Group A Public Water Systems

Chapter 246-290 WAC
Effective July 3, 2004

Includes Code of Federal Regulations (CFR) text adopted by reference

July 2004

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Division of Environmental Health
Office of Drinking Water

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Washington State Department of Health
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246-290-115 Corrosion control recommendation report. [Statutory Authority: RCW 43.20.050. 94-14-001, § 246-290-115, filed 6/22/94, effective 7/23/94.] Repealed by 99-07-021, filed 3/9/99, effective 4/9/99. Statutory Authority: RCW 43.02.050.

246-290-210 Source protection. [Statutory Authority: RCW 43.20.050. 91-02-051 (Order 124B), recodified as § 246-290-210, filed 12/27/90, effective 1/31/91. Statutory Authority: RCW 34.04.045. 88-05-057 (Order 307), § 248-54-125, filed 2/17/88. Statutory Authority: RCW 43.20.050. 83-19-002 (Order 266), § 248-54-125, filed 9/8/83.] Repealed by 93-08-011 (Order 352B), filed 3/25/93, effective 4/25/93. Statutory Authority: RCW 43.20.050.

246-290-240 Disinfection of facilities. [Statutory Authority: RCW 43.20.050. 91-02-051 (Order 124B), recodified as § 246-290-240, filed 12/27/90, effective 1/31/91. Statutory Authority: RCW 34.04.045. 88-05-057 (Order 307), § 248-54-145, filed 2/17/88. Statutory Authority: RCW 43.20.050. 83-19-002 (Order 266), § 248-54-145, filed 9/8/83.] Repealed by 99-07-021, filed 3/9/99, effective 4/9/99. Statutory Authority: RCW 43.02.050.

246-290-330 Public notification. [Statutory Authority: RCW 43.20.050. 94-14-001, § 246-290-330, filed 6/22/94, effective 7/23/94; 93-08-011 (Order 352B), § 246-290-330, filed 3/25/93, effective 4/25/93; 92-04-070 (Order 241B), § 246-290-330, filed 2/4/92, effective 3/6/92. Statutory Authority: Chapter 43.20 RCW. 91-07-031 (Order 150B), § 246-290-330, filed 3/15/91, effective 4/15/91. Statutory Authority: RCW 43.20.050. 91-02-051 (Order 124B), recodified as § 246-290-330, filed 12/27/90, effective 1/31/91. Statutory Authority: P.L. 99-339. 89-21-020 (Order 336), § 248-54-187, filed 10/10/89, effective 11/10/89.] Repealed by 99-07-021, filed 3/9/99, effective 4/9/99. Statutory Authority: RCW 43.02.050.

246-290-400 Operator certification. [Statutory Authority: RCW 43.20.050. 91-02-051 (Order 124B), recodified as § 246-290-400, filed 12/27/90, effective 1/31/91. Statutory Authority: RCW 34.04.045. 88-05-057 (Order 307), § 248-54-194, filed 2/17/88.] Repealed by 93-08-011 (Order 352B), filed 3/25/93, effective 4/25/93. Statutory Authority: RCW 43.20.050.

246-290-410 Small water system management program. [Statutory Authority: RCW 43.20.050. 94-14-001, § 246-290-410, filed 6/22/94, effective 7/23/94; 91-02-051 (Order 124B), recodified as § 246-290-410, filed 12/27/90, effective 1/31/91. Statutory Authority: P.L. 99-339. 89-21-020 (Order 336), § 248-54-196, filed 10/10/89, effective 11/10/89. Statutory Authority: RCW 34.04.045. 88-05-057 (Order 307), § 248-54-196, filed 2/17/88.] Repealed by 99-07-021, filed 3/9/99, effective 4/9/99. Statutory Authority: RCW 43.02.050.

246-290-430 Continuity of service. [Statutory Authority: RCW 43.20.050. 91-02-051 (Order 124B), recodified as § 246-290-430, filed 12/27/90, effective 1/31/91. Statutory Authority: RCW 34.04.045. 88-05-057 (Order 307), § 248-54-205, filed 2/17/88. Statutory Authority: RCW 43.20.050. 83-19-002 (Order 266), § 248-54-205, filed 9/8/83.] Repealed by 99-07-021, filed 3/9/99, effective 4/9/99. Statutory Authority: RCW 43.02.050.

246-290-440 Operations. [Statutory Authority: RCW 43.20.050. 94-14-001, § 246-290-440, filed 6/22/94, effective 7/23/94; 93-08-011 (Order 352B), § 246-290-440, filed 3/25/93, effective 4/25/93; 91-02-051 (Order 124B), recodified as § 246-290-440, filed 12/27/90, effective 1/31/91. Statutory Authority: RCW 34.04.045. 88-05-057 (Order 307), § 248-54-215, filed 2/17/88. Statutory Authority: RCW 43.20.050. 83-19-002 (Order 266), § 248-54-215, filed 9/8/83.] Repealed by 99-07-021, filed 3/9/99, effective 4/9/99. Statutory Authority: RCW 43.02.050.

246-290-450 Watershed control. [Statutory Authority: RCW 43.20.050. 91-02-051 (Order 124B), recodified as § 246-290-450, filed 12/27/90, effective 1/31/91. Statutory Authority: RCW 34.04.045. 88-05-057 (Order 307), § 248-54-225, filed 2/17/88. Statutory Authority: RCW 43.20.050. 83-19-002 (Order 266), § 248-54-225, filed 9/8/83.] Repealed by 93-08-011 (Order 352B), filed 3/25/93, effective 4/25/93. Statutory Authority: RCW 43.20.050.

246-290-495 Public notification. [Statutory Authority: RCW 43.02.050 [43.20.050]. 99-07-021, § 246-290-495, filed 3/9/99, effective 4/9/99.] Repealed by 03-08-037, filed 3/27/03, effective 4/27/03. Statutory Authority: RCW 43.20.050 (2) and (3) and 70.119A.080.

246-290-610 Definitions relating to surface water treatment. [Statutory Authority: RCW 43.20.050. 93-08-011 (Order 352B), § 246-290-610, filed 3/25/93, effective 4/25/93.] Repealed by 99-07-021, filed 3/9/99, effective 4/9/99. Statutory Authority: RCW 43.02.050.

246-290-680 Operating criteria for new water treatment facilities. [Statutory Authority: RCW 43.20.050. 93-08-011 (Order 352B), § 246-290-680, filed 3/25/93, effective 4/25/93.] Repealed by 97-20-100, filed 9/29/97, effective 10/30/97. Statutory Authority: RCW 43.20.050.

Part 1. General Provisions

WAC 246-290-001 Purpose and scope.

(1) The purpose of this chapter is to define basic regulatory requirements and to protect the health of consumers using public drinking water supplies.

(2) The rules of this chapter are specifically designed to ensure:

(a) Adequate design, construction, sampling, management, maintenance, and operation practices; and

(b) Provision of safe and high quality drinking water in a reliable manner and in a quantity suitable for intended use.

(3) Purveyors shall be responsible for complying with the regulatory requirements of this chapter.

(4) These rules are intended to conform with Public Law 93-523, the Federal Safe Drinking Water Act of 1974, and Public Law 99-339, the Safe Drinking Water Act Amendments of 1986, and certain provisions of Public Law 104-182, the Safe Drinking Water Act Amendments of 1996.

(5) The rules set forth are adopted under chapter 43.20 RCW. Other statutes relating to this chapter are:

(a) RCW 43.20B.020, Fees for services -- Department of health and department of social and health services;

(b) Chapter 43.70 RCW, Department of health;

(c) Chapter 70.05 RCW, Local health department, boards, officers -- Regulations;

(d) Chapter 70.116 RCW, Public Water System Coordination Act of 1977;

(e) Chapter 70.119 RCW, Public water supply systems -- Certification and regulation of operators;

(f) Chapter 70.119A RCW, Public water systems -- Penalties and compliance; and

(g) Chapter 70.142 RCW, Chemical contaminants and water quality.

[Statutory Authority: RCW 43.02.050 [43.20.050]. 99-07-021, § 246-290-001, filed 3/9/99, effective 4/9/99. Statutory Authority: RCW 43.20.050. 93-08-011 (Order 352B), § 246-290-001, filed 3/25/93, effective 4/25/93; 91-02-051 (Order 124B), recodified as § 246-290-001, filed 12/27/90, effective 1/31/91. Statutory Authority: P.L. 99-339. 89-21-020 (Order 336), § 248-54-005, filed 10/10/89, effective 11/10/89. Statutory Authority: RCW 34.04.045. 88-05-057 (Order 307), § 248-54-005, filed 2/17/88. Statutory Authority: RCW 43.20.050. 83-19-002 (Order 266), § 248-54-005, filed 9/8/83.]

WAC 246-290-002 Guidance.

(1) The department has numerous guidance documents available to help purveyors comply with state and federal rules regarding drinking water. These include documents on the following subjects:

(a) Compliance;

(b) System management and financial assistance;

(c) Ground water protection;

(d) Growth management;

(e) Operations/maintenance;

(f) Operator certification;

(g) Water system planning;

(h) Monitoring and water quality;

(i) System approval;

(j) Small water systems;

(k) Water resources;

(l) Water system design; and

(m) General information.

(2) The department's guidance documents are available at minimal or no cost by contacting the office of drinking water's publication service at (360) 236-3164 or (800) 521-0323. Individuals can also request the documents via the Internet at http://www.doh.wa.gov/ehp/dw or through conventional mail at P.O. Box 47822, Olympia, Washington 98504-7822.

(3) Federal guidance documents are available from the Environmental Protection Agency for a wide range of topics. These are available from the EPA Office of Ground Water and Drinking Water website at www.epa.gov/safewater/index.html.

[Statutory Authority: RCW 43.20.050 (2) and (3) and 70.119A.080. 03-08-037, § 246-290-002, filed 3/27/03, effective 4/27/03. Statutory Authority: RCW 43.02.050 [43.20.050]. 99-07-021, § 246-290-002, filed 3/9/99, effective 4/9/99.]

WAC 246-290-010 Definitions.

Abbreviations and acronyms:

ADD - average day demand;
AG - air gap;
ANSI - American National Standards Institute;
APWA - American Public Works Association;
ASCE - American Society of Civil Engineers;
AVB - atmospheric vacuum breaker;
AWWA - American Water Works Association;
BAT - best available technology;
BAT - backflow assembly tester (for WAC 246-29-490);
C - residual disinfectant concentration in mg/L;
CCS - cross-connection control specialist;
CFR - code of federal regulations;
CPE - comprehensive performance evaluation;
CT - the mathematical product in mg/L - minutes of "C" and "T";
CTA - comprehensive technical assistance;
CWSSA - critical water supply service area;
DBPs - disinfection by-products;
DCDA - double check detector assembly;
DCVA - double check valve assembly;
EPA - Environmental Protection Agency;
ERU - equivalent residential unit;
gph - gallons per hour;
gpm - gallons per minute;
GAC - granular activated carbon;
GAC10 - granular activated carbon with ten-minute empty bed contact time based on average daily flow and one hundred eighty-day reactivation frequency;
GWI - ground water under the direct influence of surface water;
HAA5 - haloacetic acids (five);
HPC - heterotrophic plate count;
IAPMO - International Association of Plumbing and Mechanical Officials;
kPa - kilo pascal (SI units of pressure);
MCL - maximum contaminant level;
MDD - maximum day demand;
mg/L - milligrams per liter (1 mg/L = 1 ppm);
mL - milliliter;
mm - millimeter;
MRDL - maximum residual disinfectant level;
MRDLG - maximum residual disinfectant level goal;
MTTP - maximum total trihalomethane potential;
NSF - National Sanitation Foundation;
NTNC - nontransient **noncommunity;**
NTU - nephelometric turbidity unit;

PAA - project approval application;
pCi/L - picocuries per liter;
PHD - peak hourly demand;
ppm - parts per million (1 ppm = 1 mg/L);
psi - pounds per square inch;
PVBA - pressure vacuum breaker assembly;
RPBA - reduced pressure backflow assembly;
RPDA - reduced pressure detector assembly;
SAL - state advisory level;
SCA - sanitary control area;
SDWA - Safe Drinking Water Act;
SEPA - State Environmental Policy Act;
SOC - synthetic organic chemical;
SMA - satellite management agency;
SPI - special purpose investigation;
SRF - state revolving fund;
SUVA - specific ultraviolet absorption;
SVBA - spill resistant vacuum breaker assembly;
SWTR - surface water treatment rule;
T - disinfectant contact time in minutes;
TTHM - total trihalomethane;
TNC - transient **noncommunity**;
TNTC - too numerous to count;
TOC - total organic carbon;
UBC - Uniform Building Code;
ug/L - micrograms per liter;
UL - Underwriters Laboratories, Inc.;
umhos/cm - micromhos per centimeter;
UPC - Uniform Plumbing Code;
UTC - utilities and transportation commission;
VOC - volatile organic chemical;
WAC - Washington Administrative Code;
WFI - water facilities inventory and report form; and
WHPA - wellhead protection area.

"Acute" means posing an immediate risk to human health.

"Alternate filtration technology" means a filtration process for substantial removal of particulates (generally > 2 log *Giardia lamblia* cysts and ≥ 2 log removal of *Cryptosporidium* oocysts) by other than conventional, direct, diatomaceous earth, or slow sand filtration processes.

"Analogous treatment system" means an existing water treatment system that has unit processes and source water quality characteristics that are similar to a proposed treatment system.

"Approved air gap" means a physical separation between the free-flowing end of a potable water supply pipeline and the overflow rim of an open or nonpressurized receiving vessel. To be an air gap approved by the department, the separation must be at least:

- Twice the diameter of the supply piping measured vertically from the overflow rim of the receiving vessel, and in no case be less than one inch, when unaffected by vertical surfaces (sidewalls); and:

- Three times the diameter of the supply piping, if the horizontal distance between the supply pipe and a vertical surface (sidewall) is less than or equal to three times the diameter of the supply pipe, or if the horizontal distance between the supply pipe and intersecting vertical surfaces (sidewalls) is less than or equal to four times the diameter of the supply pipe and in no case less than one and one-half inches.

"Approved atmospheric vacuum breaker" means an AVB of make, model, and size that is approved by the department. AVBs that appear on the current approved backflow prevention assemblies list developed by the University of Southern California Foundation for Cross-Connection Control and Hydraulic Research or that are listed or approved by other nationally recognized testing agencies (such as IAPMO, ANSI, or UL) acceptable to the local administrative authority are considered approved by the department.

"Approved backflow preventer" means an approved air gap, an approved backflow prevention assembly, or an approved AVB. The terms "approved backflow preventer," "approved air gap," or "approved backflow prevention assembly" refer only to those approved backflow preventers relied upon by the purveyor for the protection of the public water system. The requirements of WAC 246-290-490 do not apply to backflow preventers installed for other purposes.

"Approved backflow prevention assembly" means an RPBA, RPDA, DCVA, DCDA, PVBA, or SVBA of make, model, and size that is approved by the department. Assemblies that appear on the current approved backflow prevention assemblies list developed by the University of Southern California Foundation for Cross-Connection Control and Hydraulic Research or other entity acceptable to the department are considered approved by the department.

"As-built drawing" means the drawing created by an engineer from the collection of the original design plans, including changes made to the design or to the system, that reflects the actual constructed condition of the water system.

"Authorized agent" means any person who:

- Makes decisions regarding the operation and management of a public water system whether or not he or she is engaged in the physical operation of the system;

- Makes decisions whether to improve, expand, purchase, or sell the system; or

- Has discretion over the finances of the system.

"Average day demand (ADD)" means the total quantity of water use from all sources of supply as measured or estimated over a calendar year divided by three hundred sixty-five. ADD is typically expressed as gallons per day per ERU (gpd/ERU).

