretion ⁸ | State discretion ⁸ |
| Bromate ⁹ | Community and NTNC using ozone for disinfection or oxidation | One sample per month at each entry point ^{10, 11} | One sample per month at each entry point ^{10, 11} | State discretion ⁸ |
| Chlorite ¹² | Community and NTNC using chlorine dioxide for disinfection or oxidation | Daily samples at each entry point. Additional three-sample set monthly in the distribution system ^{11, 13, 14, 15} | Daily samples at each entry point. Additional three-sample set monthly in the distribution system ^{11, 13, 14, 15} | State discretion ⁸ |

GT = Greater Than; LT = Less Than

¹For all types of water sources the system shall take each sample at the same sampling point unless conditions make another sampling point more representative of each source or treatment plant. If a system draws water from more than one source and the sources are combined before distribution, the system must sample at an entry point to the distribution system during periods of normal operating conditions when water is representative of all sources, or separately at the individual sources. The State may allow systems to composite samples in accordance with the conditions in Appendix 5-C. All samples taken and analyzed in accordance with the monitoring plan must be included in determining compliance, even if the number is greater than the minimum required.

²The average of the initial and confirmation sample contaminant concentration at each sampling point shall be used to determine compliance with the MCL.

³A waiver from the required initial monitoring frequencies may be granted by the State, based upon the following conditions:

- a. A minimum of one sample shall be collected while the waiver is effective;
- b. Surface water systems must have monitored annually for at least three years and ground water systems must have conducted a minimum of three rounds of monitoring with at least one sample taken since January 1, 1990;
- c. All results must be less than the MCL;
- d. New sources are not eligible for a waiver until completion of three rounds of sampling; and
- e. Waivers issued by the State shall be made in writing, shall cite the basis for determination and shall not exceed a maximum of nine years.

⁴To determine the appropriate reduced monitoring frequency, the State shall consider:

- a. Reported concentrations from all previous monitoring;
- b. Variations in reported concentrations; and

c. Other factors which may affect contaminant concentrations such as changes in ground water pumping rates, changes in the system's configuration, operating procedures, stream flows or other characteristics.

⁵The State may require or the water system may request more frequent monitoring frequencies than is minimally required. The State, at its discretion, may require confirmation samples.

⁶The State may decrease the quarterly monitoring requirement to the initial sampling requirement provided that it is determined that the system is reliably and consistently below the MCL on the basis of a minimum of two quarterly ground water samples and a minimum of four quarterly samples for surface water.

⁷If concentrations of a listed contaminant exceed the MCL, the department requires the collection of an additional sample as soon as possible but not to exceed two weeks.

⁸State discretion shall mean requiring monitoring when the State has reason to believe the MCL has been violated, the potential exists for an MCL violation or the contaminant may present a risk to public health.

⁹Community and nontransient noncommunity water systems using ozone for disinfection or oxidation must comply with the bromate monitoring requirement.

¹⁰Systems required to analyze for bromate may reduce monitoring from monthly to once per quarter, if the system's running annual average bromate concentration is ≤ 0.0025 mg/l based on monthly bromate measurements for the most recent four quarters. A system may remain on reduced bromate monitoring until the running annual average source water bromide concentration, computed quarterly, is equal to or greater than 0.025 mg/L. If the average bromide concentration is equal to or greater than 0.025 mg/L, the system must resume routine monthly bromate monitoring.

¹¹Failure to monitor will be treated as a monitoring violation for the entire period covered by an annual average where compliance is based on an annual average of monthly or quarterly samples or averages and a system's failure to monitor makes it impossible to determine MCL compliance.

¹²Community and nontransient noncommunity water systems using chlorine dioxide as a disinfectant or oxidant must comply with the chlorite monitoring requirement.

¹³On each day following a sample result that exceeds the chlorite MCL at the entrance to the distribution system, the system must take three chlorite distribution system samples at the following locations: as close to the first customer as possible, in a location representative of average residence time, and in a location representative of maximum residence time. The samples comprising the three-sample set required for routine monitoring must be collected at the same three locations in the distribution system that are used when following up on a daily MCL exceedance at the entry point. The system may use results of additional monitoring, conducted as the result of an entry point MCL exceedance, to meet the requirement for routine monthly monitoring.

¹⁴Daily chlorite monitoring at the entrance to the distribution system may not be reduced. Monthly chlorite monitoring in the distribution system may be reduced to one three-sample set per quarter after one year of monitoring where no individual chlorite sample taken in the distribution system has exceeded the chlorite MCL. If the system has had to conduct distribution system monitoring as a result of an MCL exceedance at the entry point, the system cannot reduce monitoring. The system may remain on a reduced monitoring schedule until either any of the three individual chlorite samples taken quarterly in the distribution system exceeds the chlorite MCL or the system is required to conduct distribution system monitoring because of an entry point chlorite MCL exceedance.

¹⁵A system must monitor according to its monitoring plan as described in section 5-1.51(c) of this Subpart. Failure to monitor in accordance with the monitoring plan is a monitoring violation.

Footnote 6 of Table 8C of section 5-1.52 is amended as follows:

⁶ For both types of water sources the system shall take each sample at the same sampling point unless conditions make another sampling point more representative of each source or treatment plant. If a system draws water from more than one source and the sources are combined before distribution the system must sample at an entry point to the distribution systems during periods of normal operating conditions when water is representative of all sources. The average of the initial and confirmation sample contaminant concentration at each sampling point shall be used to determine compliance with the MCL.

Table 9A. Organic Chemicals – Disinfection Byproducts Minimum Monitoring Requirements¹

| | Source Water Type | Population Size | Routine Monitoring | | Reduced Monitoring ² | |
|---|-------------------------|-----------------------|--|------------------------|--|-------------------------------|
| | | | Distribution System monitoring location per monitoring period ³ | Frequency ⁴ | Distribution System monitoring locations per monitoring period | Frequency |
| Total Trihalomethanes (TTHM) Haloacetic Acids (HAA5) | Surface water and GWUDI | <500 | 2 ⁵ | per year ⁶ | not allowed | not allowed |
| | | 500 – 3,300 | 2 ⁵ | per quarter | 2 ⁵ | per year ⁶ |
| | | 3,301 – 9,999 | 2 | per quarter | 2 ⁷ | per year ⁶ |
| | | 10,000 – 49,999 | 4 | per quarter | 2 ⁸ | per quarter |
| | | 50,000 – 249,999 | 8 | per quarter | 4 ⁹ | per quarter |
| | | 250,000 – 999,999 | 12 | per quarter | 6 ¹⁰ | per quarter |
| | | 1,000,000 – 4,999,999 | 16 | per quarter | 8 ¹¹ | per quarter |
| | | ≥5,000,000 | 20 | per quarter | 10 ¹² | per quarter |
| | Ground water | <500 | 2 ⁵ | per year ⁶ | 2 ⁵ | every third year ⁶ |
| | | 500 – 9,999 | 2 | per year ⁶ | 2 ⁵ | per year ⁶ |
| | | 10,000 – 99,999 | 4 | per quarter | 2 ⁷ | per year ⁶ |
| | | 100,000 – 499,999 | 6 | per quarter | 2 ⁸ | per quarter |
| | | ≥500,000 | 8 | per quarter | 4 ⁹ | per quarter |

Table 9A (continued)

¹To comply with monitoring requirements, certain conditions must be applied to test methods. The following apply to any samples collected for compliance with section 5-1.50(o) of this Subpart:

- Total Organic Carbon (TOC) samples. Inorganic carbon must be removed from TOC 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.
- SUVA Samples:
For Specific Ultraviolet Absorbance (SUVA) samples, SUVA must be determined on water prior to the addition of disinfectants/oxidants by the system. Dissolved Organic Carbon (DOC) and Ultraviolet Absorption at 254 nm (UV254) samples used to determine a SUVA value must be taken at the same time and at the same location.

DOC samples must be filtered through the 0.45 µm pore-diameter filter as soon as practical after sampling, not to exceed 48 hours. After filtration, DOC samples must be acidified to achieve pH less than or equal to 2 with minimal addition of the acid specified in the method or by the instrument manufacturer. Acidified DOC samples must be analyzed within 28 days of sample collection. Inorganic carbon must be removed from the samples prior to analysis. Water passed through the filter prior to filtration of the sample must serve as the filtered blank. This filtered blank must be analyzed using procedures identical to those used for analysis of the samples and must meet the following criteria: DOC < 0.5 mg/L.

For UV254 samples, UV absorption must be measured at 253.7 nm (may be rounded off to 254 nm). Prior to analysis, UV254 samples must be filtered through a 0.45 µm pore-diameter filter. The pH of UV254 samples may not be adjusted. Samples must be analyzed as soon as practical after sampling, not to exceed 48 hours.

² Systems may reduce monitoring if, at all monitoring locations, the TTHM LRAA is ≤0.040 mg/L and the HAA5 LRAA is ≤0.030 mg/L. In addition, the source water annual average TOC level, before any treatment, shall be ≤4.0 mg/L at each treatment plant treating surface water or GWUDI. A system with quarterly reduced monitoring may remain on reduced monitoring as long as the TTHM LRAA is ≤0.040 mg/L and the HAA5 LRAA is ≤0.030 mg/L at each monitoring location. For systems with annual or less frequent monitoring, each TTHM sample shall be ≤0.060 mg/L and each HAA5 sample shall be ≤0.045 mg/L. In addition, the source water annual average TOC level, before any treatment, shall be ≤4.0 mg/L at each treatment plant treating surface water or GWUDI. If these conditions are not met, or at the State's discretion, the system shall resume routine monitoring in the quarter immediately following the exceedance (for quarterly systems) or in the year immediately following the exceedance (for systems that monitor annually or less frequently).

³A system shall monitor according to its monitoring plan as described in section 5-1.51(c) of this Subpart. Failure to monitor in accordance with the monitoring plan is a monitoring violation. All systems shall monitor during the month of highest Disinfection Byproducts concentrations. Monitoring shall be increased to quarterly at all locations if a TTHM sample is > 0.080 mg/L or a HAA5 sample is >0.060 mg/L.

⁴Systems on quarterly monitoring shall take dual sample sets every 90 days at each monitoring location, except for surface water and GWUDI systems serving a population of 500 -3,300. Ground water systems serving a population of 500 – 9,999 on annual monitoring shall take dual sample sets at each monitoring location. All other systems on annual monitoring and surface water and GWUDI systems serving a population of 500 – 3,300 are required to take individual TTHM and HAA5 samples (instead of dual sample set) at the locations with the highest TTHM and HAA5 concentrations, respectively. For systems serving fewer than 500 people, only one location with a dual sample set per monitoring period is needed if the highest TTHM and HAA5 concentrations occur at the same location and month.

Table 9A (continued)

⁵Collect one TTHM sample at the location and during the quarter with the highest TTHM single measurement, and one HAA5 sample at the location and during the quarter with the highest HAA5 single measurement; alternatively, collect one dual sample set per year if the highest TTHM and HAA5 measurements occurred at the same location and quarter.

⁶If a system is required to monitor a particular location annually or less frequently, and a TTHM sample is >0.080 mg/L or a HAA5 sample is >0.060 mg/L at any location, the system shall increase monitoring to dual sample sets once per quarter (taken every 90 days) at all locations. The system may return to routine monitoring if at least four consecutive quarters of increased monitoring have been conducted and for every monitoring location the TTHM LRAA ≤ 0.060 mg/L and the HAA5 LRAA is ≤ 0.045 mg/L.

⁷Collect one dual sample set at the location and during the quarter of the highest TTHM single measurement, and one dual sample set at the location and during the quarter of the highest HAA5 single measurement.

⁸Collect dual sample sets at the locations with the highest TTHM and HAA5 LRAAs.

⁹Collect dual sample sets at the locations with the two highest TTHM and two highest HAA5 LRAAs.

¹⁰Collect dual sample sets at the locations with the three highest TTHM and three highest HAA5 LRAAs.

¹¹ Collect dual sample sets at the locations with the four highest TTHM and four highest HAA5 LRAAs.

¹² Collect dual sample sets at the locations with the five highest TTHM and five highest HAA5 LRAAs.

**Table 9B. Organic Chemicals - POCs, Vinyl Chloride, Methyl-tertiary-butyl-ether (MTBE), UOCs, Propylene Glycol
Minimum Monitoring Requirements**

| Contaminant | Type of water system | Initial requirement¹ | Continuing requirement where detected¹ | Continuing requirement where not detected and vulnerable to contamination¹ | Continuing requirement where not detected and invulnerable to contamination¹ |
|--|--|--|--|--|--|
| Principal Organic Contaminants listed on Table 9D and Vinyl chloride and Methyl-tertiary-butyl-ether (MTBE) ² | Community and Nontransient Noncommunity serving 3,300 or more persons | Quarterly sample per source for one year. ³ | Quarterly ⁴ | Annually ⁵ | Once every six years ⁶ for ground water sources. State discretion ⁷ for surface water sources. |
| | Community and Nontransient Noncommunity serving fewer than 3,300 persons | Quarterly sample per source for one year. ³ | Quarterly ⁴ | Annually ⁵ | Once every six years ⁶ for ground water sources. State discretion ⁷ for surface water sources. |
| | Noncommunity excluding NTNC | State discretion ⁷ | State discretion ⁷ | State discretion ⁷ | State discretion ⁷ |
| Unspecified Organic Contaminants and other POCs not listed on Table 9C or 9D and Propylene glycol | Community and Noncommunity | State discretion ⁷ | State discretion ⁷ | State discretion ⁷ | State discretion ⁷ |

¹The location for sampling of each ground water source of supply shall be between the individual well and at or before the first service connection and before mixing with other sources, unless otherwise specified by the State to be at the entry point representative of the individual well. Public water systems which rely on a surface water shall sample at points in the distribution system representative of each source or at an entry point or points to the distribution system after any water treatment plant.

²The initial requirement does not apply to MTBE monitoring

³The State may reduce the initial monitoring requirement to one sample if the State determines that the system is invulnerable in accordance with footnote 4.

⁴The State may decrease the quarterly monitoring requirement to annually provided that the system is reliably and consistently below the MCL based on a minimum of two quarterly samples from a ground water source and four quarterly samples from a surface water source. Systems which monitor annually must monitor during the quarter which previously yielded the highest analytical result.

⁵The State may reduce the frequency of monitoring of a ground water source to once every three years for a public water system which has three consecutive annual samples with no detection of a contaminant.