"Backflow" means the undesirable reversal of flow of water or other substances through a cross-connection into the public water system or consumer's potable water system.

"Backflow assembly tester" means a person holding a valid BAT certificate issued in accordance with chapter 246-292 WAC.

"Backpressure" means a pressure (caused by a pump, elevated tank or piping, boiler, or other means) on the consumer's side of the service connection that is greater than the pressure provided by the public water system and which may cause backflow.

"Backsiphonage" means backflow due to a reduction in system pressure in the purveyor's distribution system and/or consumer's water system.

"Best available technology (BAT)" means the best technology, treatment techniques, or other means that EPA finds, after examination for efficacy under field conditions, are available, taking cost into consideration.

"Blended sample" means a sample collected from two or more individual sources at a point downstream of the confluence of the individual sources and prior to the first connection.

"C" means the residual disinfectant concentration in mg/L at a point before or at the first consumer.

"Category red operating permit" means an operating permit identified as such under chapter 246-294 WAC. Placement in this category results in permit issuance with conditions and a determination that the system is inadequate.

"Chemical contaminant treatment facility" means a treatment facility specifically used for the purpose of removing chemical contaminants.

"Clarification" means a treatment process that uses gravity (sedimentation) or dissolved air (flotation) to remove flocculated particles.

"Closed system" means any water system or portion of a water system in which water is transferred to a higher pressure zone closed to the atmosphere, such as when no gravity storage is present.

"Coagulant" means a chemical used in water treatment to destabilize particulates and accelerate the rate at which they aggregate into larger particles.

"Coagulation" means a process using coagulant chemicals and rapid mixing to destabilize colloidal and suspended particles and agglomerate them into flocs.

"Combination fire protection system" means a fire sprinkler system that:

- Is supplied only by the purveyor's water;
- Does not have a fire department pumper connection; and
- Is constructed of approved potable water piping and materials that serve both the fire sprinkler system and the consumer's potable water system.

"Completely treated water" means water from a surface or GWI source that receives filtration or disinfection treatment that fully complies with the treatment technique requirements of Part 6 of this chapter as determined by the department.

"Composite sample" means a sample in which more than one source is sampled individually by the water system and then composited by a certified laboratory by mixing equal parts of water from each source (up to five different sources) and then analyzed as a single sample.

"Comprehensive monitoring plan" means a schedule that describes both the frequency and appropriate locations for sampling of drinking water contaminants as required by state and federal rules.

"Comprehensive performance evaluation (CPE)" means a thorough review and analysis of a treatment plant's performance-based capabilities and associated administrative, operation and maintenance practices. It is conducted to identify factors that may be adversely impacting a plant's capability to achieve compliance and emphasizes approaches that can be implemented without significant capital improvements. The comprehensive performance evaluation must consist of at least the following components: Assessment of plant performance; evaluation of major unit processes; identification and prioritization of performance limiting factors; assessment of the applicability of comprehensive technical assistance; and preparation of a CPE report.

"Comprehensive technical assistance (CTA)" means technical assistance intended to identify specific steps that may help a water treatment plant overcome operational or design limitations identified during a comprehensive performance evaluation.

"Confirmation" means to demonstrate the accuracy of results of a sample by analyzing another sample from the same location within a reasonable period of time, generally not to exceed two weeks. Confirmation is when analysis results fall within plus or minus thirty percent of the original sample results.

"Confluent growth" means a continuous bacterial growth covering a portion or the entire filtration area of a membrane filter in which bacterial colonies are not discrete.

"Conservation program" means policies and activities implemented to encourage or cause efficient use of water on a long-term basis. Conservation programs shall include identification of the conservation objectives of the purveyor, evaluation of conservation measures considered, and identification of specific conservation measures identified for implementation.

"Construction completion report" means a form provided by the department and completed for each specific construction project to document:

- Project construction in accordance with this chapter and general standards of engineering practice;
- Physical capacity changes; and
- Satisfactory test results.

The completed form must be stamped with an engineer's seal, and signed and dated by a professional engineer.

"Consumer" means any person receiving water from a public water system from either the meter, or the point where the service line connects with the distribution system if no meter is present. For purposes of cross-connection control, "consumer" means the owner or operator of a water system connected to a public water system through a service connection.

"Consumer's water system," as used in WAC 246-290-490, means any potable and/or industrial water system that begins at the point of delivery from the public water system and is located on the consumer's premises. The consumer's water system includes all auxiliary sources of supply, storage, treatment, and distribution facilities, piping, plumbing, and fixtures under the control of the consumer.

"Contaminant" means a substance present in drinking water that may adversely affect the health of the consumer or the aesthetic qualities of the water.

"Contingency plan" means that portion of the wellhead protection program section of the water system plan or small water system management program that addresses the replacement of the major well(s) or wellfield in the event of loss due to ground water contamination.

"Continuous monitoring" means determining water quality with automatic recording analyzers that operate without interruption twenty-four hours per day.

"Conventional filtration treatment" means a series of processes including coagulation, flocculation, clarification, and filtration that together result in substantial particulate removal in compliance with Part 6 of this chapter.

"Critical water supply service area (CWSSA)" means a geographical area which is characterized by a proliferation of small, inadequate water systems, or by water supply problems which threaten the present or future water quality or reliability of service in such a manner that efficient and orderly development may best be achieved through coordinated planning by the water utilities in the area.

"Cross-connection" means any actual or potential physical connection between a public water system or the consumer's water system and any source of nonpotable liquid, solid, or gas that could contaminate the potable water supply by backflow.

"Cross-connection control program" means the administrative and technical procedures the purveyor implements to protect the public water system from contamination via cross-connections as required in WAC 246-290-490.

"Cross-connection control specialist" means a person holding a valid CCS certificate issued in accordance with chapter 246-292 WAC.

"Cross-connection control summary report" means the annual report that describes the status of the purveyor's cross-connection control program.

"CT" or **"CTcalc"** means the product of "residual disinfectant concentration" (C) and the corresponding "disinfectant contact time" (T) i.e., "C" x "T."

"$CT_{99.9}$" means the CT value required for 99.9 percent (3 log) inactivation of *Giardia lamblia* cysts.

"CTreq" means the CT value a system shall provide to achieve a specific percent inactivation of *Giardia lamblia* cysts or other pathogenic organisms of health concern as directed by the department.

"Curtailment" means short-term, infrequent actions by a purveyor and its consumers to reduce their water use during or in anticipation of a water shortage.

"Dead storage" means the volume of stored water not available to all consumers at the minimum design pressure in accordance with WAC 246-290-230 (5) and (6).

"Demand forecast" means an estimate of future water system water supply needs assuming historically normal weather conditions and calculated using numerous parameters, including population, historic water use, local land use plans, water rates and their impacts on consumption, employment, projected conservation savings from implementation of a conservation program, and other appropriate factors.

"Department" means the Washington state department of health or health officer as identified in a joint plan of operation in accordance with WAC 246-290-030(1).

"Design and construction standards" means department design guidance and other peer reviewed documents generally accepted by the engineering profession as containing fundamental criteria for design and construction of water facility projects. Design and construction standards are comprised of performance and sizing criteria and reference general construction materials and methods.

"Diatomaceous earth filtration" means a filtration process for substantial removal of particulates (> 2 log *Giardia lamblia* cysts) in which:

- A precoat cake of graded diatomaceous earth filter media is deposited on a support membrane (septum); and
- Water is passed through the cake on the septum while additional filter media, known as body feed, is continuously added to the feed water to maintain the permeability of the filter cake.

"Direct filtration" means a series of processes including coagulation, flocculation, and filtration (but excluding sedimentation) that together result in substantial particulate removal in compliance with Part 6 of this chapter.

"Direct service connection" means a service hookup to a property that is contiguous to a water distribution main and where additional distribution mains or extensions are not needed to provide service.

"Disinfectant contact time (T in CT)" means: When measuring the first or only C, the time in minutes it takes water to move from the point of disinfectant application to a point where the C is measured; and

For subsequent measurements of C, the time in minutes it takes water to move from one C measurement point to the C measurement point for which the particular T is being calculated.

"Disinfection" means the use of chlorine or other agent or process the department approves for killing or inactivating microbiological organisms, including pathogenic and indicator organisms.

"Disinfection profile" means a summary of *Giardia lamblia* inactivation through a surface water treatment plant.

"Distribution coliform sample" means a sample of water collected from a representative location in the distribution system at or after the first service and analyzed for coliform presence in compliance with this chapter.

"Distribution-related projects" means distribution projects such as storage tanks, booster pump facilities, transmission mains, pipe linings, and tank coating. It does not mean source of supply (including interties) or water quality treatment projects.

"Distribution reservoir" means a water storage structure that is integrated with a water system's distribution network to provide for variable system demands including, but not limited to, daily equalizing storage, standby storage, or fire reserves, or to provide for disinfectant contact time.

"Distribution system" means all piping components of a public water system that serve to convey water from transmission mains linked to source, storage and treatment facilities to the consumer excluding individual services.

"Domestic or other nondistribution system plumbing problem," means contamination of a system having more than one service connection with the contamination limited to the specific service connection from which the sample was taken.

"Drinking water state revolving fund (DWSRF)" means the revolving loan program financed by the state and federal governments and managed by the state for the purpose of assisting water systems to meet their capital needs associated with complying with the federal Safe Drinking Water Act.

"Duplicate (verification) sample" means a second sample collected at the same time and location as the first sample and used for verification.

"Emergency" means an unforeseen event that causes damage or disrupts normal operations and requires immediate action to protect public health and safety.

"Emergency source" means any source that is approved by the department for emergency purposes only, is not used for routine or seasonal water demands, is physically disconnected, and is identified in the purveyor's emergency response plan.

"Engineering design review report" means a form provided by the department and completed for a specific distribution-related project to document:

- Engineering review of a project report and/or construction documents under the submittal exception process in accordance with WAC 246-290-125(3); and
- Design in accordance with this chapter and general standards of engineering practice.

The completed form must be stamped with engineer's seal, and signed and dated by a professional engineer.

"Equalizing storage" means the volume of storage needed to supplement supply to consumers when the peak hourly demand exceeds the total source pumping capacity.

"Equivalent residential unit (ERU)" means a system-specific unit of measure used to express the amount of water consumed by a typical full-time single family residence.

"Expanding public water system" means a public water system installing additions, extensions, changes, or alterations to their existing source, transmission, storage, or distribution facilities that will enable the system to increase in size its existing service area and/or its number of approved service connections. Exceptions:

- A system that connects new approved individual retail or direct service connections onto an existing distribution system within an existing service area; or
- A distribution system extension in an existing service area identified in a current and approved water system plan or project report.

"Filter profile" means a graphical representation of individual filter performance in a direct or conventional surface water filtration plant, based on continuous turbidity measurements or total particle counts versus time for an entire filter run, from startup to backwash inclusively, that includes an assessment of filter performance while another filter is being backwashed.

"Filtration" means a process for removal of particulate matter from water by passage through porous media.

"Financial viability" means the capability of a water system to obtain sufficient funds to construct, operate, maintain, and manage a public water system, on a continuing basis, in full compliance with federal, state, and local requirements.

"Fire flow" means the maximum rate and duration of water flow needed to suppress a fire under WAC 246-293-640 or as required under local fire protection authority standards.

"Fire suppression storage" means the volume of stored water available during fire suppression activities to satisfy minimum pressure requirements per WAC 246-290-230.

"First consumer" means the first service connection associated with any source (i.e., the point where water is first withdrawn for human consumption, excluding connections where water is delivered to another water system covered by these regulations).

"Flocculation" means a process enhancing agglomeration and collection of colloidal and suspended particles into larger, more easily settleable or filterable particles by gentle stirring.

"Flow-through fire protection system" means a fire sprinkler system that:

- Is supplied only by the purveyor's water;
- Does not have a fire department pumper connection;
- Is constructed of approved potable water piping and materials to which sprinkler heads are attached; and
- Terminates at a connection to a toilet or other plumbing fixture to prevent the water from becoming stagnant.

"Grab sample" means a water quality sample collected at a specific instant in time and analyzed as an individual sample.

"Ground water under the direct influence of surface water (GWI)" means any water beneath the surface of the ground that the department determines has the following characteristics:

- Significant occurrence of insects or other macroorganisms, algae, or large-diameter pathogens such as *Giardia lamblia* or *Cryptosporidium*; or

- Significant and relatively rapid shifts in water characteristics such as turbidity, temperature, conductivity, or pH closely correlating to climatological or surface water conditions where natural conditions cannot prevent the introduction of surface water pathogens into the source at the system's point of withdrawal.

"Guideline" means a department document assisting the purveyor in meeting a rule requirement.

"Health officer" means the health officer of the city, county, city-county health department or district, or an authorized representative.

"Heterotrophic Plate Count (HPC)" means a procedure to measure a class of bacteria that use organic nutrients for growth. The density of these bacteria in drinking water is measured as colony forming units per milliliter and is referred to as the HPC.

"High health cross-connection hazard" means a cross-connection which could impair the quality of potable water and create an actual public health hazard through poisoning or spread of disease by sewage, industrial liquids or waste.

"Human consumption" means the use of water for drinking, bathing or showering, hand washing, food preparation, cooking, or oral hygiene.

"Hydraulic analysis" means the study of a water system's distribution main and storage network to determine present or future adequacy for provision of service to consumers within the established design parameters for the system under peak flow conditions, including fire flow. The analysis is used to establish any need for improvements to existing systems or to substantiate adequacy of design for distribution system components such as piping, elevated storage, booster stations or similar facilities used to pump and convey water to consumers.

"Inactivation" means a process which renders pathogenic microorganisms incapable of producing disease.

"Inactivation ratio" means the ratio obtained by dividing CTcalc by CTreq.

"Incompletely treated water" means water from a surface or GWI source that receives filtration and/or disinfection treatment that does not fully comply with the treatment technique requirements of Part 6 of this chapter as determined by the department.

"In-line filtration" means a series of processes, including coagulation and filtration (but excluding flocculation and sedimentation) that together result in particulate removal.

"In-premises protection" means a method of protecting the health of consumers served by the consumer's potable water system, located within the property lines of the consumer's premises by the installation of an approved air gap or backflow prevention assembly at the point of hazard, which is generally a plumbing fixture.

"Intertie" means an interconnection between public water systems permitting the exchange or delivery of water between those systems.

"Legionella" means a genus of bacteria containing species which cause a type of pneumonia called Legionnaires' Disease.

"Limited alternative to filtration" means a process that ensures greater removal and/or inactivation efficiencies of pathogenic organisms than would be achieved by the combination of filtration and chlorine disinfection.

"Local administrative authority" means the local official, board, department, or agency authorized to administer and enforce the provisions of the Uniform Plumbing Code as adopted under chapter 19.27 RCW.

"Low health cross-connection hazard" means a cross-connection that could cause an impairment of the quality of potable water to a degree that does not create a hazard to the public health, but does adversely and unreasonably affect the aesthetic qualities of such potable waters for domestic use.

"Major project" means all construction projects subject to SEPA in accordance with WAC 246-03-030 (3)(a) and include all surface water source development, all water system storage facilities greater than one-half million gallons, new transmission lines longer than one thousand feet and larger than eight inches in diameter located in new rights of way and major extensions to existing water distribution systems involving use of pipes greater than eight inches in diameter, that are designed to increase the existing service area by more than one square mile.

"Mandatory curtailment" means curtailment required by a public water system of specified water uses and consumer classes for a specified period of time.

"Maximum contaminant level (MCL)" means the maximum permissible level of a contaminant in water the purveyor delivers to any public water system user, measured at the locations identified under WAC 246-290-300, Table 3.

"Maximum contaminant level violation" means a confirmed measurement above the MCL and for a duration of time, where applicable, as outlined under WAC 246-290-310.

"Maximum day demand (MDD)" means the highest actual or estimated quantity of water that is, or is expected to be, used over a twenty-four hour period, excluding unusual events or emergencies. MDD is typically expressed as gallons per day per ERU (gpd/ERU).

"Monitoring waiver" means an action taken by the department under WAC 246-290-300 (4)(g) or (7)(f) to allow a water system to reduce specific monitoring requirements based on a determination of low source vulnerability to contamination.

"Nested storage" means one component of storage is contained within the component of another.

"Nonacute" means posing a possible or less than immediate risk to human health.

"Nonresident" means a person having access to drinking water from a public water system, but who lives elsewhere. Examples include travelers, transients, employees, students, etc.

"Normal operating conditions" means those conditions associated with the designed, day-to-day provision of potable drinking water that meets regulatory water quality standards and the routine service expectations of the system's consumers at all times, including meeting fire flow demands. Operation under conditions such as power outages, floods, or unscheduled transmission or distribution disruptions, even if considered in the system design, are considered abnormal.

"Operational storage" means the volume of distribution storage associated with source or booster pump normal cycling times under normal operating conditions and is additive to the equalizing and standby storage components, and to fire flow storage if this storage component exists for any given tank.

"Peak hourly demand (PHD)" means the maximum rate of water use, excluding fire flow, that can be expected to occur within a defined service area over a continuous sixty minute time period. PHD is typically expressed in gallons per minute (gpm).

"Peak hourly flow" means, for the purpose of CT calculations, the greatest volume of water passing through the system during any one hour in a day.

"Performance criteria" means the level at which a system shall operate in order to maintain system reliability compliance, in accordance with WAC 246-290-420, and to meet consumers' reasonable expectations.

"Permanent residence" means any dwelling that is, or could reasonably be expected to be, occupied on a continuous basis.

"Permanent source" means a public water system supply source that is used regularly each year, and based on expected operational requirements of the system, will be used more than three consecutive months in any twelve-month period. For seasonal water systems that are in operation for less than three consecutive months per year, their sources shall also be considered to be permanent.

"Point of disinfectant application" means the point where the disinfectant is added, and where water downstream of that point is not subject to contamination by untreated surface water.

"Population served" means the number of persons, resident and nonresident, having immediate access to drinking water from a public water system, whether or not such persons have actually consumed water from that system. The number of nonresidents shall be the average number of persons having immediate access to drinking water on days access was provided during that month. In the absence of specific population data, the number of residents shall be computed by multiplying the number of active services by two and one-half.

"Potable" means water suitable for drinking by the public.

"Potential GWI" means a source identified by the department as possibly under the influence of surface water, and includes, but is not limited to, all wells with a screened interval fifty feet or less from the ground surface at the wellhead and located within two hundred feet of a surface water, and all Ranney wells, infiltration galleries, and springs.

"Premises isolation" means a method of protecting a public water system by installation of approved air gaps or approved backflow prevention assemblies at or near the service connection or alternative location acceptable to the purveyor to isolate the consumer's water system from the purveyor's distribution system.

"Pressure filter" means an enclosed vessel containing properly sized and graded granular media through which water is forced under greater than atmospheric pressure.

"Primary disinfection" means a treatment process for achieving inactivation of *Giardia lamblia* cysts, viruses, or other pathogenic organisms of public health concern to comply with the treatment technique requirements of Part 6 of this chapter.

"Primary standards" means standards based on chronic, nonacute, or acute human health effects.

"Primary turbidity standard" means an accurately prepared formazin solution or commercially prepared polymer solution of known turbidity (prepared in accordance with "standard methods") that is used to calibrate bench model and continuous turbidimeters (instruments used to measure turbidity).

"Project approval application (PAA)" means a department form documenting ownership of water system, design engineer for the project, and type of project.

"Protected ground water source" means a ground water source the purveyor shows to the department's satisfaction as protected from potential sources of contamination on the basis of hydrogeologic data and/or satisfactory water quality history.

"Public water system" is defined and referenced under WAC 246-290-020.

"Purchased source" means water a purveyor purchases from a public water system not under the control of the purveyor for distribution to the purveyor's consumers.

"Purveyor" means an agency, subdivision of the state, municipal corporation, firm, company, mutual or cooperative association, institution, partnership, or person or other entity owning or operating a public water system. Purveyor also means the authorized agents of such entities.

"Reclaimed water" means effluent derived in any part from sewage from a wastewater treatment system that has been adequately and reliably treated, so that as a result of that treatment, it is suitable for beneficial use or a controlled use that would not otherwise occur, and it is no longer considered wastewater.

"Record drawings" means the drawings bearing the seal and signature of a professional engineer that reflect the modifications made to construction documents, documenting actual constructed conditions of the water system facilities.

"Recreational tract" means an area that is clearly defined for each occupant, but has no permanent structures with internal plumbing, and the area has been declared as such in the covenants or on the recorded plat in order to be eligible for reduced design considerations.

"Regional public water supplier" means a water system that provides drinking water to one, or more, other public water systems.

"Regularly" means four hours or more per day for four days or more per week.

"Removal credit" means the level (expressed as a percent or log) of *Giardia* and virus removal the department grants a system's filtration process.

"Repeat sample" means a sample collected to confirm the results of a previous analysis.

"Resident" means an individual living in a dwelling unit served by a public water system.

"Residual disinfectant concentration" means the analytical level of a disinfectant, measured in milligrams per liter, that remains in water following the application (dosing) of the disinfectant after some period of contact time.

"Same farm" means a parcel of land or series of parcels that are connected by covenants and devoted to the production of livestock or agricultural commodities for commercial purposes and does not qualify as a **Group A** public water system.

"Sanitary survey" means a review, inspection, and assessment of a public water system by the department or department designee including, but not limited to: Source, facilities, equipment, administration and operation, maintenance procedures, monitoring, recordkeeping, planning documents and schedules, and management practices. The purpose of the survey is to evaluate the adequacy of the water system for producing and distributing safe and adequate drinking water.

"Satellite management agency (SMA)" means a person or entity that is approved by the department to own or operate public water systems on a regional or county-wide basis without the necessity for a physical connection between such systems.

"Seasonal source" means a public water system source used on a regular basis, that is not a permanent or emergency source.

"Secondary standards" means standards based on factors other than health effects.

"Service connection" means a connection to a public water system designed to provide potable water to a single-family residence, or other residential or nonresidential population. When the connection provides water to a residential population without clearly defined single-family residences, the following formulas shall be used in determining the number of services to be included as residential connections on the WFI form:

- Divide the average population served each day by two and one-half; or
- Using actual water use data, calculate the total ERUs represented by the service connection in accordance with department design guidance.
- In no case shall the calculated number of services be less than one.

"Significant noncomplier" means a system that is violating or has violated department rules, and the violations may create, or have created an imminent or a significant risk to human health. Such violations include, but are not limited to, repeated violations of monitoring requirements, failure to address an exceedance of permissible levels of regulated contaminants, or failure to comply with treatment technique standards or requirements.

"Simple disinfection" means any form of disinfection that requires minimal operational control in order to maintain the disinfection at proper functional levels, and that does not pose safety concerns that would require special care, equipment, or expertise. Examples include hypochlorination, UV-light, contactor chlorination, or any other form of disinfection practice that is safe to use and easy to routinely operate and maintain.

"Slow sand filtration" means a process involving passage of source water through a bed of sand at low velocity (generally less than 0.10 gpm/ft^2) that results in substantial particulate removal (> 2 log *Giardia lamblia* cysts) by physical and biological mechanisms.

"Source meter" means a meter that measures total output of a water source over specific time periods.

"Source water" means untreated water that is not subject to recontamination by surface runoff and:

- For unfiltered systems, enters the system immediately before the first point of disinfectant application; and
- For filtered systems, enters immediately before the first treatment unit of a water treatment facility.

"Special purpose investigation (SPI)" means on-site inspection of a public water system by the department or designee to address a potential public health concern, regulatory violation, or consumer complaint.

"Special purpose sample" means a sample collected for reasons other than the monitoring compliance specified in this chapter.

"Spring" means a source of water where an aquifer comes in contact with the ground surface.

"Standard methods" means the 18th edition of the book, titled *Standard Methods for the Examination of Water and Waste Water,* jointly published by the American Public Health Association, American Water Works Association (AWWA), and Water Pollution Control Federation. This book is available through public libraries or may be ordered from AWWA, 6666 West Quincy Avenue, Denver, Colorado 80235.

"Standby storage" means the volume of stored water available for use during a loss of source capacity, power, or similar short-term emergency.

"State advisory level (SAL)" means a level established by the department and state board of health for a contaminant without an existing MCL. The SAL represents a level that when exceeded, indicates the need for further assessment to determine if the chemical is an actual or potential threat to human health.

"State board of health" and **"board"** means the board created by RCW 43.20.030.

"Subpart H System" see definition for **"surface water system."**

"Surface water" means a body of water open to the atmosphere and subject to surface runoff.

"Surface water system" means a public water system that uses in whole, or in part, source water from a surface supply, or ground water under the direct influence of surface water (GWI) supply. This includes systems that operate surface water treatment facilities, and systems that purchase "completely treated water" (as defined in this subsection). A "surface water system" is also referred to as a "Subpart H System" in some federal regulatory language adopted by reference and the two terms are considered equivalent for the purposes of this chapter.

"Susceptibility assessment" means the completed Susceptibility Assessment Survey Form developed by the department to evaluate the hydrologic setting of the water source and assess its contribution to the source's overall susceptibility to contamination from surface activities.

"Synthetic organic chemical (SOC)" means a manufactured carbon-based chemical.

"System capacity" means the system's operational, technical, managerial, and financial capability to achieve and maintain compliance with all relevant local, state, and federal plans and regulations.

"System physical capacity" means the maximum number of service connections or equivalent residential units (ERUs) that the system can serve when considering the limitation of each system component such as source, treatment, storage, transmission, or distribution, individually and in combination with each other.

"Time-of-travel" means the time required for ground water to move through the water bearing zone from a specific point to a well.

"Too numerous to count (TNTC)" means the total number of bacterial colonies exceeds 200 on a 47-mm diameter membrane filter used for coliform detection.

"Tracer study" means a field study conducted to determine the disinfectant contact time, T, provided by a water system component, such as a clearwell or storage reservoir, used for *Giardia lamblia* cyst and virus inactivation. The study involves introducing a tracer chemical at the inlet of the contact basin and measuring the resulting outlet tracer concentration as a function of time.

"Transmission line" means pipes used to convey water from source, storage, or treatment facilities to points of distribution or distribution mains, and from source facilities to treatment or storage facilities. This also can include transmission mains connecting one section of distribution system to another section of distribution system as long as this transmission main is clearly defined as such on the plans and no service connections are allowed along the transmission main.

"Treatment technique requirement" means a department-established requirement for a public water system to provide treatment, such as filtration or disinfection, as defined by specific design, operating, and monitoring requirements. A "treatment technique requirement" is established in lieu of a primary MCL when monitoring for the contaminant is not economically or technologically feasible.

"Trihalomethane (THM)" means one of a family of organic compounds, named as derivatives of methane, where three of the four hydrogen atoms in methane are each substituted by a halogen atom in the molecular structure. THMs may occur when chlorine, a halogen, is added to water containing organic material and are generally found in water samples as disinfection by-products.

"Turbidity event" means a single day or series of consecutive days, not to exceed fourteen, when one or more turbidity measurement each day exceeds 5 NTU.

"T10" means the time it takes ten percent of the water passing through a system contact tank intended for use in the inactivation of *Giardia lamblia* cysts, viruses, and other microorganisms of public health concern, as determined from a tracer study conducted at peak hourly flow or from published engineering reports or guidance documents for similarly configured tanks.

"Unapproved auxiliary water supply" means a water supply (other than the purveyor's water supply) on or available to the consumer's premises that is either not approved for human consumption by the health agency having jurisdiction or is not otherwise acceptable to the purveyor.

"Uncovered distribution reservoir" means a distribution reservoir that is open, without a suitable water-tight roof or cover, where the potable water supply is exposed to external contaminants, including but not limited to people, birds, animals, and insects and will undergo no further treatment except for residual disinfection.

"Uniform Plumbing Code" means the code adopted under RCW 19.27.031(4) and amended under chapter 51-56 WAC. This code establishes statewide minimum plumbing standards applicable within the property lines of the consumer's premises.

"Used water" means water which has left the control of the purveyor.

"Verification" means to demonstrate the results of a sample to be precise by analyzing a duplicate sample. Verification occurs when analysis results fall within plus or minus thirty percent of the original sample.

"Virus" means a virus of fecal origin which is infectious to humans and transmitted through water.

"Volatile organic chemical (VOC)" means a manufactured carbon-based chemical that vaporizes quickly at standard pressure and temperature.

"Voluntary curtailment" means a curtailment of water use requested, but not required of consumers.

"Waterborne disease outbreak" means the significant occurrence of acute infectious illness, epidemiologically associated with drinking water from a public water system, as determined by the appropriate local health agency or the department.

"Water facilities inventory (WFI) form" means the department form summarizing each public water system's characteristics.

"Water right" means a permit, claim, or other authorization, on record with or accepted by the department of ecology, authorizing the beneficial use of water in accordance with all applicable state laws.

"Water right assessment" means an evaluation of the legal ability of a water system to use water for existing or proposed usages in conformance with state water right laws. Such an assessment may be done by a water system, a purveyor, the department of ecology, or any combination thereof.

"Watershed" means the region or area that:

- Ultimately drains into a surface water source diverted for drinking water supply; and
- Affects the physical, chemical, microbiological, and radiological quality of the source.

"Water shortage" means a situation during which the water supplies of a system cannot meet normal water demands for the system, including peak periods.

"Water shortage response plan" means a plan outlining policies and activities to be implemented to reduce water use on a short-term basis during or in anticipation of a water shortage.

"Well field" means a group of wells one purveyor owns or controls that:

- Draw from the same aquifer or aquifers as determined by comparable inorganic chemical analysis and comparable static water level and top of the open interval elevations; and

- Discharge water through a common pipe and the common pipe shall allow for collection of a single sample before the first distribution system connection.

"Wellhead protection area (WHPA)" means the portion of a well's, wellfield's or spring's zone of contribution defined as such using WHPA criteria established by the department.

"Zone of contribution" means the area surrounding a pumping well or spring that encompasses all areas or features that supply ground water recharge to the well or spring.

[Statutory Authority: RCW 43.20.050 and 70.119A.080. 04-04-056, § 246-290-010, filed 1/30/04, effective 3/1/04. Statutory Authority: RCW 43.20.050 (2) and (3) and 70.119A.080. 03-08-037, § 246-290-010, filed 3/27/03, effective 4/27/03. Statutory Authority: RCW 43.02.050 [43.20.050]. 99-07-021, § 246-290-010, filed 3/9/99, effective 4/9/99. Statutory Authority: RCW 43.20.050. 94-14-001, § 246-290-010, filed 6/22/94, effective 7/23/94; 93-08-011 (Order 352B), § 246-290-010, filed 3/25/93, effective 4/25/93; 92-04-070 (Order 241B), § 246-290-010, filed 2/4/92, effective 3/6/92. Statutory Authority: Chapter 43.20 RCW. 91-07-031 (Order 150B), § 246-290-010, filed 3/15/91, effective 4/15/91. Statutory Authority: RCW 43.20.050. 91-02-051 (Order 124B), recodified as § 246-290-010, filed 12/27/90, effective 1/31/91. Statutory Authority: P.L. 99-339. 89-21-020 (Order 336), § 248-54-015, filed 10/10/89, effective 11/10/89. Statutory Authority: RCW 34.04.045. 88-05-057 (Order 307), § 248-54-015, filed 2/17/88. Statutory Authority: RCW 43.20.050. 83-19-002 (Order 266), § 248-54-015, filed 9/8/83.] WAC 246-290-020 Applicability.