⁶The State may determine that a public water system is invulnerable to a contaminant or contaminants after evaluating every three years the following factors:

- a. Knowledge of previous use (including transport, storage, or disposal) of the contaminant within the watershed or zone of influence of the system. If a determination by the State reveals no previous use of the contaminant within the watershed or zone of influence, a waiver can be granted.
- b. If previous use of the contaminant is unknown or it has been used previously, then the following factors shall be used to determine whether a waiver can be granted.
 1. Previous analytical results.
 2. The proximity of the system to a potential point or nonpoint source of contamination. Point sources include spills and leaks of chemicals at or near a water treatment facility or at manufacturing, distribution, or storage facilities, or from hazardous and municipal waste landfills and other waste handling or treatment facilities.
 3. The environmental persistence and transport of the contaminants.
 4. The number of persons served by the public water system and the proximity of a smaller system to a larger system.
 5. How well the water source is protected against contamination, such as whether it is a surface or ground water system. Ground water systems must consider factors such as depth of the well, the type of soil, and wellhead protection. Surface water systems must consider watershed protection.

⁷State discretion shall mean requiring monitoring when the State has reason to believe the MCL has been violated, the potential exists for an MCL violation or the contaminant may present a risk to public health.

Table 9C. Organic Chemicals - Pesticides, Dioxin, PCBs Minimum Monitoring Requirements

| Contaminant | | Type of water system | Initial requirement ¹ | Continuing requirement where detected ^{1,2,3,4} | Continuing requirement where not detected ¹ |
|---|-----------------------------|--|--|--|--|
| Group 1 Chemicals Alachlor Aldicarb Aldicarb sulfoxide Aldicarb sulfone Atrazine Carbofuran Chlordane Dibromochloropropane 2,4-D Endrin Ethylene Dibromide Heptachlor Heptachlor epoxide Lindane Methoxychlor Polychlorinated biphenyls Pentachlorophenol Toxaphene 2,4,5-TP (Silvex) | Group 2 Chemicals | Community and Nontransient Noncommunity serving 3,300 or more persons ³ | Quarterly sample per source, for one year ⁵ | Quarterly | One sample every eighteen months per source ^{6,7,8} |
| | Aldrin | Community and Nontransient Noncommunity serving fewer than 3,300 persons and more than 149 service connections | Quarterly samples per entry point, for one year ^{6,7,8} | Quarterly | Once per entry point every three years ^{6,7,8} |
| | Benzo(a)pyrene | | | | |
| | Butachlor | | | | |
| | Carbaryl | | | | |
| | Dalapon | | | | |
| | Di(2-ethylhexyl)adipate | | | | |
| | Di(2-ethylhexyl)phthalate | | | | |
| | Dicamba | | | | |
| | Dieldrin | | | | |
| | Dinoseb | | | | |
| | Diquat | | | | |
| | Endothall | | | | |
| | Glyphosate | | | | |
| | Hexachlorobenzene | | | | |
| Hexachlorocyclopentadiene | Noncommunity excluding NTNC | State discretion ⁹ | State discretion ⁹ | State discretion ⁹ | |
| 3-Hydroxycarbofuran | | | | | |
| Methomyl | | | | | |
| Metolachlor | | | | | |
| Metribuzin | | | | | |
| Oxamyl (vydate) | | | | | |
| Picloram | | | | | |
| Propachlor | | | | | |
| Simazine | | | | | |
| 2,3,7,8-TCDD (Dioxin) | | | | | |

Table 9C (continued)

¹The location for sampling of each ground water source of supply shall be between the individual well and at or before the first service connection and before mixing with other sources, unless otherwise specified by the State to be at the entry point representative of the individual well. Public water systems which take water from a surface water body or watercourse shall sample at points in the distribution system representative of each source or at entry point or points to the distribution system after any water treatment plant.

²The State may decrease the quarterly monitoring requirement to annually provided that system is reliably and consistently below the MCL based on a minimum of two quarterly samples from a ground water source and four quarterly samples from a surface water source. Systems which monitor annually must monitor during the quarter that previously yielded the highest analytical result. Systems serving fewer than 3,300 persons and which have three consecutive annual samples without detection may apply to the State for a waiver in accordance with footnote 6.

³If a contaminant is detected, repeat analysis must include all analytes contained in the approved analytical method for the detected contaminant.

⁴Detected as used in the table shall be defined as reported by the State approved laboratory to be greater than or equal to the method detection levels. ⁵The State may allow a system to postpone monitoring for a maximum of two years, if an approved laboratory is not reasonably available to do a required analysis within the scheduled monitoring period.

⁶The State may waive the monitoring requirement for a public water system that submits information every three years to demonstrate that a contaminant or contaminants was not used, transported, stored or disposed within the watershed or zone of influence of the system.

⁷The State may reduce the monitoring requirement for a public water system that submits information every three years to demonstrate that the public water system is invulnerable to contamination. If previous use of the contaminant is unknown or it has been used previously, then the following factors shall be used to determine whether a waiver is granted.

- a. Previous analytical results.
- b. The proximity of the system to a potential point or nonpoint source of contamination. Point sources include spills and leaks of chemicals at or near a water treatment facility or at manufacturing, distribution, or storage facilities, or from hazardous and municipal waste landfills and other waste handling or treatment facilities. Nonpoint sources include the use of pesticides to control insect and weed pests on agricultural areas, forest lands, home and gardens, and other land application uses.
- c. The environmental persistence and transport of the pesticide or PCBs.
- d. How well the water source is protected against contamination due to such factors as depth of the well and the type of soil and the integrity of the well casing. e. Elevated nitrate levels at the water supply source.
- f. Use of PCBs in equipment used in production, storage or distribution of water.

⁸The State may allow systems to composite samples in accordance with the conditions in Appendix 5-C of this Title.

⁹State discretion shall mean requiring monitoring when the State has reason to believe the MCL has been violated, the potential exists for an MCL violation or the contaminant may present a risk to public health.

Table 10. Turbidity Minimum Monitoring Requirements for Unfiltered Systems Pending Filtration¹

| Contaminant | Type of water system | Source Type | |
|------------------------------|----------------------|-------------------------------|---|
| | | Ground water only | Surface only, surface and ground water, or ground water directly influenced by surface water |
| Entry point turbidity | Community | State discretion ² | Collect and analyze one sample per day from each entry point. All results must be recorded to two significant figures. |
| | Noncommunity | State discretion ² | Collect and analyze one sample annually. Monitoring requirement may be increased at State discretion. ² |
| Distribution point turbidity | Community | State discretion ² | Five distribution samples each week unless otherwise determined by the State. No two samples may be obtained on the same day and no two samples are to be collected from the same distribution point during the week. |
| | Noncommunity | State discretion ² | State discretion ² |

¹The requirements of this table apply to unfiltered systems that the State has determined, in writing pursuant to section 5-1.30 of this Subpart, must install filtration. These requirements only apply until filtration is installed.

²State discretion shall mean requiring monitoring when the State has reason to believe the MCL has been violated, the potential exists for an MCL violation or the contaminant may present a risk to public health.

Table 13 - REQUIRED NOTIFICATIONS

| Contaminant/Situation (Subpart 5-1 citations) | Single sample exceeds MCL/MRDL¹ | MCL/MRDL/TT¹ violation | Failure to meet monitoring requirements and/or failure to use applicable testing procedure |
|--|---|--|---|
| Public Health Hazard (section 5-1.1(bw)) ² | Not applicable | State Tier 1 | State Tier 1 |
| <i>Escherichia coli</i> (<i>E. coli</i>) in distribution system (section 5-1.52, Tables 6, 11 and 11B) | ³ State Not applicable, or ⁴ Tier 1 | State Tier 1 | State ⁵ Tier 3, or Tier 1 |
| <i>E. coli</i> or other fecal indicator detected in ground water source at system not providing both 4-log virus treatment and process compliance monitoring (section 5-1.52, Tables 6, 11 and 11B) | ^{2, 3, 5, 6} Tier 1 | ⁶ Tier 1 | State ^{2, 5, 7} Tier 3, or Tier 1 |
| Total coliform in distribution system (section 5-1.52, Tables 6, 11 and 11B) | Not applicable | ⁸ State ⁹ Tier 2, or Tier 1 | State Tier 3, or Tier 2 as directed by State |
| Entry Point Turbidity monthly average (section 5-1.52, Tables 4 and 10) | ¹⁰ State | State Tier 2 | State Tier 3 |
| Entry Point Turbidity two day average (section 5-1.52, Tables 4 and 10) | State | State ¹¹ Tier 2, or Tier 1 | State Tier 3 |
| Raw Water Turbidity (section 5-1.30(d) and section 5-1.52, Table 10A) | State | State ¹¹ Tier 2, or Tier 1 | State Tier 3 |
| Filtered Water Turbidity Single exceedance of the maximum allowable Turbidity level (section 5-1.52, Tables 4A and 10A) | State | State ¹¹ Tier 2, or Tier 1 | State Tier 3 |
| Filtered Water Turbidity Treatment Technique violation (section 5-1.52, Tables 4A and 10A) | Not applicable | State Tier 2 | State Tier 3 |

Table 13 (cont.)

| Contaminant/Situation (Subpart 5-1 citations) | Single sample exceeds MCL/MRDL¹ | MCL/MRDL/TT¹ violation | Failure to meet monitoring requirements and/or failure to use applicable testing procedure |
|--|---|--|---|
| Distribution Point Turbidity (section 5-1.52, Tables 5, 10 and 10A) | Not applicable | State Tier 2 | State Tier 3 |
| ^{12, 13} Treatment Technique violations other than turbidity (sections 5-1.12, 5-1.30, 5-1.32, 51.81, and 5-1.83 and section 5-1.71(d)) | Not applicable | State ^{2, 13} Tier 2, or Tier 1 | State ^{12, 13} Tier 3, or Tier 2 |
| ¹⁴ Free chlorine residual less than 0.2 mg/L at the entry point (section 5-1.30(d)) | Not applicable | State | Not applicable |
| ¹⁵ Free chlorine residual less than required minimum for a ground water system or ground water source required to provide 4-log virus treatment (section 5- 1.30(a)) | Not applicable | State ⁹ Tier 2, or Tier 1 | Tier 2 |
| Inorganic chemicals and physical characteristics listed in Tables 8A and 8B (section 5-1.52, Tables 1, 8A, and 8B) | State | State Tier 2 | State Tier 3 |
| Chloride, iron, manganese, silver, sulfate, and zinc (section 5-1.52, Tables 1 and 8D) | Not applicable | State Tier 3 | State Tier 3 |
| Sodium (section 5-1.52, Tables 1 and 8D) | State if the level exceeds 20 mg/L | Tier 2 if the level exceeds 270 mg/L | Tier 3 |
| Nitrate, Nitrite, Total Nitrate and Nitrite (section 5-1.52, Tables 2 and 8C) | State | State Tier 1 | State ¹⁶ Tier 1, or Tier 3 |
| Lead and Copper (sections 5-1.40 to 1.48) | Not applicable | State Tier 2 | State Tier 3 |
| Organic Chemicals Group 1 and 2 (section 5-1.52, Table 9C) | State | State Tier 2 | State Tier 3 |

Table 13 (cont.)

| Contaminant/Situation (Subpart 5-1 citations) | Single sample exceeds MCL/MRDL1 | MCL/MRDL/TT¹ violation | Failure to meet monitoring requirements and/or failure to use applicable testing procedure |
|--|--|--|---|
| Principal Organic Contaminants Unspecified Organic Contaminants Total POCs and UOCs (section 5-1.52, Tables 3, 9B and 9D) | State | State Tier 2 | State Tier 3 |
| Radiological Contaminants (section 5-1.52, Tables 7 and 12) | State | State Tier 2 | State Tier 3 |
| Monitoring and Control of Disinfection Byproduct Precursors (sections 5-1.60 to 5-1.64) | Not applicable | State Tier 2 | State Tier 3 |
| Disinfectant residuals Chlorine and Chloramine (section 5-1.52, Tables 3A and 15A) | State | State Tier 2 | State Tier 3 |
| Disinfectant residual Chlorine dioxide at entry point (section 5-1.52, Tables 3A, 15 and 15A) | State | State Tier 2 | State ¹⁷ Tier 3, or Tier 2 |
| Disinfectant residual Chlorine dioxide in distribution system (section 5-1.52, Tables 3A, 15 and 15A) | State | State ¹⁸ Tier 1 | State ¹⁸ Tier 1 |
| Disinfection byproducts Trihalomethanes Haloacetic acids (section 5-1.52, Tables 3 and 9A) and Bromate and Chlorite (section 5-1.52, Tables 1 and 8B) | Not applicable | State Tier 2 | State Tier 3 |

Table 13 (cont.)

| Contaminant/Situation (Subpart 5-1 citations) | Single sample exceeds MCL/MRDL¹ | MCL/MRDL/TT¹ violation | Failure to meet monitoring requirements and/or failure to use applicable testing procedure |
|---|---|--|---|
| Acrylamide and Epichlorohydrin (section 5-1.51(m)) | Not applicable | State Tier 2 | Not applicable |
| Operation under a variance or exemption (sections 5-1.90 to 5-1.96) | Not applicable | Tier 3 | Not applicable |
| Violation of conditions of a variance or exemption (sections 5-1.90 to 5-1.96) | Not applicable | State Tier 2 | Not applicable |
| Disruption of water service of four hours or more (section 5-1.23(b)) | Not applicable | ¹⁹ State | Not applicable |

¹MCL-maximum contaminant level, MRDL-maximum residual disinfectant level, TT-treatment technique

²Community systems must describe in their annual water supply statement (section 5-1.72(e)), prepared in accordance with section 5-1.72(f), any Public Health Hazard that is determined to be a violation, or any uncorrected significant deficiency, and indicate whether corrective action is completed. This notice must be repeated every year until the annual report documents that corrective action is completed in accordance with section 5-1.22 of this Subpart.

³State notification must be made by the supplier of water within 24 hours of learning of an *E. coli* positive sample.

⁴Public notification normally does not have to be issued for an *E. coli* positive sample prior to the results of the repeat samples. However, there may be situations where the State determines that a Tier 1 notification is necessary to protect the public health. The supplier of water must provide the Tier 1 notification no later than 24 hours after learning of the State's determination.

⁵Failure to test for *E. coli* requires a Tier 1 notification if testing is not done after any repeat sample tests positive for coliform. All other *E. coli* monitoring and testing procedure violations require Tier 3 notification.

⁶At a ground water system, Tier 1 notification is required after initial detection of *E. coli* or other fecal indicator in raw source water, if system does not provide 4-log virus treatment and process compliance monitoring. Confirmation of *E. coli* or other fecal indicator in the source water requires Tier 1 notification. Failure to take confirmatory samples may be a public health hazard requiring Tier 1 notification.

⁷Notice of the fecal indicator positive raw water sample must be made in the annual water supply statement (section 5-1.72(e)), until the annual report documents that corrective action is completed.

⁸State notification must be made by the supplier of water within 24 hours of learning of the violation.

Table 13 (cont.)

⁹Tier 2 notification is normally required, however, there may be situations where the State determines that a Tier 1 notification is necessary to protect the public health. The supplier of water must provide the Tier 1 notification no later than 24 hours after learning of the State's determination.

¹⁰If the daily entry point analysis exceeds one NTU, a repeat sample must be taken as soon as practicable and preferably within one hour. If the repeat sample exceeds one NTU, the supplier of water must make state notification.

¹¹Systems must consult with the State within 24 hours after learning of the violation. Based on this consultation, the State may subsequently decide to elevate the violation from a Tier 2 to a Tier 1 notification. If consultation does not take place within the 24-hour period, the water system must distribute a Tier 1 notification no later than 48 hours after the system learns of the violation.

¹²These violations include the following: failure to comply with the treatment technique or monitoring requirements in section 5-1.30(a), (b), (c), and (g) of this Subpart; failure to comply with the avoidance criteria in section 5-1.30(c) of this Subpart; failure to cover a finished water storage facility or treat its discharge required in section 5-1.32 of this Subpart; failure to report to the state information required in section 5-1.72(c)(3) of this Subpart; failure to maintain records required in section 5-1.72(c)(7) of this Subpart; failure to meet the bin classification requirements for filtered systems associated with Cryptosporidium in section 5-1.83(a); failure to meet the treatment technique requirements for filtered systems associated with Cryptosporidium in section 5-1.83(b); and failure to meet the treatment technique requirements for unfiltered systems associated with Cryptosporidium in section 5-1.83(c). Failure to collect three or more samples for Cryptosporidium analysis as required in section 5-1.81 of this Subpart is a Tier 2 violation requiring public notification; failure to perform all other monitoring and testing procedures as required in section 5-1.81 of this Subpart are Tier 3 violations.

¹³Any significant deficiency that is not corrected or where correction has not begun according to a State-approved corrective action plan within 120 days, or as directed by the State, is a treatment technique violation and must be addressed in accordance with the requirements in section 5-1.12. If the deficiency is a public health hazard, the deficiency must be addressed as directed by the State and Tier 1 notification is required.

¹⁴Applies to systems that have surface water or ground water directly influenced by surface water as a source and use chlorine. The system must make State notification whether the residual was restored to at least 0.2 mg/L within four hours.

¹⁵Required minimum chlorine residual at point that demonstrates adequate CT for disinfected water from ground water sources at first customer.

¹⁶Failure to take a confirmation sample within 24 hours for nitrate or nitrite after an initial sample exceeds the MCL requires a Tier 1 notification. Other monitoring violations for nitrate or nitrite require a Tier 3 notification.

¹⁷Failure to monitor for chlorine dioxide at the entrance to the distribution system the day after exceeding the MRDL at the entrance to the distribution system requires a Tier 2 notification. Other monitoring violations for chlorine dioxide at the entrance to the distribution system require a Tier 3 notification.

¹⁸If any daily sample taken at the entrance to the distribution system exceeds the MRDL for chlorine dioxide and one or more samples taken in the distribution system the next day exceed the MRDL, Tier 1 notification is required. Failure to take the required samples in the distribution system the day after the MRDL is exceeded at the entry point also triggers Tier 1 notification.

¹⁹Tier 1 notification is required if the situation meets the definition of a public health hazard.

Table 14H. CT Values (CT_{99.9}) for 99.9 Percent Inactivation of *Giardia Lamblia* Cysts by Chloramines¹

| Water Temperature, in Degrees Celsius | | | | | |
|---------------------------------------|-------|-------|-------|-------|-----|
| <1 | 5 | 10 | 15 | 20 | 25 |
| 3,800 | 2,200 | 1,850 | 1,500 | 1,100 | 750 |

¹These values are for pH values of 6 to 9. These CT values may be assumed to achieve greater than 99.99 percent inactivation of viruses only if chlorine is added and mixed in the water prior to the addition of ammonia. If this condition is not met, the system must demonstrate, based on on-site studies or other information, as approved by the State, that the system is achieving at least 99.99 percent inactivation of viruses. CT values between the indicated temperatures may be determined by linear interpolation. If no interpolation is used, use the CT_{99.9} value at the lower temperature for determining CT_{99.9} values between indicated temperatures.

Table 14I. CT Values (mg·min/L) for *Cryptosporidium* Inactivation by Chlorine Dioxide¹

| Log Credit | Water Temperature, in Degrees Celsius | | | | | | | | | | |
|------------|---------------------------------------|------|------|------|------|------|-----|-----|-----|-----|-----|
| | <=0.5 | 1 | 2 | 3 | 5 | 7 | 10 | 15 | 20 | 25 | 30 |
| 0.25 | 159 | 153 | 140 | 128 | 107 | 90 | 69 | 45 | 29 | 19 | 12 |
| 0.5 | 319 | 305 | 279 | 256 | 214 | 180 | 138 | 89 | 58 | 38 | 24 |
| 1.0 | 637 | 610 | 558 | 511 | 429 | 360 | 277 | 179 | 116 | 75 | 49 |
| 1.5 | 956 | 915 | 838 | 767 | 643 | 539 | 415 | 268 | 174 | 113 | 73 |
| 2.0 | 1275 | 1220 | 1117 | 1023 | 858 | 719 | 553 | 357 | 232 | 150 | 98 |
| 2.5 | 1594 | 1525 | 1396 | 1278 | 1072 | 899 | 691 | 447 | 289 | 188 | 122 |
| 3.0 | 1912 | 1830 | 1675 | 1534 | 1286 | 1079 | 830 | 536 | 347 | 226 | 147 |

¹Systems may use this equation to determine log credit between the indicated values:

$$\text{Log credit} = (0.001506 \times (1.09116)^{\text{Temp}}) \times \text{CT}.$$

Table 14J. CT Values (mg·min/L) for *Cryptosporidium* Inactivation by Ozone¹

| Log Credit | Water Temperature, in Degrees Celsius | | | | | | | | | | |
|------------|---------------------------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|
| | <=0.5 | 1 | 2 | 3 | 5 | 7 | 10 | 15 | 20 | 25 | 30 |
| 0.25 | 6.0 | 5.8 | 5.2 | 4.8 | 4.0 | 3.3 | 2.5 | 1.6 | 1.0 | 0.6 | 0.39 |
| 0.5 | 12 | 12 | 10 | 9.5 | 7.9 | 6.5 | 4.9 | 3.1 | 2.0 | 1.2 | 0.78 |
| 1.0 | 24 | 23 | 21 | 19 | 16 | 13 | 9.9 | 6.2 | 3.9 | 2.5 | 1.6 |
| 1.5 | 36 | 35 | 31 | 29 | 24 | 20 | 15 | 9.3 | 5.9 | 3.7 | 2.4 |
| 2.0 | 48 | 46 | 42 | 38 | 32 | 26 | 20 | 12 | 7.8 | 4.9 | 3.1 |
| 2.5 | 60 | 58 | 52 | 48 | 40 | 33 | 25 | 16 | 9.8 | 6.2 | 3.9 |
| 3.0 | 72 | 69 | 63 | 57 | 47 | 39 | 30 | 19 | 12 | 7.4 | 4.7 |

¹ Systems may use this equation to determine log credit between the indicated values:

$$\text{Log credit} = (0.0397 \times (1.09757)^{\text{Temp}}) \times \text{CT}.$$

Table 14K. UV Dose Table for *Cryptosporidium*, *Giardia lamblia*, and Virus Inactivation Credit^{1,2,3,4}

| Log Credit | <i>Cryptosporidium</i> UV dose (mJ/cm ²) | <i>Giardia lamblia</i> UV dose (mJ/cm ²) | Virus UV dose (mJ/cm ²) |
|------------|--|--|-------------------------------------|
| 0.5 | 1.6 | 1.5 | 39 |
| 1.0 | 2.5 | 2.1 | 58 |
| 1.5 | 3.9 | 3.0 | 79 |
| 2.0 | 5.8 | 5.2 | 100 |
| 2.5 | 8.5 | 7.7 | 121 |
| 3.0 | 12 | 11 | 143 |
| 3.5 | 15 | 15 | 163 |
| 4.0 | 22 | 22 | 186 |

¹Ultraviolet light. Systems receive *Cryptosporidium*, *Giardia lamblia*, and virus treatment credits for ultraviolet (UV) light reactors by achieving the corresponding UV dose values shown in this table. Systems must use validated UV reactors and monitor UV reactors as described in footnotes 3 and 4 of this table to demonstrate that they are achieving a particular UV dose value for treatment credit.

²UV dose table. The treatment credits listed in this table are for UV light at a wavelength of 254 nm as produced by a low pressure mercury vapor lamp. To receive treatment credit for other lamp types, systems must demonstrate an equivalent germicidal dose through reactor validation testing, as described in footnote 3 of this table. The UV dose values in this table are applicable only to unfiltered systems (either by filtration waiver or those that do not require filtration) and to post-filter applications of UV in filtered systems.

³Reactor validation testing. Systems must use UV reactors that have undergone validation testing to determine the operating conditions under which the reactor delivers the UV dose required in footnote 2 of this table (*i.e.*, validated operating conditions). These operating conditions must include flow rate, UV intensity as measured by a UV sensor, and UV lamp status.

- When determining validated operating conditions, systems must account for the following factors: UV absorbance of the water; lamp fouling and aging; measurement uncertainty of on-line sensors; UV dose distributions arising from the velocity profiles through the reactor; failure of UV lamps or other critical system components; and inlet and outlet piping or channel configurations of the UV reactor.
- Validation testing must include full scale testing of a reactor that conforms uniformly to the UV reactors used by the system and inactivation of a test microorganism whose dose response characteristics have been quantified with a low pressure mercury vapor lamp. The State may approve an alternative approach to validation testing.

⁴Reactor monitoring.

- To receive treatment credit for UV light, systems must treat at least 95 percent of the water delivered to the public during each month by UV reactors operating within validated conditions for the required UV dose, as described in footnotes 2 and 3 of this table. Systems must demonstrate compliance with this condition by monitoring UV intensity as measured by a UV sensor, flow rate, lamp status, and other parameters designated by the State.

The Title for sections 5-1.60 through 5-1.65 is amended to read as follows:

Monitoring and Control of Disinfection Byproducts and Disinfection Byproduct
Precursors

Section 5-1.60 is amended to read as follows:

5-1.60 Applicability.

Surface water systems or systems using [groundwater] ground water under the direct influence of surface water that are community or nontransient noncommunity water systems, serve 15 or more service connections or serve 25 or more persons, and use conventional filtration treatment [must] shall operate with enhanced coagulation to achieve the total organic carbon (TOC) percent removal levels specified in section 5-1.63 of this Subpart, unless the system meets the alternative compliance criteria described in section 5-1.62 of this Subpart. [Systems serving 10,000 or more people must comply with this requirement beginning January 1, 2002. Systems serving fewer than 10,000 people must comply with this requirement beginning January 1, 2004.]

Section 5-1.61 is repealed and a new section is adopted to read as follows:

5-1.61 Monitoring requirements for disinfection byproduct precursors.

Monitoring for Disinfection byproduct precursors shall be in accordance with the following table.

| Monitoring Requirements for Disinfection Byproduct Precursors | | | | | | | |
|--|--------------------|-----------------|---------------------------------------|-------------------------|------------------------|---|----------------------------------|
| Source Type | System Type | Filtration Type | Sampling location at each plant | Routine | | Reduced ¹ | |
| | | | | Monitoring requirements | Frequency ² | Running annual average TOC results | Frequency |
| Surface water and GWUDI | Community and NTNC | Conventional | Combined Filter effluent ³ | TOC ⁴ | Monthly | <2.0 mg/L for two consecutive years or <1.0 mg/L for one year | 1 TOC (paired) per plant/quarter |
| | | | Raw | TOC ⁴ | Monthly | | |
| | | | | Alkalinity | Monthly | | |
| | | All other types | Raw | TOC | Monthly | ≤4.0 mg/L | 1 TOC quarterly |

¹Routine monitoring shall begin in the month following the quarter when the running annual average TOC is ≥2.0 mg/L for systems using conventional filtration and >4.0 mg/L for systems using all other types of filtration

² TOC monitoring for disinfection precursors for both treated and source water shall be collected at the same time. These samples (source water and treated water) are referred to as paired samples

³Samples collected for TOC shall be collected no further downstream than point of combined filter effluent turbidity monitoring and representative of treated water.

⁴Systems shall take one paired TOC sample and one source water alkalinity sample per month per plant at a time representative of normal operating conditions and influent water quality. The alkalinity sample shall be collected at the same time as the source water TOC sample.

Section 5-1.62 is repealed and a new section is adopted to read as follows:

5-1.62 Alternative compliance criteria for enhanced coagulation.

Systems may use one of the following alternative compliance criteria instead of enhanced coagulation. Systems using the alternative compliance criteria shall still comply with the monitoring requirements stated in section 5-1.61 of this Subpart.

| Water Type | Parameter | Concentration | Calculation Frequency |
|---|------------------------------------|-------------------|-----------------------|
| Source water | TOC | ≤ 2.0 mg/L | Quarterly RAA |
| Treated water | TOC | ≤ 2.0 mg/L | Quarterly RAA |
| Source water ^{1,2} | SUVA | ≤ 2.0 L/mg-m | Quarterly RAA |
| Treated water ² | SUVA | ≤ 2.0 L/mg-m | Quarterly RAA |
| Source water | TOC | < 4.0 mg/L | Quarterly RAA |
| | Alkalinity (as CaCO ₃) | > 60 mg/L | Quarterly RAA |
| | TTHM | ≤ 0.040 mg/L | LRAA of all sites |
| | HAA5 | ≤ 0.030 mg/L | LRAA of all sites |
| Treated water in the distribution system ³ | TTHM | ≤ 0.040 mg/L | LRAA of all sites |
| | HAA5 | ≤ 0.030 mg/L | LRAA of all sites |

¹Prior to any treatment

²Measured monthly

³System uses only chlorine for primary disinfection and maintains a residual in the distribution system.

A new section 5-1.64 is added to read as follows:

5-1.64 Operational Evaluation Levels.

(a) If a system exceeds the operational evaluation level at any monitoring location when the sum of the two previous quarters' TTHM results plus twice the current quarter's TTHM result, divided by 4 to determine the average, exceeds 0.080 mg/L, or when the sum of the two previous quarters' HAA5 results plus twice the current quarter's HAA5 result, divided by 4 to determine the average, exceeds 0.060 mg/L.