WAC 246-290-020 Applicability.

(1) Public water system shall mean any system providing water for human consumption through pipes or other constructed conveyances, excluding a system serving only one single-family residence and a system with four or fewer connections all of which serve residences on the same farm. Such term includes:

   (a) Collection, treatment, storage, and/or distribution facilities under control of the purveyor and used primarily in connection with such system; and

   (b) Collection or pretreatment storage facilities not under control of the purveyor, but primarily used in connection with such system.

(2) The rules of this chapter shall apply to all **Group A** public water systems except those systems meeting all of the following conditions:

(a) Consists only of distribution and/or storage facilities and does not have any source or treatment facilities;

(b) Obtains all water from, but is not owned by, a public water system where the rules of this chapter apply;

(c) Does not sell water directly to any person; and

(d) Is not a passenger-conveying carrier in interstate commerce.

(3) **Group A** public water systems meeting all of the provisions under subsection (2) of this section may be required by the department to comply with such provisions of this chapter as are necessary to resolve a public health concern if the department determines a public health threat exists or is suspected.

(4) A **Group A** system shall be defined as a public water system providing service such that it meets the definition of a public water system provided in the 1996 amendments to the federal Safe Drinking Water Act (Public Law 104-182, Section 101, subsection b).

(5) **Group A** water systems are further defined as **community** and **noncommunity** water systems.

(a) **Community** water system means any **Group A** water system providing service to fifteen or more service connections used by year-round residents for one hundred eighty or more days within a calendar year, regardless of the number of people, or regularly serving at least twenty-five year-round (i.e., more than one hundred eighty days per year) residents.

Examples of a **community** water system might include a municipality, subdivision, mobile home park, apartment complex, college with dormitories, nursing home, or prison.

(b) **Noncommunity** water system means a **Group A** water system that is not a **community** water system. **Noncommunity** water systems are further defined as:

(i) **Nontransient (NTNC)** water system that provides service opportunity to twenty-five or more of the same nonresidential people for one hundred eighty or more days within a calendar year.

Examples of a **NTNC** water system might include a school, day care center, or a business, factory, motel, or restaurant with twenty-five or more employees on-site.

(ii) **Transient (TNC)** water system that serves:

(A) Twenty-five or more different people each day for sixty or more days within a calendar year;

(B) Twenty-five or more of the same people each day for sixty or more days, but less than one hundred eighty days within a calendar year; or

(C) One thousand or more people for two or more consecutive days within a calendar year.

Examples of a **TNC** water system might include a restaurant, tavern, motel, campground, state or county park, an RV park, vacation cottages, highway rest area, fairground, public concert facility, special event facility, or church.

(c) A **Group B** water system is a public water system that does not meet the definition of a **Group A** water system. (See Table 1 and chapter 246-291 WAC for further explanation of a **Group B** water system.)

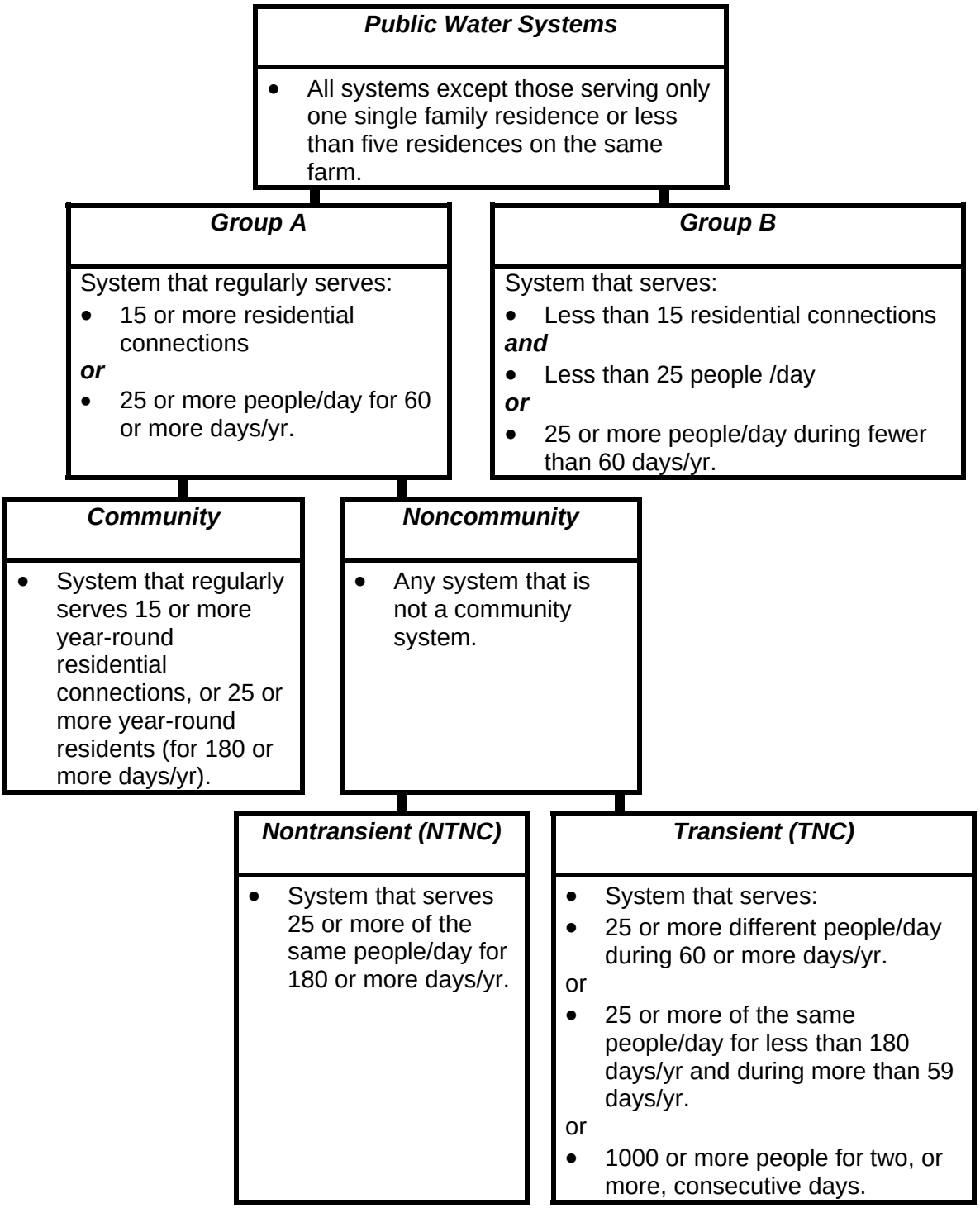
(6) A **Group A** system meeting more than one of the categories described in this section shall be classified by the department in the following order:

(a) **Community** water system;

(b) **NTNC** water system; or

(c) **TNC** water system.

Table 1



[Statutory Authority: RCW 43.02.050 [43.20.050]. 99-07-021, § 246-290-020, filed 3/9/99, effective 4/9/99. Statutory Authority: RCW 43.20.050. 94-14-001, § 246-290-020, filed 6/22/94, effective 7/23/94; 93-08-011 (Order 352B), § 246-290-020, filed 3/25/93, effective 4/25/93; 91-02-051 (Order 124B), recodified as § 246-290-020, filed 12/27/90, effective 1/31/91. Statutory Authority: P.L. 99-339. 89-21-020 (Order 336), § 248-54-006, filed 10/10/89, effective 11/10/89.]

WAC 246-290-025 Adoption by reference.

The following sections and subsections of Title 40 Code of Federal Regulations (CFR) Part 141 National Primary Drinking Water Regulations revised as of July 1, 2003, and including all amendments and modifications thereto effective as of the date of adoption of this chapter are adopted by reference:

141.2 Definitions.	Only those definitions listed as follows:
	Action level;
	Corrosion inhibitor;
	Effective corrosion inhibitor residual;
	Enhanced coagulation;
	Enhanced softening;
	Granular activated carbon (GAC10);
	Haloacetic acids (five) (HAA5);
	First draw sample;
	Large water system;
	Lead service line;
	Maximum residual disinfectant level (MRDL);
	Maximum residual disinfectant level goal (MRDLG);
	Medium-size water system;
	Optimal corrosion control treatment;
	Service line sample;
	Single family structure;
	Small water system;
	Specific ultraviolet absorption (SUVA); and
	Total Organic Carbon (TOC).
141.12	Maximum contaminant levels for organic chemicals.
141.13	Maximum contaminant levels for turbidity.
141.21	Coliform monitoring.
141.22	Turbidity sampling and analytical requirements.
141.23(a) – 141.23(j), excluding (i)(2)	Inorganic chemical sampling.
141.23(m) – 141.23(o)	
141.24(a) – 141.24(d)	Organic chemicals other than total trihalomethanes.
141.24 (f)(1) – 141.24 (f)(15),	
141.24 (f)(18), 141.24 (f)(19),	
141.24 (f)(21), 141.24(f)(22)	
141.24 (g)(1) – 141.24 (g)(9),	
141.24 (g)(12) – 141.24 (g)(14),	
141.24 (h)(1) – 141.24 (h)(11),	
141.24 (h)(14) – 141.24 (h)(17)	
141.24(h)(20)	
141.25(a) – 141.25 (c) – (d)	Analytical methods for radioactivity.
141.26	Monitoring frequency and compliance for radioactivity in community water systems.

141.31(d)	Reporting of public notices and compliance certifications.
141.33(e)	Record maintenance of public notices and certifications.
141.40(a) – 141.40(e)	Special monitoring for inorganic and organic chemicals.
141.40(g), 141.40(i) – 141.40(n)	
141.61	Maximum contaminant levels for organic contaminants.
141.62, excluding (b)	Maximum contaminant levels for inorganic chemical and physical contaminants.
141.64(c)	Best Available Technologies (BATs) for Disinfection By-Products.
141.65(c)	Best Available Technologies (BATs) for Maximum Residual Disinfectant Levels.
141.66	Maximum contaminant levels for radionuclides.
Control of Lead and Copper	
141.80	General requirements.
141.81	Applicability of corrosion control treatment steps to small, medium-size and large water systems.
141.82(a) – 141.82(h)	Description of corrosion control treatment requirements.
141.83	Source water treatment requirements.
141.84	Lead service line replacement requirements.
141.85	Public education and supplemental monitoring requirements.
141.86 (a) – (f)	Monitoring requirements for lead and copper in tap water.
141.87	Monitoring requirements for water quality parameters.
141.88	Monitoring requirements for lead and copper in source water.
141.89	Analytical methods for lead and copper testing.
141.90, excluding (a)(4)	Reporting requirements.
141.91	Recordkeeping requirements.
Disinfectants and Disinfection By-Products (D/DBP)	
141.130	General requirements.
141.131	Analytical requirements.
141.132	Monitoring requirements.
141.133	Compliance.
141.134	Reporting and recordkeeping.
141.135	Treatment technique for control of disinfection by-product precursors.

Enhanced Filtration – Reporting and Recordkeeping	
141.175(b)	Individual filter reporting and follow-up action requirements for systems treating surface water with conventional, direct, or in-line filtration and serving at least 10,000 people.
Subpart Q – Public Notification Rule	
141.201, excluding (3)(ii) of Table 1	General public notification requirements.
141.202, excluding (3) of Table 1	Tier 1 Public Notice - Form, manner, and frequency of notice.
141.203	Tier 2 Public Notice - Form, manner, and frequency of notice.
141.204	Tier 3 Public Notice - Form, manner, and frequency of notice.
141.205	Content of the public notice.
141.206	Notice to new billing units or new customers.
141.207	Special notice of the availability of unregulated contaminant monitoring results.
141.208	Special notice for exceedances of the SMCL for fluoride.
Appendix A and B	
Subpart T – Enhanced Filtration and Disinfection – Systems Serving Fewer Than 10,000 People	
141.530 – 141.544	Disinfection profile and benchmark.
141.563	Follow-up actions required.
141.570, excluding (c)	Reporting requirements.
Part 143 – National Secondary Drinking Water Regulations	
143.1 – 143.4	Secondary contaminants.

Copies of the incorporated sections and subsections of Title 40 CFR are available from the Department of Health, 7171 Cleanwater Lane, Building 3, P.O. Box 47822, Olympia, Washington 98504-7822, or by calling the department's drinking water hotline at 1-800-521-0323.

[Statutory Authority: RCW 43.20.050 and 70.119A.080. 04-04-056, § 246-290-025, filed 1/30/04, effective 3/1/04. Statutory Authority: RCW 43.20.050 (2) and (3) and RCW 70.119A.080. 03-08-037, § 246-290-025, filed 3/27/03, effective 4/27/03. Statutory Authority: RCW 43.02.050 [43.20.050]. 99-07-021, § 246-290-025, filed 3/9/99, effective 4/9/99. Statutory Authority: RCW 43.20.050. 94-14-001, § 246-290-025, filed 6/22/94, effective 7/23/94.]

WAC 246-290-030 General administration.

(1) The department and the health officer for each local health jurisdiction may develop a joint plan of operation. This plan shall:

(a) List the roles and responsibilities of each agency;

(b) Specifically designate those **Group A** systems for which the department and local health officer have primary responsibility;

(c) Provide for an agreed-to level of public water system oversight;

(d) Be signed by the department and the local health department or district; and

(e) Be reviewed at least once every five years and updated as needed.

Wherever in this chapter the term "department" is used, the term "health officer" may be substituted based on the terms of this plan of operation.

(2) The department shall, upon request, review and report on the adequacy of water supply supervision to both the state and local boards of health.

(3) The local board of health may adopt rules governing **Group A** water systems within its jurisdiction for which the health officer has assumed primary responsibility. Adopted local board of health rules shall be:

(a) No less stringent than this chapter; and

(b) Revised, if necessary, within twelve months after the effective date of revised state board of health rules. During this time period, existing local rules shall remain in effect, except provisions of the revised state board of health rules that are more stringent than the local board of health rules shall apply.

(4) For those **Group A** water systems where the health officer has assumed primary responsibility, the health officer may approve project reports and construction documents in accordance with engineering criteria approved by the department and listed under Part 3 of this chapter and water system plans in accordance with planning criteria listed under WAC 246-290-100.

(5) An advisory committee shall be established to provide advice to the department on the organization, functions, service delivery methods, and funding of the drinking water program. Members shall be appointed by the department for fixed terms of no less than two years, and may be reappointed. The committee shall reflect a broad range of interests in the regulation of public water supplies, including water utilities of all sizes, local governments, business groups, special purpose districts, local health jurisdictions, other state and federal agencies, financial institutions, environmental organizations, the legislature, professional engineers engaged in water system design, and other groups substantially affected by the department's role in implementing state and federal requirements for public water systems.

(6) The department may develop guidance to clarify sections of the rules as needed and make these available for distribution. Copies of the guidance may be obtained by contacting the office of drinking water.

(7) Fees may be charged and collected by the department as authorized in chapter 43.20B RCW and by local health agencies as authorized in RCW 70.05.060 to recover all or a portion of the costs incurred in administering this chapter or that are required to be paid under WAC 246-290-990.

(8) All state and local agencies involved in review, approval, surveillance, testing, and/or operation of public water systems, or issuance of permits for buildings or sewage systems shall be governed by these rules and any decisions of the department.