(b) If a system exceeds the operational evaluation level, it shall conduct an operational evaluation and submit a written report of the evaluation to the State no later than 90 days after being notified of the analytical result that caused the exceedance of the operational evaluation level. The written report shall be made available to the public upon request.

(c) The operational evaluation shall include an examination of the operational practices for system treatment(s) and the distribution system, including storage tank operations, excess storage capacity, distribution system flushing, changes in sources or source water quality, and treatment changes or problems that may contribute to TTHM and HAA5 formation and what steps could be considered to minimize future exceedances.

(1) A system may request, and the State may allow, limiting the scope of the evaluation if the system is able to identify the cause of the operational evaluation level exceedance.

(2) The request to limit the scope of the evaluation does not extend the schedule in subdivision (b) of this section for submitting the written report. The State shall approve this

limited scope of evaluation in writing, and the system shall keep that approval with the completed report.

A new section 5-1.65 is added to read as follows:

5-1.65 Best Available Technologies (BATs) for Disinfection Byproduct Control

The following is a table of the best available technology, treatment techniques, or other means available for achieving compliance with the maximum contaminant levels for Bromate, Chlorite, TTHM and HAA5, for public water systems that disinfect their source water.

| Water system type | Source type | Disinfection byproduct | Best available technology¹ |
|---|--------------------|--|--|
| All systems that disinfect their source water | GW; SW; GWUDI | Bromate | Control of ozone treatment process to reduce production of bromate |
| | | Chlorite | Control of treatment processes to reduce disinfectant demand and control of disinfection treatment processes to reduce disinfectant levels |
| All systems that disinfect their source water | GW; SW; GWUDI | Total trihalomethanes (TTHM); Haloacetic acids (five) (HAA5) | Enhanced coagulation or enhanced softening, plus GAC10; or nanofiltration with a molecular weight cutoff ≤ 1000 Daltons; or GAC20 |
| Consecutive systems: applies only to the disinfected water that consecutive | GW; SW; GWUDI | Total trihalomethanes (TTHM); Haloacetic acids (five) (HAA5) | Systems serving $\geq 10,000$: Improved distribution system and storage tank management to reduce residence time, plus the use of chloramines for disinfectant residual maintenance |

| | | | |
|----------------------------------|--|--|---|
| systems buy or otherwise receive | | | Systems serving <10,000: Improved distribution system and storage tank management to reduce residence time |
|----------------------------------|--|--|---|

¹ Softening that results in removing at least 10 mg/L of magnesium hardness (as CaCO₃), measured monthly and calculated quarterly as a running annual average can be the best available technology for controlling disinfection byproduct precursors.

New paragraphs (5) and (6) are added to subdivision (c) of section 5-1.72 to read as follows:

(5) Surface water systems and ground water systems under the direct influence of surface water that are required to provide enhanced filtration and disinfection for *Cryptosporidium*, shall report to the State in accordance with the treatment and/or management options used to comply with the treatment requirements under section 5-1.83(b) or (c) of this Subpart, as applicable. Alternatively, the State may approve a system to certify operation within required parameters for treatment credit, rather than reporting monthly operational data. The applicable treatment compliance dates are found in section 5-1.83(d) of this Subpart.

(i) For systems using the watershed control program option, notice of intention to develop a new or continue an existing watershed control program shall be submitted no later than two years before the treatment compliance date. The watershed control plan shall be submitted no later than one year before the treatment compliance date. The annual watershed control program status report shall be submitted every 12 months. For community water systems, the watershed sanitary survey report shall be submitted every

three years. For noncommunity water systems, the watershed sanitary survey report shall be submitted every five years.

(ii) For systems using the alternative source/intake management option, verification that the system has relocated the intake or adopted the intake withdrawal procedure, reflected in monitoring results, shall be submitted.

(iii) For systems using the presedimentation option, monthly verification of the following shall be submitted within 10 days after the month in which the monitoring was conducted: continuous basin operation; treatment of 100 percent of the flow; continuous addition of coagulant; and at least 0.5-log mean reduction of influent turbidity or compliance with alternative State-approved compliance criteria.

(iv) For systems using the two-stage lime softening option, monthly verification of the following shall be submitted within 10 days after the month in which the monitoring was conducted: chemical addition and hardness precipitation occurred in two separate and sequential softening stages prior to filtration; and both stages treated 100 percent of the plant flow.

(v) For systems using the bank filtration option, initial demonstration of the following shall be submitted no later than treatment compliance date: aquifer shall be unconsolidated sand containing at least 10 percent fines; and setback distance of at least 25 feet (0.5-log credit) or 50 feet (1.0-log credit). If the monthly average of daily maximum turbidity is greater than 1 NTU, then the system shall report the result and

submit an assessment of the cause within 30 days after the month in which the monitoring was conducted, beginning on the applicable treatment compliance date.

(vi) For systems using the combined filter performance option, monthly verification of the following shall be submitted within 10 days following the month in which the monitoring was conducted: combined filter effluent (CFE) turbidity levels less than or equal to 0.15 NTU in at least 95 percent of the four-hour CFE measurements taken each month.

(vii) For systems using the individual filter performance option, monthly verification of the following shall be submitted within 10 days following the month in which the monitoring was conducted: individual filter effluent (IFE) turbidity levels less than or equal to 0.15 NTU in at least 95 percent of sample each month in each filter; and no individual filter greater than 0.3 NTU in two consecutive readings 15 minutes apart.

(viii) For systems using the demonstration of performance option, the results from testing following a State-approved protocol shall be submitted no later than the treatment compliance date. Monthly verification of operation within the conditions of State approval for demonstration of performance credit, may be required to be submitted within 10 days after the month in which the monitoring was conducted, beginning on the applicable treatment compliance date.

(ix) For systems using the bag filter and cartridge filter option, demonstration that the following criteria are met shall be submitted no later than the treatment compliance date: the process meets the definition of bag or cartridge filtration; and the removal efficiency

established through challenge testing that meets criteria approved by the State. Monthly verification that 100 percent of the plant flow was filtered shall be submitted within 10 days after the month in which monitoring was conducted, beginning on the applicable treatment compliance date.

(x) For systems using the membrane filtration option, results of verification testing demonstrating the following shall be submitted no later than the treatment compliance date: removal efficiency established through challenge testing that meets criteria approved by the State; and integrity test method and parameters, including resolution, sensitivity, test frequency, control limits, and associated baseline. A monthly report summarizing the following shall be submitted within 10 days after the month in which monitoring was conducted: all direct integrity tests above the control limit; and, if applicable, any turbidity or alternative State-approved indirect integrity monitoring results triggering direct integrity testing and the corrective action that was taken.

(xi) For systems using the second stage filtration option, monthly verification that 100 percent of flow was filtered through both stages, and that the first stage was preceded by a coagulation step, shall be submitted within 10 days after the month in which monitoring was conducted.

(xii) For systems using the slow sand filtration (as secondary filter) option, monthly verification that both a slow sand filter and a preceding separate stage of filtration treated 100 percent of surface water flow shall be submitted within 10 days after the month in which monitoring was conducted.

(xiii) For systems using the chlorine dioxide option, a summary of CT values for each day shall be submitted within 10 days after the month in which monitoring was conducted.

(xiv) For systems using the ozone option, a summary of CT values for each day shall be submitted within 10 days after the month in which monitoring was conducted.

(xv) For systems using the UV option, validation test results demonstrating operating conditions that achieve the required UV dose shall be submitted no later than the treatment compliance date. A monthly report, summarizing the percentage of water entering the distribution system that was not treated by UV reactors operating within validated conditions for the required dose shall be submitted within 10 days after the month in which monitoring was conducted.

(6) Within 10 days of the end of any quarter in which monitoring of disinfection byproducts (DBP) and/or disinfection byproduct precursors (DBPP) is required under section 5-1.52 Table 9A and/or sections 5-1.60 and 5-1.61, the following must be reported to the State:

(i) Number of DBP and DBPP samples taken during the quarter.

(ii) Date and results of each DBP and DBPP sample taken during the last quarter.

(iii) The arithmetic average of DBP quarterly results for the last four quarters for each monitoring location (LRAA). If the LRAA calculated based on fewer than four quarters of data would cause the MCL to be exceeded regardless of the monitoring results of subsequent quarters, the system must report this information to the State as part of the first report due following the end of the quarter or anytime thereafter that this determination is made. If the system is required to conduct monitoring at a frequency that is less than quarterly, the system

must make compliance calculations beginning with the first compliance sample unless the system is required to conduct increased monitoring under section 5-1.52 Table 9A or 5-1.51.

(iv) Whether the MCL for Total Trihalomethanes (TTHM) and/or Halo Acetic Acids (5) (HAA5) was violated at any monitoring location.

(v) Any operational evaluation levels that were exceeded during the quarter and, if so, the location and date, and the calculated TTHM and HAA5 levels.

(vi) If the system is a surface water system or a system using a source of ground water under the direct influence of surface water, and seeking to qualify for or remain on reduced TTHM/HAA5 monitoring, source water Total Organic Carbon (TOC) information must be reported for each treatment plant that treats surface water or ground water under the direct influence of surface water, as follows:

(a) The number of source water TOC samples taken each month during last quarter.

(b) The date and result of each TOC sample taken during last quarter.

(c) The quarterly average of monthly TOC samples taken during the last quarter.

(d) The running annual average (RAA) of quarterly TOC averages from the past four quarters.

(e) Whether the TOC RAA exceeded 4.0 mg/L.

A new paragraph (8) of subdivision (d) of section 5-1.72 is added to read as follows:

(8) For surface water systems and ground water systems under the direct influence of surface water, the following records shall be maintained:

(i) Systems shall keep results from the initial round of source water monitoring under section 5-1.81(a)(1) of this Subpart and the second round of source water monitoring

under section 5-1.81(a)(2) of this Subpart until three years after bin classification under section 5-1.83(a) of this Subpart for filtered systems, or determination of the mean *Cryptosporidium* level under section 5-1.83(c) of this Subpart for unfiltered systems for the particular round of monitoring.

(ii) Systems shall keep any notification to the State that they will not conduct source water monitoring due to meeting the criteria of section 5-1.81(a)(4) of this Subpart for three years.

(iii) Systems shall keep the results of treatment monitoring associated with *Cryptosporidium* and with uncovered finished water storage facilities under section 5-1.32 of this Subpart for three years.

Paragraph (5) of subdivision (f) of section 5-1.72 is amended to read as follows:

(5) Information on detected contaminants from sampling used to determine compliance. For the purpose of this subdivision (except *Cryptosporidium*, *Giardia*, and radon monitoring), *detected* means: at or above the contaminant's [minimum] method detection limit (MDL), as [specified in Appendix 5-C of this Subpart] defined in section 5-1.1(bi), or as prescribed by the State. Any contaminants specified in sections 5-1.41 (lead and copper) and 5-1.51 of this Subpart and section 5-1.52 Tables 8A, 8B, 8C, 8D, 9A, 9B, 9C, 9D, 10, 10A, 11, 11A, 11B, 12, 16 and 17 of this Subpart that are detected during compliance monitoring [must] shall be displayed in one table or in several adjacent tables. Additionally, the report shall include detected monitoring results for samples collected and analyzed by the State and/or detected monitoring results of additional

samples required by the State. If a system is allowed to monitor for specific contaminants less often than once a year, the table [must] shall include the date and results of the most recent sampling and the report [must] shall include a brief statement indicating that the data presented in the report are from the most recent testing done in accordance with the regulations. No data older than five years need be included. For the contaminants listed in section 5-1.52 Tables 8A, 8B, 8C, 8D, 9A, 9B, 9C, 9D, 10, 10A, 11, 11B, 12, 16 and 17 of this Subpart the table(s) [must] shall contain:

* * *

Clause (c) of subparagraph (iv) of paragraph (5) of subdivision (f) of section 5-1.72 is amended to read as follows:

(c) when compliance with the MCL is determined by calculating a running annual average of all samples taken at a [sampling point] monitoring location: the highest average of any of the [sampling points] monitoring locations used to determine compliance and the range of all sampling points expressed in the same units as the MCL; and]. For the MCLs for TTHM and HAA5, systems shall include the highest locational running annual average for TTHM and HAA5 and the range of individual sample results for all monitoring locations expressed in the same units as the MCL. If more than one location exceeds the TTHM or HAA5 MCL, the system shall include the locational running annual averages for all locations that exceed the MCL; and

* * *

Subparagraph (iii) of paragraph (9) of subdivision (f) of section 5-1.72 is amended to read as follows:

(iii) lead and copper control requirements. The report [must] shall include health effects language [prescribed by the state] specified in 40 CFR 141.54(d) for lead, copper, or both, for systems which fail to take one or more actions prescribed by sections 5-1.40[-5-1.49] through 5-1.48 of this Subpart;

Section 5-1.73 is amended to read as follows:

5-1.73 Water treatment plant laboratory.

Every supplier of water shall provide, or have available environmental laboratory facilities approved by [ELAP] the New York State Environmental Laboratory Approval Program (ELAP). Tests for the control of the operation of such public water system shall be made daily or more frequently as required by the State. The results of such tests shall be recorded on forms pursuant to section 5-1.72(d) of this Subpart.

Section 5-1.74 is repealed and new section 5-1.74 is added to read as follows:

5-1.74 Approved laboratories.

(a) For determining compliance with this Subpart, results of analyses, except for parameters listed in section 5-1.74(b), may be considered only if they have been performed by an environmental laboratory approved in accordance with Subpart 55-2 of this Title (10 NYCRR Part 55, Subpart 55-2).

(b) Measurements for pH, temperature, conductivity, turbidity, disinfectant residual, alkalinity, calcium, orthophosphate, bromide, chlorite, total organic carbon (TOC) concentration, dissolved organic carbon concentration, ultraviolet (UV) absorption, and silica may be performed by any person with a demonstrated ability to perform these analyses. These analyses shall be conducted in accordance with 40 CFR Part 141. All necessary documentation required by the approved methods shall be retained by the water system conducting the analyses for a period of ten years.

(c) The owner of a water system shall ensure the approved environmental laboratory performing the analyses sends laboratory results to the department in a manner prescribed by the department.

New subparagraphs (iv) and (v) are added to paragraph (4) of subdivision (b) of section 5-1.78 to read as follows:

(iv) Standard language for repeated failure to conduct *Cryptosporidium* monitoring: We are required to monitor the source of your drinking water for *Cryptosporidium*. Results of the monitoring are to be used to determine whether water treatment at the (treatment plant name) is sufficient to adequately remove *Cryptosporidium* from your drinking water. We are required to complete this monitoring and make this determination by (required bin determination date). We “did not monitor or test” or “did not complete all monitoring or testing” on schedule, and therefore, we may not be able to determine by the required date what treatment modifications, if

any, shall be made to ensure adequate *Cryptosporidium* removal. Missing this deadline may, in turn, jeopardize our ability to have the required treatment modifications, if any, completed by the deadline required, (date). For more information, please call (name of water system contact) of (name of water system) at (phone number).