[Statutory Authority: RCW 43.02.050 [43.20.050]. 99-07-021, § 246-290-030, filed 3/9/99, effective 4/9/99. Statutory Authority: RCW 43.20.050. 94-14-001, § 246-290-030, filed 6/22/94, effective 7/23/94; 93-08-011 (Order 352B), § 246-290-030, filed 3/25/93, effective 4/25/93; 91-02-051 (Order 124B), recodified as § 246-290-030, filed 12/27/90, effective 1/31/91. Statutory Authority: P.L. 99-339. 89-21-020 (Order 336), § 248-54-025, filed 10/10/89, effective 11/10/89. Statutory Authority: RCW 34.04.045. 88-05-057 (Order 307), § 248-54-025, filed 2/17/88. Statutory Authority: RCW 43.20.050. 83-19-002 (Order 266), § 248-54-025, filed 9/8/83.]

WAC 246-290-035 Water system ownership.

(1) The following requirements apply to all newly developed public water systems:

(a) Except for systems proposed within an individual water system's approved service area in a critical water supply service area as governed by the Public Water System Coordination Act, chapter 70.116 RCW and chapter 246-293 WAC, and offered service by that existing system, any proposed new public water system must be owned or operated by a department approved satellite management agency (SMA) if one is available;

(b) The approval of any proposed new public water system shall be conditioned upon the periodic review of the system's operational history to determine its ability to meet the department's financial viability and other operating requirements. If, upon periodic review, the department determines the system is in violation of financial viability or other operating requirements, the system shall transfer ownership to an approved SMA or obtain operation and management by an approved SMA, if such ownership or operation and management can be made with reasonable economy and efficiency.

(2) An owner of a public water system who is proposing to transfer or has transferred ownership shall:

(a) Provide written notice to the department and all consumers at least one year prior to the transfer, unless the new owner agrees to an earlier date. Notification shall include a time schedule for transferring responsibilities, identification of the new owner, and under what authority the new ownership will operate. If the system is a corporation, identification of the registered agent shall also be provided;

(b) Ensure all health-related standards pursuant to this chapter are met during transfer of the utility. It shall also be the responsibility of the utility transferring ownership to inform and train the new owner regarding operation of the utility; and

(c) Comply with the operating permit requirements pursuant to chapter 246-294 WAC.

(3) The purveyor may be required to document compliance with other relevant ownership requirements, such as those pursuant to UTC jurisdiction under Title 80 RCW.

(4) No purveyor may end utility operations without providing written notice to all customers and to the department at least one year prior to termination of service. A purveyor that fails to provide such notice remains subject to the provisions of this chapter.

[Statutory Authority: RCW 43.02.050 [43.20.050]. 99-07-021, § 246-290-035, filed 3/9/99, effective 4/9/99.]

WAC 246-290-040 Engineering requirements.

(1) Purveyors shall ensure that all work required to be prepared under the direction of a professional engineer, including, but not limited to, water system plans, project reports, corrosion control recommendation reports, tracer studies, construction documents and construction completion reports, and engineering design review reports for distribution-related submittal exceptions, is prepared under the direction, and bears the seal, date, and signature of a professional engineer:

(a) Licensed in the state of Washington under chapter 18.43 RCW; and

(b) Having specific expertise regarding design, operation, and maintenance of public water systems.

(2) Exceptions to this requirement are projects identified under WAC 246-290-125 (1)(a) through (d).

[Statutory Authority: RCW 43.02.050 [43.20.050]. 99-07-021, § 246-290-040, filed 3/9/99, effective 4/9/99. Statutory Authority: RCW 43.20.050. 94-14-001, § 246-290-040, filed 6/22/94, effective 7/23/94; 93-08-011 (Order 352B), § 246-290-040, filed 3/25/93, effective 4/25/93; 91-02-051 (Order 124B), recodified as § 246-290-040, filed 12/27/90, effective 1/31/91. Statutory Authority: P.L. 99-339. 89-21-020 (Order 336), § 248-54-035, filed 10/10/89, effective 11/10/89. Statutory Authority: RCW 34.04.045. 88-05-057 (Order 307), § 248-54-035, filed 2/17/88. Statutory Authority: RCW 43.20.050. 83-19-002 (Order 266), § 248-54-035, filed 9/8/83.]

WAC 246-290-050 Enforcement.

When any purveyor is out of compliance with a law or rule regulating public water systems and administered by the department, the department may initiate appropriate enforcement actions, regardless of any prior approvals issued. These actions may include, but are not limited to, any one or combination of the following:

(1) Notice of violation instructing or requiring appropriate corrective measures;

(2) Compliance schedule for specific actions necessary to achieve compliance status;

(3) Departmental order requiring submission of project reports, construction documents, and construction report forms;

(4) Departmental order requiring specific actions or ceasing unacceptable activities within a designated time period;

(5) Departmental order to stop work and/or refrain from using any public water system or improvements thereto until all written approvals required by statute or rule are obtained;

(6) Imposition of civil penalties may be issued for up to five thousand dollars per day per violation, or, in the case of a violation that has been determined to be a public health emergency, a penalty of not more than ten thousand dollars per day per violation under authority of chapter 70.119A RCW;

(7) Imposition of civil penalties may be issued to a person who constructs, modifies, or expands a public water system or who commences the construction, modification, or expansion of a public water system without first obtaining the required department approval. The amount of the penalty may be up to five thousand dollars per service connection, or, in the case of a system serving a transient population, a penalty of not more than four hundred dollars per person based on the highest average daily population the system serves or is anticipated to serve. The total penalty that may be imposed pursuant to this subsection and RCW 70.119A.040 (1)(b) is five hundred thousand dollars;

(8) Action that requires the purveyor to take preventive or corrective steps when results of a sanitary survey or special purpose investigation conducted by, or on behalf of, the department indicate conditions that are currently or may become a detriment to system operation;

(9) Legal action may be taken by the attorney general or local prosecutor. The legal action may be criminal or civil.

[Statutory Authority: RCW 43.02.050 [43.20.050]. 99-07-021, § 246-290-050, filed 3/9/99, effective 4/9/99. Statutory Authority: RCW 43.20.050. 93-08-011 (Order 352B), § 246-290-050, filed 3/25/93, effective 4/25/93; 91-02-051 (Order 124B), recodified as § 246-290-050, filed 12/27/90, effective 1/31/91. Statutory Authority: P.L. 99-339. 89-21-020 (Order 336), § 248-54-045, filed 10/10/89, effective 11/10/89. Statutory Authority: RCW 34.04.045. 88-05-057 (Order 307), § 248-54-045, filed 2/17/88. Statutory Authority: RCW 43.20.050. 83-19-002 (Order 266), § 248-54-045, filed 9/8/83.]

WAC 246-290-060 Variances, exemptions, and waivers.

(1) General.

(a) The state board of health may grant variances, exemptions, and waivers of the requirements of this chapter according to the procedures outlined in subsection (5) of this section. See WAC 246-290-300 (4)(g) and (8)(f) for monitoring waivers.

(b) Consideration by the board of requests for variances, exemptions, and waivers shall not be considered adjudicative proceedings as that term is defined in chapter 34.05 RCW.

(c) Statements and written material regarding the request may be presented to the board at or before the public hearing where the application will be considered. Allowing cross-examination of witnesses shall be within the discretion of the board.

(d) The board may grant a variance, exemption, or waiver if it finds:

(i) Due to compelling factors, the public water system is unable to comply with the requirements; and

(ii) The granting of the variance, exemption, or waiver will not result in an unreasonable risk to the health of consumers.

(2) Variances.

(a) MCL.

(i) The board may grant a MCL variance to a public water system that cannot meet the MCL requirements because of characteristics of the source water that is reasonably available to the system.

(ii) A MCL variance may only be granted in accordance with 40 CFR 141.4.

(iii) A variance shall not be granted from the MCL for presence of total coliform under WAC 246-290-310(2).

(b) Treatment techniques.

(i) The board may grant a treatment technique variance to a public water system if the system demonstrates that the treatment technique is not necessary to protect the health of consumers because of the nature of the system's source water.

(ii) A treatment technique variance granted in accordance with 40 CFR 141.4.

(iii) A variance shall not be granted from any treatment technique requirement under Part 6 of chapter 246-290 WAC.

(c) The board shall condition the granting of a variance upon a compliance schedule as described in subsection (6) of this section.

(3) Exemptions.

(a) The board may grant a MCL or treatment technique exemption to a public water system that cannot meet an MCL standard or provide the required treatment in a timely manner, or both, in accordance with 40 CFR 141.4.

(b) No exemption shall be granted from:

(i) The requirement to provide a residual disinfectant concentration in the water entering the distribution system under WAC 246-290-662 or 246-290-692; or

(ii) The MCL for presence of total coliform under WAC 246-290-310(2).

(c) The board shall condition the granting of an exemption upon a compliance schedule as described in subsection (6) of this section.

(4) Waivers. The board may grant a waiver to a public water system if the system cannot meet the requirements of these regulations pertaining to any subject not covered by EPA variance and/or exemption regulations.

(5) Procedures.

(a) For variances and exemptions. The board shall consider granting a variance or exemption to a public water system in accordance with 40 CFR 141.4.

(b) For waivers. The board shall consider granting a waiver upon completion of the following actions:

(i) The purveyor applies to the department in writing. The application, which may be in the form of a letter, shall clearly state the reason for the request;

(ii) The purveyor provides notice of the purveyor's application to consumers and provides proof of the notice to the department;

(iii) The department prepares a recommendation to the board; and

(iv) The board provides notice for and conducts a public hearing on the purveyor's request.

(6) Compliance schedule.

(a) The board shall condition the granting of a variance or exemption based on a compliance schedule. The compliance schedule shall include:

(i) Actions the purveyor shall undertake to comply with a MCL or treatment technique requirement within a specified time period; and

(ii) A description and time-table for implementation of interim control measures the department may require while the purveyor completes the actions required in (a)(i) of this subsection.

(b) The purveyor shall complete the required actions in the compliance schedule within the stated time frame.

(7) Extensions to variances and exemptions.

(a) The board may extend the final date of compliance prescribed in the compliance schedule for a variance and/or exemption in accordance with 40 CFR 141.4.

[Statutory Authority: RCW 43.20.050 (2) and (3) and 70.119A.080. 03-08-037, § 246-290-060, filed 3/27/03, effective 4/27/03. Statutory Authority: RCW 43.02.050 [43.20.050]. 99-07-021, § 246-290-060, filed 3/9/99, effective 4/9/99. Statutory Authority: RCW 43.20.050. 94-14-001, § 246-290-060, filed 6/22/94, effective 7/23/94; 93-08-011 (Order 352B), § 246-290-060, filed 3/25/93, effective 4/25/93; 91-02-051 (Order 124B), recodified as § 246-290-060, filed 12/27/90, effective 1/31/91. Statutory Authority: P.L. 99-339. 89-21-020 (Order 336), § 248-54-055, filed 10/10/89, effective 11/10/89. Statutory Authority: RCW 34.04.045. 88-05-057 (Order 307), § 248-54-055, filed 2/17/88. Statutory Authority: RCW 43.20.050. 83-19-002 (Order 266), § 248-54-055, filed 9/8/83.]

Part 2. Planning and Engineering Documents

WAC 246-290-100 Water system plan.

(1) The purpose of this section is to establish a uniform process for purveyors to:

(a) Demonstrate the system's operational, technical, managerial, and financial capability to achieve and maintain compliance with relevant local, state, and federal plans and regulations;

(b) Demonstrate how the system will address present and future needs in a manner consistent with other relevant plans and local, state, and federal laws, including applicable land use plans;

(c) Establish eligibility for funding under the drinking water state revolving fund (SRF).

(2) Purveyors of the following categories of community public water systems shall submit a water system plan for review and approval by the department:

(a) Systems having one thousand or more services;

(b) Systems required to develop water system plans under the Public Water System Coordination Act of 1977 (chapter 70.116 RCW);

(c) Any system experiencing problems related to planning, operation, and/or management as determined by the department;

(d) All new systems;

(e) Any expanding system; and

(f) Any system proposing to use the document submittal exception process in WAC 246-290-125.

(3) The purveyor shall work with the department and other parties to establish the level of detail for a water system plan. In general, the scope and detail of the plan will be related to size, complexity, past performance, and use of the water system. Project reports may be combined with a water system plan.

(4) In order to demonstrate system capacity, the water system plan shall address the following elements, as a minimum, for a period of at least twenty years into the future:

(a) Description of the water system, including:

(i) Ownership and management, including the current names, addresses, and telephone numbers of the owners, operators, and emergency contact persons for the system;

(ii) System history and background;

(iii) Related plans, such as coordinated water system plans, abbreviated coordinated water system plans, local land use plans, ground water management plans, and basin plans;

(iv) Service area map, characteristics, agreements, and policies; and

(v) Satellite management, if applicable.

(b) Basic planning data, including:

(i) Current population, service connections, water use, and equivalent residential units; and

(ii) Projected land use, future population, and water demand for a consecutive six-year and final twenty-year planning period within the system's service area.

(c) System analysis, including:

(i) System design standards;

(ii) Water quality analysis;

(iii) System inventory description and analysis; and

(iv) Summary of system deficiencies.

(d) Water resource analysis, including:

(i) Development and implementation of a cost-effective conservation program, which includes evaluation of conservation-oriented water rate structures;

(ii) Water demand forecasts;

(iii) Water use data collection;

(iv) Source of supply analysis, which includes an evaluation of water supply alternatives if additional water rights will be pursued within twenty years;

(v) Water shortage response plan if a water system experiences a water shortage, or anticipates it will experience a water shortage within the next six-year planning period;

(vi) Water right assessment;

(vii) Water supply reliability analysis; and

(viii) Interties.

(e) Source water protection in accordance with WAC 246-290-135.

(f) Operation and maintenance program in accordance with WAC 246-290-415 and 246-290-654(5), as applicable.

(g) Improvement program, including a six-year capital improvement schedule.

(h) Financial program, including demonstration of financial viability by providing:

(i) A summary of past income and expenses;

(ii) A one-year balanced operational budget for systems serving one thousand or more connections or a six-year balanced operational budget for systems serving less than one thousand connections;

(iii) A plan for collecting the revenue necessary to maintain cash flow stability and to fund the capital improvement program and emergency improvements; and

(iv) A rate structure that has considered:

(A) The affordability of water rates; and

(B) The feasibility of adopting and implementing a rate structure that encourages water conservation.

(i) Other documents, such as:

(i) Documentation of SEPA compliance;

(ii) Agreements; and

(iii) Comments from the county and adjacent utilities.

(5) Purveyors intending to implement the project report and construction document submittal exceptions authorized under WAC 246-290-125 must include:

(a) Standard construction specifications for distribution mains; and/or

(b) Design and construction standards for distribution-related projects, including:

(i) Description of project report and construction document internal review procedures, including engineering design review and construction completion reporting requirements;

(ii) Construction-related policies and requirements for external parties, including consumers and developers;

(iii) Performance and sizing criteria; and

(iv) General reference to construction materials and methods.

(6) The department, at its discretion, may require reports from purveyors identifying the progress in developing their water system plans.

(7) Purveyors shall transmit water system plans to adjacent utilities and local governments having jurisdiction, to assess consistency with ongoing and adopted planning efforts.

(8) For community systems, the purveyor shall hold an informational meeting for system consumers prior to departmental approval of a water system plan or a water system plan update. The purveyor shall notify consumers in a way that is appropriate to the size of the system.

(9) Department approval of a water system plan shall be in effect for six years from the date of written approval unless:

(a) Major projects subject to SEPA as defined in WAC 246-03-030 (3)(a) are proposed that are not addressed in the plan;

(b) Changes occur in the basic planning data significantly affecting system improvements identified; or

(c) The department requests an updated plan or plan amendment.

(10) The purveyor shall update the plan and submit it for approval at least every six years. If the system no longer meets the conditions of subsection (2) of this section, the purveyor shall as directed by the department, submit either a plan amendment the scope of which will be determined by the department, or a small water system management program under WAC 246-290-105.

[Statutory Authority: RCW 43.20.050 (2) and (3) and 70.119A.080. 03-08-037, § 246-290-100, filed 3/27/03, effective 4/27/03. Statutory Authority: RCW 43.02.050 [43.20.050]. 99-07-021, § 246-290-100, filed 3/9/99, effective 4/9/99. Statutory Authority: RCW 43.20.050. 94-14-001, § 246-290-100, filed 6/22/94, effective 7/23/94; 93-08-011 (Order 352B), § 246-290-100, filed 3/25/93, effective 4/25/93; 91-02-051 (Order 124B), recodified as § 246-290-100, filed 12/27/90, effective 1/31/91. Statutory Authority: RCW 34.04.045. 88-05-057 (Order 307), § 248-54-065, filed 2/17/88. Statutory Authority: RCW 43.20.050. 83-19-002 (Order 266), § 248-54-065, filed 9/8/83.]

WAC 246-290-105 Small water system management program.

(1) The purpose of a small water system management program is to:

(a) Demonstrate the system's operational, technical, managerial, and financial capability to achieve and maintain compliance with all relevant local, state, and federal plans and regulations; and

(b) Establish eligibility for funding under the drinking water state revolving fund (SRF).

(2) All noncommunity and all community systems not required to complete a water system plan as described under WAC 246-290-100(2) shall develop and implement a small water system management program.

(3) The purveyor shall submit this program for review and approval to the department when:

(a) A new NTNC public water system is created; or

(b) An existing system has operational, technical, managerial, or financial problems, as determined by the department.

(4) Content and detail shall be consistent with the size, complexity, past performance, and use of the public water system. General content topics shall include, but not be limited to, the following elements:

(a) System management;

(b) Annual operating permit;

(c) Water facilities inventory form;

(d) Service area and facility map;

(e) Documentation of water rights, through a water right assessment;

(f) Record of source water pumped;

(g) Water usage;

(h) Water conservation program;

(i) Source protection;

(j) Component inventory and assessment;

(k) List of planned system improvements;

(l) Water quality monitoring program;

(m) Operation and maintenance program;

(n) Cross-connection control program;

(o) Emergency response plan; and

(p) Budget.

(5) The department may require changes be made to a small water system management program if necessary to effectively accomplish the program's purpose.

[Statutory Authority: RCW 43.20.050 (2) and (3) and 70.119A.080. 03-08-037, § 246-290-105, filed 3/27/03, effective 4/27/03. Statutory Authority: RCW 43.02.050 [43.20.050]. 99-07-021, § 246-290-105, filed 3/9/99, effective 4/9/99.]

WAC 246-290-110 Project report.

(1) The project report is a written document that describes why a project is being proposed and includes engineering design calculations showing how the project will meet its objectives.

(2) The purveyor shall submit project reports to the department and receive written approval prior to installation or construction of any new water system, water system extension, or improvement. The department may require the submittal of a project report for the purpose of resolving a system operational problem. Exceptions to this requirement are listed in WAC 246-290-125.

(3) Project reports submitted for approval by purveyors who are required to have a water system plan will not be considered for approval unless a current, approved water system plan that adequately addresses the project is on file with the department. In the event that a purveyor of an existing system does not have such a plan, the department may enter into a compliance agreement with the purveyor that grants a time extension to complete the water system plan.

(4) Project reports shall be consistent with the standards identified in Part 3 of this chapter. Depending on the complexity and type of project or problem, shall include the following elements (information contained in a current water system plan or other engineering document previously approved by the department need not be duplicated, but must be specifically referenced):

(a) Project description, including:

(i) Why the project is being proposed, how problem(s) (if any) are to be addressed, and the relationship of the project to other system components;

(ii) A statement of State Environmental Policy Action (SEPA) determination of nonsignificance or justification of why SEPA does not apply to project;

(iii) If applicable, source development information (refer to WAC 246-290-130, Source approval, WAC 246-290-132, Interties, and WAC 246-290-135, Source protection);

(iv) If applicable, type of treatment (refer to WAC 246-290-250, Water treatment and Part 6, Surface water treatment); and

(v) A summary of consumer and user complaints.

(b) Planning data. If a purveyor has a water system plan or small water system management program, the project report shall indicate the proposed project's relationship to the plan. If the purveyor is not required by WAC 246-290-100 to have a water system plan, planning related information shall include:

(i) General project background with population and water demand forecasts;

(ii) How the project will impact neighboring water systems;

(iii) Local requirements, such as fire flow;

(iv) Additional management responsibilities in accordance with WAC 246-290-105, Small water system management program, WAC 246-290-415, Operations and maintenance, and chapter 246-292 WAC, Waterworks operator certification regulations;

(v) Implementation strategies or proposed construction schedule;

(vi) Estimated capital and annual operating cost, and method of financing, if applicable.

(c) An analysis of alternatives, including description of options and rationale for selecting the proposed option.

(d) A review of water quality as it relates to the purpose of the proposed project. If a project involves treatment and/or a filtration facility pilot study, refer to departmental guidance, reporting requirements for corrosion control under 40 CFR 141.90, and tracer studies under WAC 246-290-636(5).

(e) When the project involves a new source or an increase in system physical capacity, a review of water quantity, including a water rights assessment, unless such an assessment has previously been submitted in a water system plan or small water system management program that has been approved by the department. The purveyor shall take any follow-up action as directed by the department, to determine conformance with applicable state water rights laws.

(f) Engineering calculations including sizing justification, hydraulic analysis, physical capacity analysis, and other relevant technical considerations necessary to support the project.

(g) Design and construction standards, including performance standards, construction materials and methods, and sizing criteria, if applicable.

(h) Project reports for the design of treatment facilities shall include the following:

(i) Detailed design criteria and calculations to support the proposed treatment processes, process control, and process utilities; and

(ii) Proposed methods and schedules for start-up, testing, and operation of the completed treatment facility.

(i) Legal considerations, such as ownership, right of way, sanitary control area (SCA), restrictive covenants, restrictions related to water use that are recorded on titles or deeds to properties, and relationship with the boundary review board and the utilities and transportation commission (UTC).

(j) Other necessary department-determined considerations.

[Statutory Authority: RCW 43.02.050 [43.20.050]. 99-07-021, § 246-290-110, filed 3/9/99, effective 4/9/99. Statutory Authority: RCW 43.20.050. 94-14-001, § 246-290-110, filed 6/22/94, effective 7/23/94; 93-08-011 (Order 352B), § 246-290-110, filed 3/25/93, effective 4/25/93; 91-02-051 (Order 124B), recodified as § 246-290-110, filed 12/27/90, effective 1/31/91. Statutory Authority: P.L. 99-339. 89-21-020 (Order 336), § 248-54-086, filed 10/10/89, effective 11/10/89. Statutory Authority: RCW 34.04.045. 88-05-057 (Order 307), § 248-54-086, filed 2/17/88.]

WAC 246-290-120 Construction documents.

(1) Construction documents shall identify how specific projects will be constructed while satisfying the requirements and conditions established in the project report and/or the water system plan.

(2) Purveyors shall submit construction documents to the department for written approval prior to installation of any new water system, or water system extension or improvement. Exceptions to this requirement are listed in WAC 246-290-125.

(3) Construction documents submitted for approval by purveyors who are required to have a water system plan will not be considered for approval unless a current, approved water system plan that adequately addresses the project is on file with the department. In the event that a purveyor of an existing system does not have such a plan, the department may enter into a compliance agreement with the purveyor that grants a time extension to complete the water system plan.

(4) Construction documents shall be consistent with the standards identified in Part 3 of this chapter and shall include, at a minimum, the following:

(a) Drawings. Include detailed drawings of each project component;

(b) Material specifications. List detailed material specifications for each project component;

(c) Construction specifications.

(i) List detailed construction specifications and assembly techniques for carrying out the project;

(ii) Testing. Identify testing criteria and procedures for each applicable portion of the project;

(iii) Disinfection. Identify specific disinfection procedures that shall conform with American Water Works Association (AWWA) standards or other standards acceptable to the department;

(iv) Inspection. Identify provisions for inspection of the installation of each project component. See WAC 246-290-040 and subsection (5) of this section for construction reporting requirements;

(d) Change orders. All significant changes shall be submitted to and approved by the department in writing. The change order must identify who will be responsible for obtaining departmental approval and how change orders will be reported to the department. Significant means a change in materials used, deviations from original intent of project, or changes made to the physical capacity of the project;

(e) Record drawings. Record drawings provided to the purveyor following the completion of the project shall be maintained and available to the department upon request.

(5) Purveyors shall submit a construction completion report (departmental form) to the department within sixty days of completion and before use of distribution-related projects in accordance with WAC 246-290-125 (3)(f), or other project approved for construction by the department. Exceptions to this requirement are projects listed in WAC 246-290-125(1). The form shall:

(a) Bear the seal, date, and signature of a professional engineer licensed in the state of Washington;

(b) State the project is constructed and is completed in accordance with department regulations and principles of standard engineering practice, including physical testing procedures, water quality tests, and disinfection practices; and

(c) Document system physical capacity to serve consumers if the project results in a change (increase or decrease) in physical capacity.

(6) The purveyor shall submit a new or updated water facilities inventory (WFI) form (departmental form) with the construction completion report (departmental form) for a new water system, whenever there are changes or additions to an existing water system that would change information of the WFI, or when required by the department.

(7) If the project results in an increase in the water system's physical capacity, the purveyor shall submit a water right assessment, unless such an assessment has previously been submitted in a project report, water system plan, or small water system management program, that has been approved by the department. The purveyor shall take any follow-up action, as directed by the department, to determine conformance with applicable state water rights laws.

(8) Approval of construction documents shall be in effect for two years unless the department determines a need to withdraw the approval. An extension of the approval may be obtained by submitting a status report and a written schedule for completion. Extensions may be subject to additional terms and conditions imposed by the department.

(9) The purveyor shall fulfill the requirements of this section before the use of any completed project.

(10) Purveyors of new water systems must meet the ownership requirements of WAC 246-290-035 and the water system planning requirements of WAC 246-290-100 or 246-290-105 before the department will review and approve the purveyors' construction documents.

[Statutory Authority: RCW 43.02.050 [43.20.050]. 99-07-021, § 246-290-120, filed 3/9/99, effective 4/9/99. Statutory Authority: RCW 43.20.050. 93-08-011 (Order 352B), § 246-290-120, filed 3/25/93, effective 4/25/93; 91-02-051 (Order 124B), recodified as § 246-290-120, filed 12/27/90, effective 1/31/91. Statutory Authority: RCW 34.04.045. 88-05-057 (Order 307), § 248-54-096, filed 2/17/88.]

WAC 246-290-125 Project report and construction document submittal exceptions.

(1) The following projects do not require project reports in accordance with WAC 246-290-110 and construction documents in accordance with WAC 246-290-120 to be submitted to the department for review and approval prior to installation:

(a) Installation of valves, fittings, and meters, including backflow prevention assemblies;

(b) Installation of hydrants in accordance with WAC 246-290-230 (3) and (6);

(c) Repair of a system component or replacement with a component of a similar capacity and material in accordance with the original construction specifications of the approved design; or

(d) Maintenance or painting of surfaces not contacting potable water.

(2) Purveyors may elect to not submit to the department for review and approval project reports in accordance with WAC 246-290-110 and construction documents in accordance with WAC 246-290-120 for new distribution mains if:

(a) The purveyor has on file with the department a current department-approved water system plan that includes standard construction specifications for distribution mains; and

(b) The purveyor maintains on file a completed construction completion report (departmental form) in accordance with WAC 246-290-120(5) and makes it available for review upon request by the department.

(3) Purveyors may elect to not submit to the department for review and approval project reports in accordance with WAC 246-290-110 and construction documents in accordance with WAC 246-290-120 for review and approval of other distribution-related projects as defined in WAC 246-290-010 providing:

(a) The purveyor has on file with the department a current department-approved water system plan, in accordance with WAC 246-290-100(5);

(b) The purveyor submits a written request with a new water system plan or an amendment to a water system plan, and updates the request with each water system plan update. The written request should specifically identify the types of projects or facilities for which the submittal exception procedure is requested;

(c) The purveyor has documented that they have employed or hired under contract the services of a professional engineer licensed in the state of Washington to review distribution-related projects not submitted to the department for review and approval. The review engineer and design engineer shall not be the same individual. The purveyor shall provide written notification to the department whenever they propose to change their designated review engineer;

(d) If the project is a new transmission main, storage tank, or booster pump station, it must be identified in the capital improvement program of the utility's water system plan. If not, either the project report must be submitted to the department for review and approval, or the water system plan must be amended;

(e) A project summary file is maintained by the purveyor for each project and made available for review upon request by the department, and includes:

(i) Descriptive project summary;

(ii) Anticipated completion schedule;

(iii) Consistency with utility's water system plan;

(iv) Water right assessment, where applicable;

(v) Change in system physical capacity;

(vi) Copies of original design and record drawings;

(vii) Engineering design review report (departmental form). The form shall:

(A) Bear the seal, date, and signature of a professional engineer licensed in the state of Washington prior to the start of construction;

(B) Provide a descriptive reference to completed project report and/or construction documents reviewed, including date of design engineer's seal and signature; and

(C) State the project report and/or construction documents have been reviewed, and the design is in accordance with department regulations and principles of standard engineering practice;

(f) The construction completion report is submitted to the department in accordance with WAC 246-290-120(5) for new storage tanks and booster pump stations, and maintained on file with the water system for all other distribution-related projects;

(g) A WFI is completed in accordance with WAC 246-290-120(6); and

(h) The purveyor meets the requirements of chapter 246-294 WAC to have a category "green" operating permit.

(4) Source of supply (including interties) and water quality treatment-related projects shall not be eligible for the submittal exception procedure.

(5) Purveyors not required to prepare a water system plan under WAC 246-290-100 shall be eligible for the submittal exception procedure if the purveyor:

(a) Has a department-approved water system plan meeting the requirements of WAC 246-290-100; and

(b) Complies with all other requirements in this section.

(6) Ensures that all work required to be prepared under the direction of a professional engineer be accomplished per WAC 246-290-040 and chapter 18.43 RCW.

[Statutory Authority: RCW 43.20.050 (2) and (3) and 70.119A.080. 03-08-037, § 246-290-125, filed 3/27/03, effective 4/27/03. Statutory Authority: RCW 43.02.050 [43.20.050]. 99-07-021, § 246-290-125, filed 3/9/99, effective 4/9/99.]

WAC 246-290-130 Source approval.

(1) Every purveyor shall obtain drinking water from the highest quality source feasible. No new source, previously unapproved source, or modification of an existing source shall be used as a public water supply without department approval. No intake or other connection shall be maintained between a public water system and a source of water not approved by the department.

(2) Before initiating source development or modification, the purveyor shall contact the department to identify submittal requirements.