(v) Standard language for failure to determine bin classification or mean *Cryptosporidium* level:

We are required to monitor the source of your drinking water for *Cryptosporidium* in order to determine by (date) whether water treatment at the (treatment plant name) is sufficient to adequately remove *Cryptosporidium* from your drinking water. We have not made this determination by the required date. Our failure to do this may jeopardize our ability to have the required treatment modifications, if any, completed by the required deadline of (date). For more information, please call (name of water system contact) of (name of water system) at (phone number).

Subdivision (c) of section 5-1.78 is amended to read as follows:

(c) Tier 1 notification requirements (public health hazards, as defined in section 5-1.1 [(bc)] (bw) of this Subpart, require Tier 1 notification). The supplier of water [must] shall:

* * *

Paragraphs (3), (4), and (5) of subdivision (d) of section 5-1.78 are renumbered to be paragraphs (4), (5), and (3) and a new paragraph (6) is added to read as follows:

(6) For repeated failure to conduct *Cryptosporidium* monitoring, failure to determine bin classification, or failure to calculate mean *Cryptosporidium*, each notification shall also include a description of what the system is doing to correct the violation and when the system expects to return to compliance or resolve the situation.

A new section 5-1.80 is added to read as follows:

ENHANCED TREATMENT FOR *CRYPTOSPORIDIUM*

5-1.80: Applicability.

(a) The provisions of this section, and sections 5-1.81 through 5-1.83 apply to all public water systems supplied by a surface water source(s) or ground water source(s) directly influenced by surface water, provided the system serves 15 or more service connections or serves 25 or more persons. The requirements in this section for filtered systems apply to any system with a surface water or GWUDI source that is required to provide filtration, regardless of whether the system is currently operating a filtration system. All treatment must comply with the requirements of the Microbial Toolbox Components as described in 40 CFR 141.715 through 40 CFR 141.720. Any unfiltered systems that are in compliance with the filtration avoidance criteria in section 5-1.30(c) of this Subpart, are subject to the requirements in sections 5-1.80 through 5-1.83 pertaining to unfiltered systems. Wholesale system compliance with sections 5-1.81 through 5-1.83 is based on the population of the largest system in the combined distribution system. The above systems shall comply with the following requirements: (a) Systems shall conduct an initial and a second round of source water monitoring for each plant that treats water from a surface water source or ground water source directly influenced by surface water. This monitoring may include *Cryptosporidium*, *E. coli*, and turbidity, as described in

section 5-1.81(a) through (d) of this Subpart, to determine what level, if any, of additional *Cryptosporidium* treatment shall be provided. *Cryptosporidium* monitoring shall be done using an approved method. The following method modifications must also be followed:

(1) Samples must be at least 10 liters (L) or a packed pellet volume of at least 2 milliliters (mL) must be used. If a 10 L sample cannot be processed, as much sample volume as can be filtered by two filters, as described in 40 CFR 141.704(a)(1), must be processed, up to a packed pellet volume of at least 2 mL.

(2) The method-required matrix spike (MS) samples must be spiked and filtered by a laboratory certified for the method.

(3) If the volume of the MS is greater than 10 L, the volume greater than 10 L may be filtered in the field, and the filtered sample may be shipped with the 10 L sample to the laboratory where the 10 L sample is spiked and filtered through the filter that was used to collect the balance of the sample in the field.

(4) Flow cytometer-counted spiking suspensions must be used for MS samples and ongoing precision and recovery samples.

(b) Systems that plan to make a significant change to their disinfection practice shall develop disinfection profiles and calculate disinfection benchmarks, as described in section 5-1.82 of this Subpart.

(c) Filtered systems shall determine their *Cryptosporidium* treatment bin classification, as described in section 5-1.83(a) of this Subpart, and provide additional treatment for *Cryptosporidium*, if required, as described in section 5-1.83(b) of this Subpart. All unfiltered systems shall determine their mean *Cryptosporidium* level and provide

treatment for *Cryptosporidium* as described in section 5-1.83(c) of this Subpart. Systems shall implement *Cryptosporidium* treatment according to the schedule in section 5-1.83(d) of this Subpart.

A new section 5-1.81 is added to read as follows:

5-1.81: Source Water Monitoring Requirements at Systems using Surface Water and Ground Water under the Direct Influence of Surface Water (GWUDI) Sources.

(a) Source Water Monitoring.

(1) Initial round of source water monitoring. Systems shall conduct the following monitoring, based on the monitoring schedule prescribed in paragraph (3) of this subdivision, unless they meet the monitoring exemption criteria in paragraph (4) of this subdivision:

(i) Filtered systems serving at least 10,000 people shall sample their source water for *Cryptosporidium*, *E. coli*, and turbidity at least monthly for 24 months.

(ii) Unfiltered systems serving at least 10,000 people shall sample their source water for *Cryptosporidium* at least monthly for 24 months.

(iii) Filtered systems serving fewer than 10,000 people:

(a) shall sample their source water for *E. coli* and use an approved method to enumerate the presence of *E. coli* at least once every two weeks for 12 months;

(b) may avoid *E. coli* monitoring if the system notifies the State that it will monitor for *Cryptosporidium* as described in subparagraph (iv) of this paragraph. The system shall notify the state no later than three months prior to the date the system is otherwise required to start *E. coli* monitoring under paragraph (3) of this subdivision; and

(c) shall sample their source water for *Cryptosporidium* at least twice per month for 12 months, or at least monthly for 24 months, if, based on monitoring conducted under subparagraph (iii) of this paragraph, they meet one of the following criteria:

(1) the annual mean *E. coli* concentration is greater than 10 *E. coli*/ 100 mL; or

(2) the system does not conduct *E. coli* monitoring at least once every two weeks for 12 months.

(3) The State may approve an alternative to the *E. coli* concentration specified in subdivision (a)(1)(iii)(c)(1) of this section to trigger *Cryptosporidium* monitoring. This approval by the State will be provided to the system in writing and will include the basis for the State's determination that the alternative trigger concentration will provide a more accurate identification of whether a system will exceed the Bin 1 *Cryptosporidium* level specified in section 5-1.83(a)(2) of this Subpart.

(iv) Unfiltered systems serving fewer than 10,000 people shall sample their source water for *Cryptosporidium* at least twice per month for 12 months or at least monthly for 24 months.

(v) Systems may sample more frequently than required under this section if the sampling frequency is evenly spaced throughout the monitoring period.

(2) Second round of source water monitoring. Systems shall conduct a second round of source water monitoring that meets the requirements for monitoring parameters, frequency, and duration described in paragraph (1) of this subdivision, unless they meet the monitoring exemption criteria in paragraph (4) of this subdivision. Systems shall conduct this monitoring on the schedule in paragraph (3) of this subdivision.

(3) Monitoring schedule. Systems shall comply with the monitoring schedule prescribed in 40 CFR 141.701(c).

(4) Monitoring avoidance.

(i) Filtered systems are not required to conduct source water monitoring under this section if the system will provide a total of at least 5.5-log of treatment for *Cryptosporidium*, equivalent to meeting the treatment requirements of Bin 4 in section 5-1.83(b) of this Subpart.

(ii) Unfiltered systems are not required to conduct source water monitoring under this section if the system will provide a total of at least 3-log *Cryptosporidium* inactivation, equivalent to meeting the treatment requirements for unfiltered systems with a mean *Cryptosporidium* concentration of greater than 0.01 oocysts/L in section 5-1.83(c) of this Subpart.

(iii) If a system chooses to provide the level of treatment in subparagraph (i) or (ii) of this paragraph, as applicable, rather than start source water monitoring, the system shall notify the State in writing no later than the date the system is otherwise required to submit a sampling schedule for monitoring under subdivision (b) of this section. Alternatively, a

system may choose to stop sampling at any point after it has initiated monitoring if it notifies the State in writing that it will provide this level of treatment. Systems shall install and operate technologies to provide this level of treatment by the applicable treatment compliance date in section 5-1.83(d) of this Subpart.

(5) Plants operating only part of the year. Systems with surface water sources or ground water sources directly influenced by surface water and with plants that operate for only part of the year shall conduct source water monitoring in accordance with this section and section 5-1.80 of this Subpart, but with the following modifications:

(i) Systems shall sample their source water only during the months that the plant operates unless the State specifies another monitoring period based on plant operating practices.

(ii) Systems with plants that operate less than six months per year and that monitor for *Cryptosporidium* shall collect at least six *Cryptosporidium* samples per year during each of two years of monitoring. Samples shall be evenly spaced throughout the period the plant operates.

(6) New sources.

(i) A system that begins using a new source of surface water or ground water directly influenced by surface water after the system is required to begin monitoring under paragraph (3) of this subdivision shall monitor the new source on a schedule approved by the State. Source water monitoring shall meet the requirements of this section. The system also shall meet the bin classification of section 5-1.83(a) and *Cryptosporidium* treatment requirements of section 5-1.83(b) or 5-1.83(c) of this Subpart, as applicable, for the new source on a schedule approved by the State.

(ii) The requirements of this paragraph also apply to new systems that use surface water or ground water directly influenced by surface water, that begin operation after the monitoring start date applicable to the system's size under paragraph (3) of this subdivision.

(iii) The system shall begin a second round of source water monitoring no later than six years following initial bin classification or determination of the mean *Cryptosporidium* level, as applicable.

(b) Sampling Schedules.

(1) Systems required to conduct source water monitoring under this section shall submit a sampling schedule that specifies the calendar dates when the system will collect each required sample. Systems shall submit sampling schedules to the State no later than three months prior to any applicable date referenced in subdivision (a)(3) of this section. If the State does not respond to a system regarding its sampling schedule, the system shall sample at the reported schedule.

(2) Systems shall collect samples within two days before or two days after the dates indicated in their sampling schedule, unless one of the following conditions applies:

(i) If an extreme condition or situation exists that may pose danger to the sample collector, or that cannot be avoided and causes the system to be unable to sample in the scheduled five-day period, the system shall sample as close to the scheduled date as is feasible, unless the State approves an alternate sampling date. The system shall submit an

explanation for the delayed sampling date to the State concurrent with the shipment of the sample to the laboratory.

(ii) If a system is unable to report a valid analytical result for a scheduled sampling date due to equipment failure, loss of or damage to the sample, failure to comply with the analytical method requirements, including the quality control requirements in subdivision (d) of this section, or the failure of an approved laboratory to analyze the sample, then the system shall collect a replacement sample. The replacement sample shall be collected no later than 21 days after receiving information that an analytical result cannot be reported for the scheduled date, unless the system demonstrates that collecting a replacement sample within this time frame is not feasible, or the State approves an alternative resampling date. The system shall submit an explanation for the delayed sampling date to the State concurrent with the shipment of the replacement sample to the laboratory.

(3) Systems that fail to meet the criteria of paragraph (2) of this subdivision for any source water sample required under subdivision (a) of this section shall revise their sampling schedules to add dates for collecting all missed samples. Systems shall submit the revised schedule to the State for approval prior to when the system begins collecting the missed samples.

(c) Sampling Locations.

(1) Systems required to conduct source water monitoring under subdivision (a) of this section shall collect samples for each plant that treats a surface water or GWUDI source.

Where multiple plants draw water from the same influent, such as the same pipe or intake, the State may approve one set of monitoring results to be used to satisfy the requirements for all plants.

(2) Systems shall collect source water samples prior to chemical treatment, such as coagulants, oxidants, and disinfectants, unless the State determines that collecting a sample prior to chemical treatment is not feasible for the system and that the chemical treatment is unlikely to have a significant adverse effect on the analysis of the sample.

(3) Systems that recycle filter backwash water shall collect source water samples prior to the point of filter backwash water addition.

(4) Bank filtration.

(i) Systems that receive *Cryptosporidium* treatment credit for bank filtration, as applicable, shall collect source water samples in the surface water prior to bank filtration.

(ii) Systems that use bank filtration as pretreatment to a filtration plant shall collect source water samples from the well (i.e., after bank filtration). Use of bank filtration during monitoring shall be consistent with routine operational practice. Systems collecting samples after a bank filtration process may not receive treatment credit for the bank filtration.

(5) Multiple sources. Systems with plants that use multiple water sources, including multiple surface water sources and blended surface water and ground water sources, shall

collect samples as specified in subparagraph (i) or (ii) of this paragraph. The use of multiple sources during monitoring shall be consistent with routine operational practice.

(i) If a sampling tap is available where the sources are combined prior to treatment, systems shall collect samples from that tap.

(ii) If a sampling tap where the sources are combined prior to treatment is not available, systems shall collect samples at each source near the intake on the same day and select one of the following options for sample analysis;

(a) Systems may composite samples from each source into one sample prior to analysis. The volume of sample from each source shall be weighted according to the proportion of the source in the total plant flow at the time the sample is collected; or

(b) Systems may analyze samples from each source separately and calculate a weighted average of the analysis results for each sampling date. The weighted average shall be calculated by multiplying the analysis result for each source by the fraction the source contributed to total plant flow at the time the sample was collected and then summing these values.

(6) Additional Requirements. Systems shall submit a description of their sampling location(s) to the State at the same time as the sampling schedule. This description shall address the position of the sampling location in relation to the system's water source(s) and treatment processes, including pretreatment, points of chemical treatment, and filter

backwash recycle. If the State does not respond to a system regarding sampling location(s), the system shall sample at the reported location(s).

(d) Reporting source water monitoring results.

(1) Systems shall report results from the source water monitoring no later than 10 days after the end of the first month following the month when the sample is collected.

(2) Systems shall report the following information, as applicable, for the source water monitoring samples required under subdivision (a) of this section.

(i) Systems shall report the following data elements for each *Cryptosporidium* analysis: PWS ID; facility ID sample collection date sample type (field or matrix spike); sample volume filtered (in liters, to the nearest 0.25 liter); confirmation that 100 percent of filtered volume was examined; and the number of oocysts counted.

(a) For matrix spike samples, systems shall also report the sample volume spiked and estimated number of oocysts spiked. These data are not required for field samples. (b) For samples in which less than 10 liters are filtered or less than 100 percent of the sample volume is examined, systems shall also report the number of filters used and the packed pellet volume.

(c) For samples in which less than 100 percent of sample volume is examined, systems shall also report the volume of resuspended concentrate and volume of this resuspension processed through immunomagnetic separation.

(ii) Systems shall report the following data elements for each *E. coli* analysis: PWS ID; facility ID; sample collection date; analytical method number; method type; source type; *E. coli*/100 mL; and turbidity. Systems serving fewer than 10,000 people that are not required to monitor for turbidity are not required to report turbidity with their *E. coli* results.

A new section 5-1.82 is added to read as follows:

5-1.82: Requirements when making a significant change in disinfection practice.

(a) Following the completion of initial source water monitoring under section 5-1.81(a)(1) of this Subpart, a system that plans to make a significant change to its disinfection practice, as defined in subdivision (b) of this section, shall develop disinfection profiles and calculate disinfection benchmarks for *Giardia lamblia* and viruses, in accordance with 40 CFR 141.709. Prior to changing the disinfection practice, the system shall notify the State and shall include in this notice the following information:

(1) A completed disinfection profile and disinfection benchmark for *Giardia lamblia* and viruses prepared as described in 40 CFR 141.709.

(2) A description of the proposed change in disinfection practice.

(3) An analysis of how the proposed change will affect the current level of disinfection.

(b) Significant changes to disinfection practice are defined as follows:

(1) Changes to the point of disinfection;

(2) Changes to the disinfectant(s) used in the treatment;

(3) Changes to the disinfection process; or

(4) Any other modification identified by the State as a significant change to disinfection practice.

A new section 5-1.83 is added to read as follows:

5-1.83: Treatment Technique Requirements

(a) Bin classification for filtered systems.

(1) Following completion of the initial round of source water monitoring under section 5-1.81(a)(1) of this Subpart, filtered systems shall calculate an initial *Cryptosporidium* bin concentration for each plant for which monitoring was required, such calculation shall be done in accordance with 40 CFR 141.710(b)(1) through 40 CFR 141.710(b)(5).

Calculation of the bin concentration shall use the *Cryptosporidium* results reported under section 5-1.81 of this Subpart.

(2) Filtered systems shall determine their initial bin classification from the following table and using the *Cryptosporidium* bin concentration calculated under paragraph (1) of this subdivision:

BIN CLASSIFICATION TABLE FOR FILTERED SYSTEMS

| System Characteristic | <i>Cryptosporidium</i> Concentration ¹ | Bin Classification |
|---|--|--------------------|
| Required to monitor for <i>Cryptosporidium</i> | <i>Cryptosporidium</i> <0.075 oocyst/L | Bin 1 |
| | 0.075 oocysts/L ≤ <i>Cryptosporidium</i> <1.0 oocyst/L | Bin 2 |
| | 1.0 oocyst/L ≤ <i>Cryptosporidium</i> <3.0 oocysts/L | Bin 3 |
| | <i>Cryptosporidium</i> ≥3.0 oocysts/L | Bin 4 |
| Serving fewer than 10,000 people and NOT required to monitor for <i>Cryptosporidium</i> | Not Applicable | Bin 1 |

¹ Based on calculations in paragraph (1) or (4) of this subdivision, as applicable.

(3) Following completion of the second round of source water monitoring required under section 5-1.81(a)(2) of this Subpart, filtered systems shall recalculate their *Cryptosporidium* bin concentration using the *Cryptosporidium* results reported under section 5-1.81(a)(2) of this Subpart, and following the procedures in 40 CFR 141.710(b)(1) through 40 CFR 141.710(b)(4). Systems shall then reevaluate their bin classification using the bin concentration from the second round of monitoring and the table in paragraph (2) of this subdivision.

(4) (i) Filtered systems shall report their initial bin classification under paragraph (2) of this subdivision to the State for approval no later than six months after the system is required to complete initial source water monitoring based on the schedule referenced in section 5-1.81(a)(3) of this Subpart.

(ii) Systems shall report their bin classification under paragraph (3) of this subdivision to the State for approval no later than six months after the system is required to complete the second round of source water monitoring based on the schedule referenced in section 5-1.81(a)(3) of this Subpart.

(iii) The bin classification report to the State shall include a summary of source water monitoring data and the calculation procedure used to determine bin classification.

(b) Filtered system additional *Cryptosporidium* treatment requirements.

(1) Filtered systems shall provide the level of additional treatment for *Cryptosporidium* specified in this paragraph based on their bin classification as determined under subdivision (a) of this section and according to the schedule in subdivision (d) of this section.

| System Classification | If the system uses the following filtration treatment in full compliance with section 5-1.30(b) of this Subpart (as applicable), then the additional <i>Cryptosporidium</i> treatment requirements are: | | | |
|-----------------------|---|-------------------|--|-------------------------------------|
| | Conventional Filtration Treatment (including softening) | Direct Filtration | Slow Sand or Diatomaceous Earth Filtration | Alternative Filtration Technologies |
| Bin 1 | No additional | No additional | No additional | No additional |

| | | | | |
|--|---------|---------|---------|------------------|
| Bin 2 | 1-log | 1.5-log | 1-log | (¹) |
| Bin 3 | 2-log | 2.5-log | 2-log | (²) |
| Bin 4 | 2.5-log | 3-log | 2.5-log | (³) |
| ¹ As determined by the State such that the total <i>Cryptosporidium</i> removal and inactivation is at least 4.0-log. ² As determined by the State such that the total <i>Cryptosporidium</i> removal and inactivation is at least 5.0-log. ³ As determined by the State such that the total <i>Cryptosporidium</i> removal and inactivation is at least 5.5-log. | | | | |

(2) (i) Filtered systems shall use one or more of the treatment and management options, as approved by the State, to comply with the additional *Cryptosporidium* treatment required in paragraph (1) of this subdivision.

(ii) Systems classified in Bin 3 and Bin 4 shall achieve at least 1-log of the additional *Cryptosporidium* treatment required under paragraph (1) of this subdivision using either one or a combination of the following, as approved by the State: bag filters, bank filtration, cartridge filters, chlorine dioxide, membranes, ozone, or UV.

(3) Failure by a system in any month to achieve treatment credit at least equal to the level of treatment required in paragraph (1) of this subdivision is a violation of the treatment technique requirement.

(4) If the State determines during a sanitary survey or an equivalent source water assessment that, after a system completed the monitoring conducted under section 5-1.81(a)(1) or (2) of this Subpart, significant changes occurred in the system's watershed that could lead to increased contamination of the source water by *Cryptosporidium*, the system shall take actions specified by the State to address the contamination.

(c) Unfiltered system *Cryptosporidium* treatment requirements.

(1) Determination of mean *Cryptosporidium* level.

(i) Following completion of the initial source water monitoring required under section 5-1.81(a)(1) of this Subpart, unfiltered systems shall calculate the arithmetic mean of all *Cryptosporidium* sample concentrations reported for such monitoring. Systems shall report this value to the State for approval no later than six months after the month the system is required to complete initial source water monitoring based on the schedule referenced in section 5-1.81(a)(3) of this Subpart.

(ii) Following completion of the second round of source water monitoring required under section 5-1.81(a)(2) of this Subpart, unfiltered systems shall calculate the arithmetic mean of all *Cryptosporidium* sample concentrations reported under that monitoring. Systems shall report this value to the State for approval no later than six months after the month the system is required to complete the second round of source water monitoring based on the schedule referenced in section 5-1.81(a)(3) of this Subpart.

(iii) If the monthly *Cryptosporidium* sampling frequency varies, systems shall first calculate a monthly average for each month of monitoring. Systems shall then use these monthly average concentrations, rather than individual sample concentrations, in the calculation of the mean *Cryptosporidium* level in subparagraphs (i) or (ii) of this paragraph.

(iv) The report to the State of the mean *Cryptosporidium* levels calculated under subparagraphs (i) and (ii) of this paragraph shall include a summary of the source water monitoring data used for the calculation.

(2) *Cryptosporidium* inactivation requirements. Unfiltered systems shall provide the level of inactivation for *Cryptosporidium* specified in this paragraph, based on their mean *Cryptosporidium* levels as determined under paragraph (1) of this subdivision and according to the schedule in subdivision (d) of this section.

(i) Unfiltered systems with a mean *Cryptosporidium* level of 0.01 oocysts/L or less shall provide at least 2-log *Cryptosporidium* inactivation.

(ii) Unfiltered systems with a mean *Cryptosporidium* level of greater than 0.01 oocysts/L shall provide at least 3-log *Cryptosporidium* inactivation.

(3) Inactivation treatment technology requirements. Unfiltered systems shall use chlorine dioxide, ozone, or UV to meet the *Cryptosporidium* inactivation requirements of this section.

(4) Use of two disinfectants. Unfiltered systems shall meet the combined *Cryptosporidium* inactivation requirements of this section and *Giardia lamblia* and virus inactivation requirements of section 5-1.30(c)(3) of this Subpart using a minimum of two disinfectants, and each of two disinfectants must separately achieve the total inactivation required for either *Cryptosporidium*, *Giardia lamblia*, or viruses. Systems that fail to

install a second disinfectant to treat for *Cryptosporidium* are in violation of the treatment technique requirement.

(d) Schedule for compliance with *Cryptosporidium* treatment requirements.

(1) Following initial bin classification under subdivision (a) of this section, filtered systems shall provide the level of treatment for *Cryptosporidium* required under subdivision (b) of this section, on a schedule approved by the State.

(2) Following initial determination of the mean *Cryptosporidium* level under subdivision (c)(1)(i) of this section, unfiltered systems shall provide the level of treatment for *Cryptosporidium* required under subdivision (c).

(3) If the bin classification for a filtered system changes following the second round of source water monitoring, as determined under subdivision (a)(3) of this section, the system shall provide the level of treatment for *Cryptosporidium* required under subdivision (b) of this section on a schedule approved by the State.

(4) If the mean *Cryptosporidium* level for an unfiltered system changes following the second round of monitoring, as determined under subdivision (c)(1)(ii) of this section, and if the system shall provide a different level of *Cryptosporidium* treatment under subdivision (c) of this section due to this change, the system shall meet this treatment requirement on a schedule approved by the State.

Subdivision 5-1.91 (b) is amended to read as follows:

(b) As a condition to the [grant] granting of a variance under subdivision (a) of this section, the supplier of water shall perform monitoring and other requirements as prescribed by the [department] Department.

The table Best Available Technologies (BATs) in subdivision (d) of section 5-1.91 is amended to read as follows:

BEST AVAILABLE TECHNOLOGIES (BATs)

| Contaminant | Best Available Technologies | | |
|----------------------------|-----------------------------|------------------|-----------------|
| | PTA ¹ | GAC ² | OX ³ |
| Benzene | X | X | |
| Carbon tetrachloride | X | X | |
| 1,2-Dichloroethane | X | X | |
| Trichloroethylene | X | X | |
| para-Dichlorobenzene | X | X | |
| 1,1-Dichloroethylene | X | X | |
| 1,1,1-Trichloroethane | X | X | |
| Vinyl chloride | X | | |
| cis-1,2-Dichloroethylene | X | X | |
| 1,2-Dichloropropane | X | X | |
| Ethylbenzene | X | X | |
| Monochlorobenzene | X | X | |
| o-Dichlorobenzene | X | X | |
| Styrene | X | X | |
| Tetrachloroethylene | X | X | |
| Toluene | X | X | |
| trans-1,2-Dichloroethylene | X | X | |
| Xylenes (total) | X | X | |
| Alachlor | | X | |
| Aldicarb | | X | |

| | | | |
|---|---|-------------------|---|
| Aldicarb sulfoxide | | X | |
| Aldicarb sulfone | | X | |
| Atrazine | | X | |
| Carbofuran | | X | |
| Chlordane | | X | |
| Dibromochloropropane | X | X | |
| 2,4-D | | X | |
| Ethylene dibromide | X | X | |
| Heptachlor | | X | |
| Heptachlor epoxide | | X | |
| Lindane | | X | |
| Methoxychlor | | X | |
| PCBs | | X | |
| Pentachlorophenol | | X | |
| Toxaphene | | X | |
| 2,4,5-TPBenzo(a)pyrene | | X | |
| Dalapon | | X | |
| Dichloromethane | X | | |
| Di(2-ethylhexyl)adipate | X | X | |
| Di(2-ethylhexyl)phthalate | | X | |
| Dinsoeb | | X | |
| Endothal | | X | |
| Endrin | | X | |
| Glyphosate | | | X |
| Hexachlorobenzene | | X | |
| Hexachlorocyclopentadiene | X | X | |
| Oxamyl (Vydate) | | X | |
| Picloram | | X | |
| Simazine | | X | |
| 1,2,4-Trichlorobenzene | X | X | |
| 1,1,2-Trichloroethane | X | X | |
| 2,3,7,8-TCDD (Dioxin) | | X | |
| [TTHMs] | | [X ⁴] | |
| [HAA5s] | | [X ⁴] | |
| <u>TTHM, HAA5, Bromate, Chlorite</u> ⁴ | | | |

1 Packed Tower Aeration 2 Granular Activated Carbon 3 Oxidation (Chlorination or Ozonation) 4 [GAC10, as defined in section 5-1.1 of this Subpart. The other best available technology for TTHM and HAA MCL compliance is enhanced coagulation for TTHM and HAA precursor removal, as described in section 5-1.60 of this Subpart.] For surface water systems or ground water systems influenced by surface water, GAC10, as defined in section 5-1.1 of this Subpart, is the BAT for compliance with the TTHM and HAA5 MCL as a Running Annual Average (RAA). The other BAT for RAA compliance is enhanced coagulation for TTHM and HAA5 precursor removal, as described in section 5-1.60 of this Subpart. For compliance with the MCLs for TTHM and HAA5 as LRAAs, the following are the BATs: enhanced coagulation or enhanced softening, plus GAC10; GAC20, as defined in section 5-1.1 of this Subpart; or nanofiltration with a molecular weight cutoff less than or equal to 100 Daltons. Refer to section 5-1.65 of this Subpart for BATs for TTHM, HAA5, Bromate, and Chlorite.

Subdivisions (e) and (f) of section 5-1.91 are repealed and replaced with the new subdivisions (e) and (f) to read as follows:

(e) The following are the best technologies, treatment techniques, or other means available for achieving compliance with the maximum contaminant levels for the inorganic chemicals and radionuclides listed in section 5-1.52, Tables 1 and 7 of this Subpart:

| Technologies for Achieving MCL Compliance | |
|--|--|
| Chemical Name | Best Available Technologies |
| Antimony | 2,7 |
| Arsenic ⁵ | 1,2,5,6,7,9,13 ⁶ |
| Asbestos | 2,3,8 |
| Barium | 5,6,7,9 |
| Beryllium | 1,2,5,6,7 |
| Cadmium | 2,5,6,7 |
| Chromium | 2,5,6 ² ,7 |
| Cyanide | 5,7,10 |
| Fluoride | 1,7 |
| Mercury (Hg) | 2 ¹ ,4,6 ¹ ,7 ¹ |
| Nickel | 5,6,7 |
| Nitrate | 5,7 |
| Nitrite | 5,7, 9 |
| Selenium | 1,2 ³ ,6,7,9 |
| Thallium | 1,5 |
| Gross alpha (excluding radon and uranium) | 7 |
| Combined radium (226 and 228) | 5,6,7 |
| Uranium | 5,6,7,12 ⁴ |
| Beta particle and photon radioactivity | 5,7 |

¹BAT only if influent Hg concentrations ≤ 10 $\mu\text{g/L}$.