(3) Any party seeking source approval shall provide the department sufficient documentation, in a project report, construction documents, or in supplemental documents, that the source:

(a) Is reasonable and feasible for the type and size of the system;

(b) May legally be used in conformance with state water rights laws;

(c) Supplies water that is physically and reliably available in the necessary quantities, as shown in:

(i) A hydrogeologic assessment of the proposed source;

(ii) A general description of the watershed, spring, and/or aquifer recharge area affecting the quantity or quality of flow, which includes seasonal variation and upstream water uses that may significantly affect the proposed source;

(iii) For ground water and spring sources, well source development data that are available from a pump test at the maximum design rate and duration, or are available from other sources of information, that establish pump settings (depth) in the well and demonstrate adequacy of water quantity to meet design criteria while not leading to water quality problems;

(iv) For ground water and spring sources, installation of a source meter or other equivalent device that reliably measures volume of flow into the system;

(d) Is, or is not, a GWI under WAC 246-290-640, and meets or can meet the applicable requirements for GWI sources as described in that section including treatment;

(e) Adequately provides for source protection, as shown in:

(i) For surface water and GWI sources, the watershed control program identified under WAC 246-290-135 and Part 6 of this chapter;

(ii) For wells, a preliminary department susceptibility assessment or equivalent information, and preliminary WHPA delineation and contaminant inventory, under the requirements for sanitary control and wellhead protection under WAC 246-290-135;

(f) Is designed and constructed in conformance with this chapter, and relevant requirements of chapter 173-160 WAC (department of ecology well construction standards);

(g) Meets water quality standards under WAC 246-290-310, as shown in an initial water quality analysis that includes, at a minimum, the following:

(i) Bacteriological;

(ii) Complete inorganic chemical and physical except that the MCL for arsenic under WAC 246-290-310 does not apply to TNC systems;

(iii) Complete VOC;

(iv) Radionuclides, if source approval is requested for a community system;

(v) SOC, except where waived or not required under WAC 246-290-310; and

(vi) Any other information required by the department relevant to the circumstances of the particular source.

Sources that otherwise would not meet water quality standards may be approved if treatment is provided.

(4) The required documentation under subsection (3) of this section shall include, at a minimum:

(a) A copy of the water right, or other written evidence of the existence of the right;

(b) A map showing the project location and vicinity;

(c) A map depicting topography, distances to the surface water intake, well or spring from existing property lines, buildings, potential sources of contamination, ditches, drainage patterns, and any other natural or man-made features affecting the quality or quantity of water;

(d) The dimensions, location, and legal documentation of the sanitary control area (SCA) under WAC 246-290-135;

(e) A copy of the on-site inspection form completed by the department or local health department representative;

(f) A copy of the water well report including the unique well identification tag number, depth to open interval or top of screened interval, overall depth of well from the top of the casing, vertical elevation, and location (both plat location and latitude/longitude); and

(g) Documentation of source meter installation. The purveyor may utilize other documents, such as a water system plan, susceptibility assessment, wellhead protection program,

project report, or construction documents, to provide such documentation and information to the department, provided that such documents are current, and the purveyor indicates the location in the document of the relevant information.

(5) If treatment of a source is necessary to meet water quality standards, the purveyor may be required to meet the provisions of WAC 246-290-250 and Part 6 of this chapter, if applicable, prior to or as a condition of approval.

(6) An intertie must be adequately described in a written agreement between the purveyor and the supplier of the water, and otherwise meet the requirements of WAC 246-290-132.

(7) The purveyor shall not construct facilities for source development and use without prior approval of the department pursuant to the provisions of WAC 246-290-120.

(8) The purveyor shall receive a written source approval when:

(a) The purveyor has complied with the relevant provisions of subsections (1) through (7) of this section; and

(b) The developed source provides water complying with this chapter.

(9) The purveyor may receive a conditional source approval, such as one that sets limits on use or requires interim treatment, if further analysis of the quality of the source is required before final approval.

(10) For sources or supplies of water used by bottled water or ice plants to produce bottled water or ice:

(a) If the bottled water or ice plant is a Group A community water system and the plant uses the system's source for the water that is bottled or made into ice, the source and supply used for the bottled water and ice shall meet the applicable Group A requirements;

(b) If the bottled water or ice plant uses its own source for the water that is bottled or made into ice, and the plant is not a Group A community water system, the owner or operator shall obtain source approval from the department, and the source water shall meet the ongoing source water quality monitoring requirements for a Group A community system;

(c) If the bottled water or ice plant purchases the water for bottling or making ice from another source or supply, the water shall meet the minimum requirements for a Group A community water system, and the owner or operator of the plant shall ensure that the water meets such requirements;

(d) The source or supply for the water that is bottled or made into ice shall be protected from contamination prior to the bottling or ice making process; and

(e) In addition to the requirements imposed under this subsection, the processing of bottled water shall be subject to regulation by the state department of agriculture and the United States Food and Drug Administration.

[Statutory Authority: RCW 43.20.050 and 70.119A.080. 04-04-056, § 246-290-130, filed 1/30/04, effective 3/1/04. Statutory Authority: RCW 43.02.050 [43.20.050]. 99-07-021, § 246-290-130, filed 3/9/99, effective 4/9/99. Statutory Authority: RCW 43.20.050. 94-14-001, § 246-290-130, filed 6/22/94, effective 7/23/94; 93-08-011 (Order 352B), § 246-290-130, filed 3/25/93, effective 4/25/93. Statutory Authority: Chapter 43.20 RCW. 91-07-031 (Order 150B), § 246-290-130, filed 3/15/91, effective 4/15/91. Statutory Authority: RCW 43.20.050. 91-02-051 (Order 124B), recodified as § 246-290-130, filed 12/27/90, effective 1/31/91. Statutory Authority: P.L. 99-339. 89-21-020 (Order 336), § 248-54-097, filed 10/10/89, effective 11/10/89. Statutory Authority: RCW 34.04.045. 88-05-057 (Order 307), § 248-54-097, filed 2/17/88.]

WAC 246-290-132 Interties.

(1) No interties shall be used and/or constructed as a public water supply without department approval.

(2) Interties shall not be eligible for submittal exceptions pursuant to WAC 246-290-125.

(3) Prior to department approval, purveyors proposing nonemergency interties shall ensure that the intertie is addressed:

(a) In an approved coordinated water system plan, water system plan, water system plan update, water system plan amendment, or small water system management program including:

(i) Location of the proposed intertie;

(ii) Date it is proposed to be utilized;

(iii) The purpose, physical capacity, service area, and proposed usage of the intertie;

(iv) Copy of the intertie agreement between purveyors;

(v) Description of how the intertie:

(A) Improves overall system reliability;

(B) Enhances the manageability of the system;

(C) Provides opportunities for conjunctive use; or

(D) Delays or avoids the need to develop new water sources;

(vi) Identification of any potential public health or safety concerns;

(vii) Discussion of any water quality and treatment issues;

(viii) Demonstration of the source capacity and hydraulic capacity of the supplying and receiving systems at the designed flow rate through the intertie;

(ix) Water right assessment;

(x) Identification of alternative sources that will be utilized when the intertie agreement expires if the water is not being provided in perpetuity; and

(xi) Identification and comparison of alternatives if any.

(b) In construction documents in accordance with WAC 246-290-120 including:

(i) Demonstration of the installation of a source meter to measure water exchanged; and

(ii) Water right assessment, if not previously provided to the department. Where RCW 90.03.383 requires a water right or water right change to be issued by the department of ecology, construction work on the intertie shall not begin, notwithstanding any prior approval of the intertie by the department in a water system plan, until the department of ecology issues the required water right document.

(4) Emergency use interties are interconnections between public water systems permitting the temporary exchange or delivery of water between those systems only in cases of emergency that result in permanent supplies being unavailable for use. Prior to department approval, purveyors proposing emergency use interties shall ensure that the emergency intertie is addressed:

(a) In an approved coordinated water system plan, water system plan, water system plan update, water system plan amendment, or small water system management plan including:

(i) Description of the intended use of the emergency intertie;

(ii) Location of the proposed intertie;

(iii) Date the intertie is intended to be operational;

(iv) Copy of the intertie agreement between purveyors detailing the conditions and limitations of such intertie; and

(v) Hydraulic analysis conducted to identify the impacts upon each water system.

(b) In a project report in accordance with WAC 246-290-110 or in a construction document in accordance with WAC 246-290-120.

(5) Purveyors proposing interties shall apply to the department of ecology for water right changes as provided in RCW 90.03.383. Except as provided in RCW 90.03.383(7) and 90.03.390, no interties may be constructed without department of ecology action on the proposed change.

(6) The purveyor may be required to have emergency interties approved as nonemergency interties where such interties are used frequently or on a long-term basis. If the department makes such a determination, the intertie will require approval in accordance with subsection (3) of this section.

(7) Intertie agreements between purveyors shall include:

(a) Identification of specific time periods in which water will be provided;

(b) Identification of the volume of water available for use, including any seasonal or other restrictions; and

(c) Identification of how water conservation programs, data collection, water demand forecasting, and other operational matters will be coordinated.

[Statutory Authority: RCW 43.02.050 [43.20.050]. 99-07-021, § 246-290-132, filed 3/9/99, effective 4/9/99.]

WAC 246-290-135 Source water protection.

(1) The department may require monitoring and controls in addition to those specified in this section if, in the opinion of the department, a potential risk exists to the water quality of a source.

(2) Sanitary control area (SCA).

(a) The purveyor shall maintain an SCA around all sources for the purpose of protecting them from existing and potential sources of contamination.

(b) For wells and springs, the minimum SCA shall have a radius of one hundred feet (thirty meters) and two hundred feet (sixty meters) respectively, unless engineering justification demonstrates that a smaller area can provide an adequate level of source water protection. The justification shall address geological and hydrological data, well construction details, mitigation measures, and other relevant factors necessary to assure adequate sanitary control.

(c) The department may require a larger SCA than specified in (b) of this subsection, or additional mitigation measures if land use, geological, and/or hydrological data support such a decision. It shall be the purveyor's responsibility to obtain the protection needed.

(d) No source of contamination may be constructed, stored, disposed of, or applied within the SCA without the permission of the department and the purveyor.

(e) The SCA shall be owned by the purveyor in fee simple, or the purveyor shall have the right to exercise complete sanitary control of the land through other legal provisions.

(f) A purveyor, owning all or part of the SCA in fee simple or having possession and control, shall send to the department copies of legal documentation, such as a duly recorded declaration of covenant, restricting the use of the land. This legal documentation shall state:

(i) No source of contamination may be constructed, stored, disposed of, or applied without the permission of the department and the purveyor; and

(ii) If any change in ownership of the system or SCA is considered, all affected parties shall be informed of these requirements.

(g) Where portions of the control area are in the possession and control of another, the purveyor shall obtain a duly recorded restrictive covenant which shall run with the land, restricting the use of said land in accordance with this chapter and provide the department with copies of the appropriate documentation.

(3) Wellhead protection.

(a) Purveyors of water systems using ground water or spring sources shall develop and implement a wellhead protection program.

(b) The wellhead protection program shall be part of the water system plan required under WAC 246-290-100 or the small water system management program required under WAC 246-290-105.

(c) The purveyor's wellhead protection program shall contain, at a minimum, the following elements:

(i) A completed susceptibility assessment or equivalent information;

(ii) Wellhead protection area (WHPA) delineation for each well, wellfield, or spring with the six month, one, five and ten year time of travel boundaries marked, or boundaries established using alternate criteria approved by the department in those settings where ground water time of travel is not a reasonable delineation criteria. WHPA delineations shall be done in accordance with recognized methods such as those described in the following sources:

(A) Department guidance on wellhead protection; or

(B) EPA guidance for delineation of wellhead protection areas;

(iii) An inventory, including identification of site locations and owners/operators, of all known and potential ground water contamination sources located within the defined WHPA(s) having the potential to contaminate the source water of the well(s) or spring(s). This list shall be updated every two years;

(iv) Documentation of purveyor's notification to all owners/ operators of known or potential sources of ground water contamination listed in (c)(B)(iii) of this subsection;

(v) Documentation of purveyor's notification to regulatory agencies and local governments of the boundaries of the WHPA(s) and the findings of the WHPA inventory;

(vi) A contingency plan to ensure consumers have an adequate supply of potable water in the event that contamination results in the temporary or permanent loss of the principal source of supply (major well(s) or wellfield); and

(vii) Documentation of coordination with local emergency incident responders (including police, fire and health departments), including notification of WHPA boundaries, results of susceptibility assessment, inventory findings, and contingency plan.

(4) Watershed control program.

(a) Purveyors of water systems using surface water or GWI sources shall develop and implement a watershed control program in accordance with Part 6 of chapter 246-290 WAC as applicable.

(b) The watershed control program shall be part of the water system plan required in WAC 246-290-100 or the small water system management program required in WAC 246-290-105.

(c) The purveyor's watershed control program shall contain, at a minimum, the following elements:

(i) Watershed description and inventory, including location, hydrology, land ownership and activities that may adversely affect source water quality;

(ii) An inventory of all potential surface water contamination sources and activities, including identification of site locations and owner/operators, located within the watershed and having the significant potential to contaminate the source water quality;

(iii) Watershed control measures, including documentation of ownership and relevant written agreements, and monitoring of activities and water quality;

(iv) System operation, including emergency provisions; and

(v) Documentation of water quality trends.

(d) The purveyor shall submit the watershed control program to the department for approval. Following departmental approval, the purveyor shall implement the watershed control program as approved.

(e) Purveyors of systems using unfiltered surface or GWI sources and meeting the criteria to remain unfiltered as specified in WAC 246-290-690 shall submit an annual report to the department that summarizes the effectiveness of the watershed control program. Refer to WAC 246-290-690 for further information about this report.

(f) The purveyor shall update the watershed control program at least every six years, or more frequently if required by the department.

[Statutory Authority: RCW 43.02.050 [43.20.050]. 99-07-021, § 246-290-135, filed 3/9/99, effective 4/9/99. Statutory Authority: RCW 43.20.050. 94-14-001, § 246-290-135, filed 6/22/94, effective 7/23/94; 93-08-011 (Order 352B), § 246-290-135, filed 3/25/93, effective 4/25/93.]

WAC 246-290-140 Existing system as-built approval.

At the discretion of the department, owners of existing systems without approved construction documents shall provide information necessary to establish the extent of the water system's compliance with this chapter. At a minimum, this shall include submission and approval by the department of:

(1) A water system plan or small water system management program;

(2) As-built or record drawings; and

(3) Water quality analyses.

[Statutory Authority: RCW 43.02.050 [43.20.050]. 99-07-021, § 246-290-140, filed 3/9/99, effective 4/9/99. Statutory Authority: RCW 43.20.050. 94-14-001, § 246-290-140, filed 6/22/94, effective 7/23/94; 91-02-051 (Order 124B), recodified as § 246-290-140, filed 12/27/90, effective 1/31/91. Statutory Authority: P.L. 99-339. 89-21-020 (Order 336), § 248-54-098, filed 10/10/89, effective 11/10/89.]

Part 3. Design of Public Water Systems

WAC 246-290-200 Design standards.

(1) Purveyors shall ensure that good engineering criteria and practices are used in the design and construction of all public water systems, such as those set out in:

(a) Department guidance on design for Group A public water systems;

(b) The most recent published edition of the Uniform Building Code (UBC) or the Uniform Plumbing Code (UPC);

(c) The most recent published edition of *Recommended Standards for Water Works, A Committee Report of the Great Lakes - Upper Mississippi River Board of State Public Health and Environmental Managers;*

(d) Standard specifications of the American Public Works Association (APWA), the American Society of Civil Engineers (ASCE), the American Water Works Association (AWWA), or the American Society for Testing and Materials (ASTM);

(e) Design criteria, such as contained in current college texts and professional journal articles, acceptable to the department;

(f) Chapter 173-160 WAC *Minimum Standards for Construction and Maintenance of Water Wells*;

(g) The latest edition of the PNWS-AWWA Cross-Connection Control Manual, or the University of Southern California (USC) Manual of Cross-Connection Control.