²BAT for Chromium III only.

³BAT for Selenium IV only.

⁴Assumes that the system already has coagulation/filtration in place.

⁵BATs for Arsenic V. Pre-oxidation may be required to convert Arsenic III to Arsenic V.

⁶To obtain high removals, iron to arsenic ratio must be at least 20:1.

Key to Best Available Technologies (BATs) in Table

- 1 = Activated Alumina
- 2 = Coagulation/Filtration (not BAT for systems < 500 service connections)
- 3 = Direct and Diatomite Filtration
- 4 = Granular Activated Carbon
- 5 = Ion Exchange
- 6 = Lime Softening (not BAT for systems < 500 service connections)
- 7 = Reverse Osmosis
- 8 = Corrosion Control
- 9 = Electrodialysis
- 10 = Chlorine
- 11 = Ultraviolet
- 12 = Enhanced coagulation/filtration
- 13 = Oxidation/Filtration

(f) The following are the affordable technologies, treatment techniques, or other means available to systems serving 10,000 persons or fewer for achieving compliance with the MCL for arsenic as listed in section 5-1.52 Table 1 of this

Subpart:

| Technology for Arsenic MCL Compliance at Systems Serving ≤10,000 | |
|---|--|
| Small system compliance technology¹ | Affordable for listed small system categories |
| Activated Alumina (centralized) | All Systems Serving 25-10,000 |
| Activated Alumina (Point-of-Use) ² | All Systems Serving 25-10,000 |
| Coagulation/Filtration ³ | Systems Serving 501-10,000 |
| Coagulation-assisted Microfiltration | Systems Serving 501-10,000 |
| Electrodialysis reversal ⁴ | Systems Serving 501-10,000 |
| Enhanced coagulation/filtration | All Systems Serving 25-10,000 |
| Enhanced lime softening (pH > 10.5) | All Systems Serving 25-10,000 |
| Ion Exchange | All Systems Serving 25-10,000 |
| Lime Softening ³ | Systems Serving 501-10,000 |
| Oxidation/Filtration ⁵ | All Systems Serving 25-10,000 |
| Reverse Osmosis (centralized) ⁴ | Systems Serving 501-10,000 |
| Reverse Osmosis (Point-of-Use) ² | All Systems Serving 25-10,000 |

¹Small System Compliance Technologies for Arsenic V. Pre-oxidation may be required to convert Arsenic III to Arsenic V.

²When point-of-use or point-of-entry devices are used for compliance, programs to ensure proper longterm operation, maintenance, and monitoring must be provided by the water system to ensure adequate performance.

³Unlikely to be installed solely for arsenic removal. May require pH adjustment to optimal range if high removals are needed.

⁴May not be appropriate for areas where water quantity may be an issue.

⁵To obtain high removals, iron to arsenic ratio must be at least 20:1.

Subdivision (e) of section 5-1.92 is amended to read as follows:

(e) In the case of a system which [does not serve] serves a population of no more than [500 service connections] 3,300 and which needs financial assistance for the necessary improvements, an exemption granted under [paragraph] subdivision (a)(1) or (2) of this section may be renewed for one or more additional two-year periods, not to exceed six years, if the system establishes that it is taking all practical steps to meet the requirements of subdivision (a) of this section.

Subdivision (c) of section 5-1.94 is amended to read as follows:

(c) Public notice of an opportunity for hearing pursuant to subdivision (a) or (b) of this section shall be circulated in a manner designated to inform potentially interested persons of the proposed action. Requests for hearing [must] shall be submitted to the [department] Department within [15] 30 days after issuance of such public notice.

Appendix 5-A is repealed and a new Appendix 5-A is added to read as follows:

APPENDIX 5-A

RECOMMENDED STANDARDS FOR WATER WORKS, 2012 EDITION

“Recommended Standards for Water Works, 2012 edition” reported by the Water Supply Committee of the Great Lakes-Upper Mississippi River Board of State and Provincial Public Health and Environmental Managers. Available online at <http://10statesstandards.com/> and is available for viewing at the Department of State, One Commerce Plaza, 99 Washington Avenue, Albany, NY 12231 and the Bureau of Water Supply Protection, Department of Health, Corning Tower, Empire State Plaza, Albany, NY 12237.

Appendix 5-C of Subpart 5-1 is repealed and replaced with the new Appendix 5-C to read as follows:

APPENDIX 5-C

ACCEPTABLE METHODS FOR THE ANALYSIS OF CONTAMINANTS IN DRINKING WATER

Table of Contents

- I. Approved methods for analysis of water samples to determine compliance with this Subpart**
- II. Sample Compositing Requirements**
 - A. Inorganic Chemical Compositing Requirements**
 - B. Water Sample Compositing Requirements for Pesticides, Dioxin, and PCBs**
- I. Approved methods for analysis of water samples to determine compliance with this Subpart**

All samples shall be analyzed using approved methods as recognized by the United States Environmental Protection Agency (EPA) and/or the New York State Environmental Laboratory Approval Program (ELAP). A list of approved methods is available from ELAP on The Wadsworth Center's website at

https://www.wadsworth.org/sites/default/files/WebDoc/I180_1_39_0.pdf

or by request from the Records Access Officer, Department of Health, Corning Tower, Room 2364, Albany, New York 12237-0044. Method references are cited in 40 CFR 141 at 141.21(f), 141.24(e), 141.40(c), 141.131(a)(2), 141.704(a), 141.707(c) and 141.852(c).

Test strips for free chlorine, Method D99-003, may be used for compliance monitoring only when approval of the State has been provided in writing. Method D99-003, Revision 3.0, "Free Chlorine Species (HOCl- and OCl-) by Test Strip," November 21, 2003, is available from Industrial Test Systems, Inc., 1875 Langston St., Rock Hill, SC 29730 or from the Records Access Officer, Department of Health, Corning Tower, Room 2364, Albany, New York 12237-0044.

II. Sample Compositing Requirements

A. Inorganic Chemical Sample Compositing Requirements

The State may reduce the total number of samples which must be analyzed in accordance with Tables 8A-8D of section 5-1.52 of this Subpart by allowing the use of compositing. Composite samples from a maximum of five samples are allowed, provided that the detection limit of the method used for analysis is less than one-fifth of the MCL. Compositing of samples shall be done in an ELAP certified laboratory.

If the concentration in the composite sample is greater than or equal to one-fifth of the MCL of any inorganic chemical, then a follow-up sample shall be taken within 14 days at each sampling point included in the composite. Each of the follow-up samples shall be analyzed for the contaminant(s) that exceeded one-fifth of the MCL in the composite sample.

B. Water Sample Compositing Requirements for Pesticides, Dioxin and PCBs

The State may reduce the total number of samples collected and analyzed in accordance with Table 9C of section 5-1.52 of this Subpart by allowing the use of compositing. Composite samples from a maximum of five samples are allowed, provided that the detection limit of the method used for analysis is less than one-fifth of the MCL. Compositing of samples shall be done in an ELAP certified laboratory.

- (a) If the concentration in the composite sample is greater than or equal to the detection limit of any organic chemicals listed in section 5-1.52 Table 9C, then a separate follow-up sample shall be taken within 14 days at each sampling point included in the composite. Each of the follow-up samples shall be analyzed for the contaminant(s) which were detected in the composite sample.

- (b) If duplicates or residual portions of the original sample taken from each sampling point used in the composites are available, the system may use such samples if additional sampling is necessary. Additional samples shall be analyzed and the results reported to the State within 14 days of collection.

(c) In systems serving fewer than 3,300 persons, the State may permit compositing among different systems provided the five-sample limit is maintained. In systems serving 3,300 or more persons, the State may permit compositing of samples from up to five sampling locations within the system, provided the reporting limit is maintained.

REGULATORY IMPACT STATEMENT

Statutory Authority:

The statutory authority for the proposed revisions is set forth in Public Health Law (PHL) sections 201 and 225. Section 201(1)(1) of the PHL establishes the powers and duties of the Department of Health (Department), which include the supervision and regulation of the sanitary aspects of public water supplies. Section 225 of the PHL sets forth the powers and duties of the Public Health and Health Planning Council (PHHPC), which include the authority to establish, amend and repeal sanitary regulations to be known as the State Sanitary Code (SSC), subject to the approval of the Commissioner of Health. Further, section 225(5)(a) of the PHL allows the SSC to deal with any matter affecting the security of life or health, or the preservation or improvement of public health, in New York State.

The revisions are in accord with the requirements of the United States Environmental Protection Agency (EPA) for: the Lead and Copper Rule (LCR), 56 FR 26460 - 26564, June 7, 1991, as amended 56 FR 32112, July 15, 1991; 57 FR 28785, June 29, 1992; and 59 FR 33860, June 30, 1994; the LCR Minor Revisions (LCRMR), 65 FR 1950, January 12, 2000; the LCR Short-Term Revisions (LCRSTR), 72 FR 57782, October 10, 2007; the Long Term 2 Enhanced Surface Water Treatment Rule (LT2 ESWTR), 71 FR 654, January 5, 2006, Vol. 71, No. 3, as corrected on January 30, 2006, Vol. 71, No. 19, and February 6, 2006, Vol. 71, No. 24; the Stage 2 Disinfection and Disinfection Byproducts Rule (Stage 2 DBPR), 71 FR 388, January 4, 2006, with corrections on January 27, 2006, Vol. 71, No. 18; June 29, 2006, Vol. 71, No. 125; and November 14, 2006, Vol. 73, No.221 and an amendment on June 29, 2009, Vol. 74 No. 123; and the Variances and Exceptions Rule (V & E), 63 FR 43834, August 14, 1998, Vol. 74, No. 123.

Legislative Objectives:

The legislative objective of sections 201 and 225 of the PHL is to ensure that PHHPC, in conjunction with the Commissioner of Health, protect the public health by adopting drinking water sanitary standards. In accordance with that objective, this regulation amends the SSC by revising Part 5 to enhance current protections governing public water systems (PWSs). Further, this amendment will update the SSC to ensure consistency among State and federal requirements.

Needs and Benefits:

The Department recognizes that there is no higher public health priority than ensuring the delivery of clean drinking water. To this end, the Department has obtained primacy for the implementation and enforcement of the majority of federal drinking water regulations. These revisions to Subpart 5-1, incorporate the following additional federal regulations to ensure the Department is eligible for primacy over such requirements: Minor and Short-Term Revisions to the Lead and Copper Rule (LCRMR and LCRSTR, respectively); Stage 2 Disinfectant and Disinfection Byproducts Rule (Stage 2 DBPR); Long Term 2 Enhanced Surface Water Treatment Rule (LT2 ESWTR); and the Variances and Exemptions (V&E) Rule. The Department is already implementing these federal regulations through a partnership agreement with EPA. Accordingly, the adoption of these regulations merely formalizes the existing regulatory arrangement and is expected to have no impact on PWSs.

Additionally, the proposed amendments reflect changes in the PHL regarding cross-connection control and water supply emergency plans. The proposed amendments also include revisions to

Appendix 5-C of Subpart 5-1. Minor edits to correct typographical errors and to update references are also proposed.

The minor revisions (LCRMR) eliminate unnecessary requirements in the Lead and Copper Rule (LCR), reduce the reporting burden, and promote consistent national implementation of the LCR. In addition, language was added to clarify requirements and correct oversights in the original rule. The revisions are called “minor” because they do not affect the lead and copper maximum contaminant level goals, action levels, or other basic regulatory requirements to monitor for lead and copper at the tap and to optimize corrosion control.

The Short-Term revisions (LCRSTR) enhance the implementation of the LCR in the areas of monitoring, treatment, customer awareness, lead service line replacement, and public education. The amendments ensure that drinking water consumers receive meaningful, timely, and useful information needed to help limit exposure to lead in drinking water.

The EPA promulgated the Stage 2 Disinfectant and Disinfection Byproducts Rule (Stage 2 DBPR) to reduce potential adverse health risks associated with the use disinfection byproducts (DBPs) in drinking water. Chlorination is the most popular disinfectant used and, within the State, an estimated 2,687 community (CWS) and nontransient noncommunity (NTNCWS) PWSs in the State, serving over 18 million people, use chlorination as a means of disinfecting drinking water to kill or inactivate microbial contaminants.

The Stage 2 DBPR strengthens public health protection for customers of systems that deliver disinfected water, by requiring such systems to meet maximum contaminant levels as an average

at each compliance monitoring location (instead of as a system-wide average as in previous rules) for two groups of DBPs: trihalomethanes (TTHM) and five haloacetic acids (HAA5). This amendment reduces DBP exposure, along with related potential health risks, and provides more equitable public health protection.

Additionally, the amendments include the federal Long Term 2 Enhanced Surface Water Treatment Rule (LT2 ESWTR). EPA promulgated the LT2 ESWTR to provide further protection of public health against *Cryptosporidium* and other microbial pathogens in drinking water from surface water sources. *Cryptosporidium* is a protozoan parasite that is common in surface water. Approximately 1,039 PWSs in the State, serving 14 million people, use surface water or ground water under the direct influence of surface water as a raw water source.

When ingested, *Cryptosporidium* can cause acute and severe gastrointestinal illness, which is especially dangerous for immunocompromised individuals. The proposed amendment builds on current regulations, which require PWSs using surface water sources to filter the water, unless a filtration avoidance waiver is granted, to remove at least 99 percent (2-log) of *Cryptosporidium*. This rule extends the public health benefit of *Cryptosporidium* removal or inactivation to consumers served by all PWSs that use water sources from surface water or ground water that is under the direct influence of surface water.

Further, the proposed LT2 ESWTR regulations address the risk posed by uncovered finished water storage facilities. These facilities are subject to contamination through runoff, bird and animal wastes, human activity, algal growth, insects, and airborne deposition. Under this proposed rule, PWSs must limit these risks by either covering the facility or treating the outflow.

The proposed amendments also reflect the federal Variances and Exemptions (V&E) Rule, which allows states to grant variances to small PWSs that cannot afford to comply with primary drinking water standards. These variances and exemptions allow a system to install and maintain technology that can remove a contaminant to the maximum extent that is affordable while still being protective of public health.

Further, requirements regarding cross-connection control are being revised for consistency with section 225 of the PHL. The revisions reduce the burden on the State by allowing a Department approved entity to certify backflow prevention testers.

The proposed rule also reflects an amendment to PHL section 1125. This change requires systems which service a population of more than 3,300 to submit water supply emergency plans, rather than only those with a minimum operational revenue. In addition, the proposed regulation requires a PWS to include cyber attacks in its vulnerability assessment and to incorporate the penalty established in PHL for disclosing confidential information about a water system emergency plan. This rule change simply makes Subpart 5-1 consistent with PHL.

Appendix 5-C to Subpart 5-1, Acceptable Methods for the Analysis of Contaminants in Water, is also amended. The Department is removing the approved methods from the Appendix and requiring all samples to be analyzed using a method approved by the EPA or the New York State Environmental Laboratory Approval Program (ELAP). This approach will eliminate the redundancy of listing this information in multiple locations and ensure that PWSs are using the

most current method. In addition, the revisions will also allow limited use of test strips to test for chlorine residual in drinking water.

Costs:

Costs to Public Water Systems:

The proposed regulatory amendments incorporate revisions to federal rules regarding Minor and Short-Term Revisions to the Lead and Copper Rule (LCRMR and LCRSTR); Stage 2 Disinfectant and Disinfection Byproducts Rule (Stage 2 DBPR); Long Term 2 Enhanced Surface Water Treatment Rule (LT2 ESWTR); the Variances and Exemptions (V&E) Rule. These proposed amendments will not impose an additional cost to PWSs when adopted because PWSs are already complying with these federal requirements.

In general, the proposed revision concerning cross-connection control will not impose costs because this amendment merely conforms to revisions to the PHL. The only new cost is that of having cross-connection control tester courses approved by a third-party, which may cost up to \$1500 per trainer each year. However, this cost may be passed on to testers who are renewing their certifications. Spread over approximately 1,100 testers, it should cost each less than \$15 for renewal, or about \$5 extra per tester per year.

The requirement for systems that serve a population of more than 3,300 to submit water supply emergency plans will not incur additional costs, because PWSs are already complying with this statutory requirement.

The revisions to Appendix 5-C will not change the methods that PWSs use for monitoring water quality. Accordingly, this revision will result in no financial impact to PWSs.

Finally, the proposed amendments to the tables simply make the tables consistent with the other amendments and, therefore, will not impose any additional costs.

Costs to the Agency, the State and Local Governments for the Implementation and Continuation of the Rule:

State and local government agencies are affected in different ways by these rule revisions. Some PWSs are operated by local, State or federal government agencies. All PWSs are subject to State or local health department oversight. To the extent these amendments incorporate existing federal requirements, there is no additional cost imposed.

The cost to State and local government agencies that operate PWSs will be minimal for the proposed cross-connection control revisions. As discussed, above, the proposed revisions will incur costs to training providers for the third party certification of their courses.

The requirement for systems that serve a population of more than 3,300 to submit water supply emergency plans will not incur additional costs because PWSs are already complying with this statutory requirement.

The revisions to Appendix 5-C will not change the methods that PWSs use for monitoring water quality. Accordingly, this revision will result in no financial impact to PWSs.

Finally, the proposed amendments to the tables simply make the tables consistent with the other amendments and, therefore, will not impose any additional costs.

After the Department is granted primacy for the enforcement of these regulations, enforcement costs are expected to be minimal because the State and LHDs already enforce current public water supply regulations, and compliance with the proposed amendments is already widespread. Enforcement of these additional regulations represents a minimal increase in burden over current enforcement efforts.

Local Government Mandates:

LHDs will not be impacted by the proposed regulations because they are already in compliance.

Paperwork:

These revised regulations do not require new forms or other paperwork. Adoption of these regulations will actually reduce paperwork because it will eliminate the need for PWSs to conduct dual reporting to the State and federal government.

Duplication:

Adoption of these revised regulations will reduce duplication efforts for PWS, by eliminating the need for PWSs to conduct dual reporting to the State and federal government.

Alternatives:

Declining to adopt these regulations would make compliance oversight of PWSs primarily the responsibility of the State, with oversight by the federal government remaining for four specific federal rules. This option would require additional and unnecessary reporting and coordination for PWSs. The proposed rule revisions are the better alternative.

Federal Standards:

The majority of these revisions incorporate changes in federal standards.

Compliance Schedule:

Currently, PWSs must comply with the federal LCRM, LCRSTR, Stage 2 DBPR, LT2 ESWTR, and V&E Rule, pursuant to schedules established by EPA, with the exception of certain deadlines in LT2 ESWTR. The provisions regarding certification of a cross-connection control tester course by a third-party will take effect in 2017. All provisions concerning the Water Supply Emergency Plans are currently in effect, pursuant to statute.

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REGULATORY FLEXIBILITY ANALYSIS FOR SMALL BUSINESSES AND LOCAL GOVERNMENTS

Effect of Rule:

Revisions to 10 NYCRR Subpart 5-1 of the State Sanitary Code are required to obtain primacy from the United States Environmental Protection Agency (EPA) for implementation of the following federal rules: Minor and Short-Term Revisions to the Lead and Copper Rule (LCRMR and LCRSTR); Stage 2 Disinfectant and Disinfection Byproducts Rule (Stage 2 DBPR); Long Term 2 Enhanced Surface Water Treatment Rule (LT2 ESWTR); and the Variances and Exemptions (V&E) Rule. Additionally, these amendments address changes the New York State Public Health Law (PHL) regulating cross-connection control and water supply emergency plans.

Local governments and small businesses operate most of the PWSs in New York State. It is estimated that almost 93 per cent of the PWSs impacted by any of the proposed revisions are either small businesses or local governments.

These revisions will benefit local governments and small businesses by consolidating and simplifying reporting requirements.

Compliance Requirements:

Currently, PWSs must comply with the federal LCRMR, LCRSTR, Stage 2 DBPR, LT2 ESWTR, and V&E Rule, pursuant to schedules established by EPA, with the exception of certain deadlines in LT2 ESWTR. The provisions regarding certification of a cross-connection control

tester course by a third-party will take effect in 2017. All provisions concerning the Water Supply Emergency Plans are currently in effect, pursuant to statute.

Professional Service:

The revision of the rules regarding LCRMR, LCRSTR, Stage 2 DBPR, LT2 ESWTR, and V&E Rule will not change the requirements for professional services used by small businesses or local governments, because PWSs are already complying with the requirements.

Additional professional services will be needed to provide required training courses on cross-connection control and for third party certification of training providers.

The addition of cyber security provisions to the water supply emergency plans may have a small impact for those systems that do not prepare their own Emergency Response Plans and Vulnerability Assessments. However, compliance is a statutory requirement.

Compliance costs:

The proposed amendments that incorporate federal regulations will not impose an additional cost to small business or local governments that own or operate a PWS, because PWSs are already complying with these federal requirements.

The cost to State and local government agencies that operate PWSs will be minimal for the proposed cross-connection control revisions. As discussed, above, the proposed revisions will incur costs to training providers for the third party certification of their courses. The requirement

for systems that serve a population of more than 3,300 to submit water supply emergency plans will not incur additional costs because PWSs are already complying with this statutory requirement.

The revisions to Appendix 5-C will not change any methods that PWS use for monitoring water quality. Accordingly, this revision will result in no financial impact to PWSs.

Finally, the proposed amendments to the tables simply make the tables consistent with the other amendments and, therefore, will not impose any additional costs.

After the Department is granted primacy for the enforcement of these regulations, enforcement costs are expected to be minimal because the State and LHDs already enforce current public water supply regulations, and compliance with the proposed amendments is already widespread. Enforcement of these additional regulations represents a minimal increase in burden over current enforcement efforts.

Economic and Technological Feasibility:

Currently available technology is adequate to meet rule requirements. Notably, EPA also determined that compliance with the federal regulations, as incorporated by these regulations, was both economically and technologically feasible for small businesses and local governments.

Minimizing Adverse Impact:

The proposed revisions largely incorporate existing federal rules and revisions to the PHL. With respect to provisions specific to New York State, the Department will provide PWSs with training, guidance documents, and other assistance.

Small Business and Local Government Participation:

The Department presented and discussed the proposed revisions at organizational meetings where small community water systems were represented. These meetings included the New York

Rural Water Association, the American Water Works Association, the Conference of Environmental Health Directors, the New York Association of Towns, and the New York Conference of Mayors, among others.

The revisions regarding cross-connection control were discussed with backflow prevention training providers, most of whom operate small businesses or are non-governmental nonprofit organizations. Prior to the implementation of the revised program, the Department provided training providers, certifying agencies, and backflow prevention device testers with an opportunity to comment on the revisions.

For Rules That Either Establish or Modify a Violation or Penalties Associated With a Violation:

Chapter 524 of the Laws of 2011 requires agencies to include a “cure period” or other opportunity for ameliorative action to prevent the imposition of penalties on the party or parties

subject to enforcement under the proposed regulation. This regulation creates no new penalty or sanction. Hence, no cure period is necessary.

RURAL AREA FLEXIBILITY ANALYSIS

Types and Estimated Numbers of Rural Areas:

Many PWSs are located in the 44 counties that are defined as rural and in the towns of the additional nine counties where there are rural towns. Although the revised regulations will impact PWSs in these rural areas, the revisions will have the same effect on a PWS regardless of whether it is in a rural area or an urban area.

Revisions to 10 NYCRR Subpart 5-1 of the State Sanitary Code are required to obtain primacy from the United States Environmental Protection Agency (EPA) for implementation of the following federal rules: Minor and Short-Term Revisions to the Lead and Copper Rule (LCRMR and LCRSTR); Stage 2 Disinfectant and Disinfection Byproducts Rule (Stage 2 DBPR); Long Term 2 Enhanced Surface Water Treatment Rule (LT2 ESWTR); and the Variances and Exemptions (V&E) Rule. Additionally, these amendments address changes the New York State Public Health Law (PHL) regulating cross-connection control and water supply emergency plans.

Reporting, Recordkeeping and Other Compliance Requirements; and Professional Services:

Currently, PWSs must comply with the federal LCRMR, LCRSTR, Stage 2 DBPR, LT2 ESWTR, and V&E Rule, pursuant to schedules established by EPA, with the exception of certain deadlines in LT2 ESWTR. The provisions regarding certification of a cross-connection control tester course by a third-party will take effect in 2017. All provisions concerning the Water Supply Emergency Plans are currently in effect, pursuant to statute.

The revision of the rules regarding LCRMR, LCRSTR, Stage 2 DBPR, LT2 ESWTR, and V&E Rule will not change the requirements for professional services used by small businesses or local governments in rural areas, because PWSs are already complying with the requirements.

Additional professional services will be needed to provide required training courses on cross-connection control and for third party certification of training providers.

The addition of cyber security provisions to the water supply emergency plans may have a small impact for those systems that do not prepare their own Emergency Response Plans and Vulnerability Assessments. However, compliance is a statutory requirement.

Compliance costs:

The proposed amendments that incorporate federal regulations will not impose an additional cost to small business or local governments in rural areas that own or operate a PWS, because PWSs are already complying with these federal requirements.

The cost to State and local government agencies that operate PWSs will be minimal for the proposed cross-connection control revisions. As discussed, above, the proposed revisions will incur costs to training providers for the third party certification of their courses. The requirement for systems that serve a population of more than 3,300 to submit water supply emergency plans will not incur additional costs because PWSs are already complying with this statutory requirement.

The revisions to Appendix 5-C will not change any methods that PWS use for monitoring water quality. Accordingly, this revision will result in no financial impact to PWSs.

Finally, the proposed amendments to the tables simply make the tables consistent with the other amendments and, therefore, will not impose any additional costs.

After the Department is granted primacy for the enforcement of these regulations, enforcement costs are expected to be minimal because the State and LHDs already enforce current public water supply regulations, and compliance with the proposed amendments is already widespread. Enforcement of these additional regulations represents a minimal increase in burden over current enforcement efforts.

Minimizing Adverse Impact:

The proposed revisions largely incorporate existing federal rules and revisions to the PHL. With respect to provisions specific to New York State, the Department will provide PWSs with training, guidance documents, and other assistance.

Rural Area Participation:

The majority of the proposed revisions incorporate existing federal regulations into 10 NYCRR Subpart 5-1. Representatives of public and private interests in rural areas had an opportunity to participate in the rule making process while the federal regulations were being developed.

Outreach was also conducted by the DOH's Bureau of Water Supply Protection in the form of presentations at various stakeholder meetings, such as the New York Section of the American Water Works Association and the New York Rural Water Association.

JOB IMPACT STATEMENT

The Department of Health has determined that the proposed revisions will not have substantial adverse impact on jobs or employment opportunities. It is possible that new technologies or products developed to comply with the revised rules would bring new employment opportunities to the state.

ASSESSMENT OF PUBLIC COMMENT

Public comments were submitted to the New York State Department of Health (Department) on the Proposed Regulation which amended Subpart 5-1 of Title 10 of the New York State Codes, Rules and Regulations (NYCRR). The Department received comments from the Environmental Protection Agency (EPA), two members of the New York State (NYS) Assembly, and Alliance to Prevent Legionnaires' Disease. These comments and the Department's responses are summarized below.

COMMENT: The federal Environmental Protection Agency (EPA) requested that the Department include more details in the proposed regulation including certain items that the Department was proposing to have remain in program guidance.

RESPONSE: The Department has worked extensively with the EPA to make technical modifications to the proposed regulation.

COMMENT: The members of the NYS Assembly had concerns regarding specific wording for two requirements in section 5-1.46 of the Lead and Copper Rule. The members stated: "One purpose of the proposal is to update the responsibilities of public water systems for testing and replacement of lead service lines (LSL) to maintain consistency with Federal drinking water regulations. While in most cases the regulations of the Environmental Protection Agency (EPA) are incorporated verbatim in the proposal, some provisions alter the EPA's wording in ways that seem to weaken the standard in question."

RESPONSE: Technical changes were made in the adopted rule to correct inadvertent errors. In subdivision 5-1.46(b), “any” was changed to “all”, and in section 5-1.46, “may” was changed to “shall”.

COMMENT: The Alliance to Prevent Legionnaires’ Disease requested that the Department require Public Water Systems to monitor and test for *Legionella* bacteria; require a minimum residual disinfectant level at all points throughout the public water distribution system to be 0.5 mg/L of free chlorine; and require local compliance with the Safe Drinking Water Act standards.

RESPONSE: Creating additional requirements on the monitoring, testing and treatment of *Legionella* is outside the scope of these regulatory amendments, as the purpose of these amendments is to conform to federal regulations and state law.