(2) In addition, purveyors of new or expanding public water systems shall consider and use, as appropriate, the following design factors:

(a) Historical water use;

(b) Community versus recreational uses of water;

(c) Local conditions and/or regulations;

(d) Community expectations;

(e) Public Water System Coordination Act considerations where appropriate;

(f) Provisions for systems and component reliability in accordance with WAC 246-290-420;

(g) Wind pressures, seismic risk, snow loads, and flooding;

(h) Other risks from potential disasters, as feasible; and

(i) Other information as required by the department.

[Statutory Authority: RCW 43.02.050 [43.20.050]. 99-07-021, § 246-290-200, filed 3/9/99, effective 4/9/99. Statutory Authority: RCW 43.20.050. 93-08-011 (Order 352B), § 246-290-200, filed 3/25/93, effective 4/25/93; 91-02-051 (Order 124B), recodified as § 246-290-200, filed 12/27/90, effective 1/31/91. Statutory Authority: RCW 34.04.045. 88-05-057 (Order 307), § 248-54-105, filed 2/17/88. Statutory Authority: RCW 43.20.050. 83-19-002 (Order 266), § 248-54-105, filed 9/8/83.]

WAC 246-290-220 Drinking water materials and additives.

(1) All materials shall conform to the ANSI/NSF Standard 61 if in substantial contact with potable water supplies. For the purposes of this section, "substantial contact" means the elevated degree that a material in contact with water may release leachable contaminants into the water such that levels of these contaminants may be unacceptable with respect to either public health or aesthetic concerns. It should take into consideration the total material/water interface area of exposure, volume of water exposed, length of time water is in contact with the material, and level of public health risk. Examples of water system components that would be considered to be in "substantial contact" with drinking water are filter media, storage tank interiors or liners, distribution piping, membranes, exchange or adsorption media, or other similar components that would have high potential for contacting the water. Materials associated with components such as valves, pipe fittings, debris screens, gaskets, or similar appurtenances would not be considered to be in substantial contact.

(2) Materials or additives in use prior to the effective date of these regulations that have not been listed under ANSI/NSF Standard 60 or 61 may be used for their current applications until the materials are scheduled for replacement, or that stocks of existing additives are depleted and scheduled for reorder.

(3) Any treatment chemicals, with the exception of commercially retailed hypochlorite compounds such as unscented Clorox, Purex, etc., added to water intended for potable use must comply with ANSI/NSF Standard 60. The maximum application dosage recommendation for the product certified by the ANSI/NSF Standard 60 shall not be exceeded in practice.

(4) Any products used to coat, line, seal, patch water contact surfaces or that have substantial water contact within the collection, treatment, or distribution systems must comply with the appropriate ANSI/NSF Standard 60 or 61. Application of these products must comply with recommendations contained in the product certification.

(5) The department may accept continued use of, and proposals involving, certain noncertified chemicals or materials on a case-by-case basis, if all of the following criteria are met:

(a) The chemical or material has an acknowledged and demonstrable history of use in the state for drinking water applications;

(b) There exists no substantial evidence that the use of the chemical or material has caused consumers to register complaints about aesthetic issues, or health related concerns, that could be associated with leachable residues from the material; and

(c) The chemical or material has undergone testing through a protocol acceptable to the department and has been found to not contribute leachable compounds into drinking water at levels that would be of public health concern.

(6) Any pipe, pipe fittings, fittings, fixtures, solder, or flux used in the installation or repair of a public water system shall be lead-free:

(a) This prohibition shall not apply to leaded joints necessary for the repair of cast iron pipes; and

(b) Within the context of this section, lead-free shall mean:

(i) No more than eight percent lead in pipes and pipe fittings;

(ii) No more than two-tenths of one percent lead in solder and flux; and

(iii) Fittings and fixtures that are in compliance with standards established in accordance with 42 USC 300g-6(e).

[Statutory Authority: RCW 43.20.050 (2) and (3) and 70.119A.080. 03-08-037, § 246-290-220, filed 3/27/03, effective 4/27/03. Statutory Authority: RCW 43.02.050 [43.20.050]. 99-07-021, § 246-290-220, filed 3/9/99, effective 4/9/99. Statutory Authority: RCW 43.20.050. 91-02-051 (Order 124B), recodified as § 246-290-220, filed 12/27/90, effective 1/31/91. Statutory Authority: RCW 34.04.045. 88-05-057 (Order 307), § 248-54-131, filed 2/17/88.]

WAC 246-290-221 Water demand design criteria.

(1) Except as provided in this section, expanding systems shall use water demand design for average day demand (ADD), and peak periods of demand such as maximum day demand (MDD), and peak hourly demand (PHD) that are based upon actual metered water use records. The data collected shall be sufficient to account for seasonal or other cyclic changes in water demand, and shall correlate to the maximum number of full-time or part-time equivalent residential units in service at any time.

(2) For seasonally used, transitory noncommunity, or recreational developments the design for ADD, MDD, and PHD shall be based upon metered water uses whenever such data is available. The data must account for the daily population using the water over the time that records are collected, and must reflect the uses associated with maximum occupancy for the development. The design demands for these developments apply only to part-time uses, and may not be applied to structures or dwellings that can be permanently occupied.

(3) In the absence of metered use or other comparable information, the following sources of design information may be used:

(a) Comparable metered water use data from analogous water systems. Analogous systems are those with similar characteristics, such as demographics, housing sizes, income levels, lot sizes, climate, water pricing structure, conservation practices, use restrictions, and soils and landscaping; or

(b) Design criteria or guidelines in the most recent edition of the department manual for design of Group A public water systems.

(4) The design for water systems based upon metered water use records shall have an MDD no lower than three hundred fifty gallons per day per equivalent residential unit (ERU), except for the design of any expansion to an existing water system that has a minimum of two years of meter records that clearly demonstrate that a lower design value for MDD may be used without significant risk of pressure loss. The meter records must correlate the demand data to the actual level of occupancy for the periods covered by the records.

(5) The minimum water demand and duration required for fire flow and/or fire suppression storage shall be determined by the local fire control authority, or chapter 246-293 WAC for systems within the boundaries of a designated critical water supply service area (CWSSA). Public water systems that are not required to comply with minimum fire flow standards shall coordinate with the local fire control authorities to ensure that any hydrants on the system, if they can possibly be used in the course of fire suppression activities, do not create adverse pressure problems within the water system as a result of fire control actions.

[Statutory Authority: RCW 43.02.050 [43.20.050]. 99-07-021, § 246-290-221, filed 3/9/99, effective 4/9/99.]

WAC 246-290-222 Water system physical capacity.

(1) The water system physical capacity shall be established by evaluating the capacity of each system component such as source, treatment, storage, transmission, or distribution, individually and in combination with each other. The evaluation shall identify any limitations on the ability of the system to provide service to all consumers.

(2) The water system physical capacity shall be:

(a) Reported in terms of total equivalent residential units (ERUs) and the number of residential and nonresidential connections with the number of ERUs they represent; and

(b) Compared to the existing number of residential and nonresidential connections currently served and the ERUs they represent.

(3) Total source capacity calculations shall not include emergency sources as defined in WAC 246-290-010.

(4) Total daily source capacity, in conjunction with any storage that is designed to accommodate peak use periods on a daily or longer basis, shall be sufficient to provide a reliable supply of water equal to or exceeding the MDD.

(5) Treatment capacity, in conjunction with any storage designed to accommodate peak demand periods on a daily or longer basis, shall be sufficient to provide a reliable supply of treated water equal to or exceeding the MDD while meeting the water quality parameters set forth in Part 4 and Part 6 as applicable, of this chapter.

(6) Water storage shall be sufficient to meet expected system service demands by providing sufficient operational, equalizing, standby, and where applicable, fire suppression storage volumes in accordance with WAC 246-290-235.

(7) Distribution system capacity shall provide for PHD, or MDD plus required fire flow, as required in each pressure zone while maintaining minimum design pressures established under this chapter.

[Statutory Authority: RCW 43.02.050 [43.20.050]. 99-07-021, § 246-290-222, filed 3/9/99, effective 4/9/99.]

WAC 246-290-230 Distribution systems.

(1) The purveyor shall size and evaluate new, or expansions to existing, distribution systems using a hydraulic analysis acceptable to the department.

(2) The minimum diameter of all distribution mains shall be six inches (150 mm) unless smaller mains can be justified by hydraulic analysis.

(3) Systems designed to provide fire flows shall have a minimum distribution main size of six inches (150 mm).

(4) Installation of new standard fire hydrants shall not be allowed on mains less than six inches (150 mm) in diameter. Existing fire hydrants on currently active mains less than six inches (150 mm) in diameter shall be allowed to remain provided:

   (a) The existing distribution system consists of mains at least four inches (101.6 mm) in diameter, and the fire flow available from existing four-inch (101.6 mm) mains within the proximity of the fire hydrant exceeds the minimum fire flow standard adopted by the local fire protection authority; and

   (b) The location and installation of the fire hydrants on the four-inch (101.6 mm) main have received approval by the local fire protection authority.

(5) New public water systems or additions to existing systems shall be designed with the capacity to deliver the design PHD quantity of water at 30 psi (210 kPa) under PHD flow conditions measured at all existing and proposed service water meters or along property lines adjacent to mains if no meter exists, and under the condition where all equalizing storage has been depleted.

(6) If fire flow is to be provided, the distribution system shall also provide maximum day demand (MDD) plus the required fire flow at a pressure of at least 20 psi (140 kPa) at all points throughout the distribution system, and under the condition where the designed volume of fire suppression and equalizing storage has been depleted.

(7) Booster pumps shall be designed in accordance with good engineering criteria and practices as listed in WAC 246-290-200.

(8) On existing systems, or for additions to existing systems, that are unable to meet the pressure requirements of this section, booster pumps for individual services may be used in the interim until system improvements are made to resolve pressure deficiencies. In this situation, the individual booster pumps shall be under the management and control of the purveyor.

(9) Transmission lines as defined in WAC 246-290-010 shall be designed to maintain greater than or equal to five psi (35 kPa) during normal operations, except when directly adjacent to storage tanks, and shall be sized according to a hydraulic analysis. Transmission mains designed to operate at velocities greater than ten feet per second shall include a hydraulic transient (water hammer) analysis in conjunction with the hydraulic analysis.

[Statutory Authority: RCW 43.02.050 [43.20.050]. 99-07-021, § 246-290-230, filed 3/9/99, effective 4/9/99. Statutory Authority: RCW 43.20.050. 94-14-001, § 246-290-230, filed 6/22/94, effective 7/23/94; 93-08-011 (Order 352B), § 246-290-230, filed 3/25/93, effective 4/25/93; 91-02-051 (Order 124B), recodified as § 246-290-230, filed 12/27/90, effective 1/31/91. Statutory Authority: RCW 34.04.045. 88-05-057 (Order 307), § 248-54-135, filed 2/17/88. Statutory Authority: RCW 43.20.050. 83-19-002 (Order 266), § 248-54-135, filed 9/8/83.]

WAC 246-290-235 Distribution reservoirs.

(1) Distribution reservoirs shall be designed to:

(a) Prevent entry by birds, animals, insects, excessive dust, and other potential sources of external contamination. The design shall include provisions for a lockable weathertight roof, a screened roof vent, an overflow pipe with atmospheric discharge or other suitable means to prevent a cross-connection, sample collection capability, a drain to daylight (or an approved alternative that is adequate to protect against cross-connection), a provision for tank isolation in order to perform maintenance procedures, and other appurtenances appropriate to the protection of stored water from contamination;

(b) Maintain water circulation, prevent water stagnation, and provide adequate disinfection contact time; and

(c) Be accessible for routine maintenance and water quality monitoring.

(2) Equalizing storage, as defined in WAC 246-290-010, shall be provided to meet peak periods of demand, either daily or longer, when determined to be necessary based on available, or designed, source pumping capacity.

(3) Operational, standby, and fire suppression storage volumes as defined in WAC 246-290-010 shall be provided, as applicable, for all pressure zones to meet both normal as well as abnormal demands of the system.

(4) Standby and fire suppression storage volumes may be nested with the larger of the two volumes being the minimum available, provided the local fire protection authority does not require them to be additive.

[Statutory Authority: RCW 43.02.050 [43.20.050]. 99-07-021, § 246-290-235, filed 3/9/99, effective 4/9/99.]

WAC 246-290-250 Treatment design.

(1) Treatment systems or devices shall be piloted and designed to ensure finished water quality conforms to water quality standards established in WAC 246-290-310.

(2) Treatment systems or devices for surface water or GWI sources shall be designed in accordance with the provisions of Part 6 of this chapter and the applicable provisions herein.

(3) Predesign studies, including pilot studies as appropriate, shall be required for proposed surface water and GWI sources and those ground water sources requiring treatment. The goal of the predesign study shall be to establish the most effective method, considering economics, to produce satisfactory finished water quality meeting the requirements of this chapter and complying with the treatment technique requirements in Part 6 of chapter 246-290 WAC. The predesign study shall be included as part of the project report under WAC 246-290-110. Refer to WAC 246-290-676 for requirements relating specifically to the filtration facility pilot study. The purveyor shall not establish nor maintain a bypass to divert water around any feature of a treatment process, except by written permission of the department.

(4) All well and spring sources not determined to be GWI's shall have continuous disinfection that meets the operational requirements of WAC 246-290-451 (3) and (4). The department may modify the requirement for disinfection for public water systems that demonstrate the well or spring sources (not confirmed as GWI's) have satisfactory bacteriological histories at the source and have SCAs in accordance with WAC 246-290-135.

(5) Purveyors shall use appropriate treatment technologies, such as those outlined in department guidance on water treatment, and shall address water treatment facilities in their water system plans pursuant to WAC 246-290-100.

(6) Project reports for the design of treatment facilities shall meet the requirements of WAC 246-290-110.

(7) Construction specifications for treatment facilities shall meet the requirements of WAC 246-290-120.

[Statutory Authority: RCW 43.02.050 [43.20.050]. 99-07-021, § 246-290-250, filed 3/9/99, effective 4/9/99. Statutory Authority: RCW 43.20.050. 93-08-011 (Order 352B), § 246-290-250, filed 3/25/93, effective 4/25/93; 91-02-051 (Order 124B), recodified as § 246-290-250, filed 12/27/90, effective 1/31/91. Statutory Authority: RCW 34.04.045. 88-05-057 (Order 307), § 248-54-155, filed 2/17/88. Statutory Authority: RCW 43.20.050. 83-19-002 (Order 266), § 248-54-155, filed 9/8/83.]

Part 4. Water Quality

WAC 246-290-300 Monitoring requirements.

(1) General.

(a) The monitoring requirements specified in this section are minimums. The department may require additional monitoring when:

(i) Contamination is present or suspected in the water system;

(ii) A ground water source is determined to be a potential GWI;

(iii) The degree of source protection is not satisfactory;

(iv) Additional monitoring is needed to verify source vulnerability for a requested monitoring waiver;

(v) Under other circumstances as identified in a departmental order; or

(vi) Additional monitoring is needed to evaluate continuing effectiveness of a treatment process where problems with the treatment process may exist.

(b) Special purpose samples collected by the purveyor shall not count toward fulfillment of the monitoring requirements of this chapter unless the quality of data and method of sampling and analysis are acceptable to the department.

(c) The purveyor shall ensure samples required by this chapter are collected, transported, and submitted for analysis according to EPA-approved methods. The analyses shall be performed by a laboratory accredited by the state. Qualified water utility, accredited laboratory, health department personnel, and other parties approved by the department may conduct measurements for pH, temperature, residual disinfectant concentration, alkalinity, bromide, chlorite, TOC, SUVA, and turbidity as required by this chapter, provided, these measurements are made in accordance with EPA approved methods.

(d) Compliance samples required by this chapter shall be taken at locations listed in Table 3 of this section.

(e) Purveyors failing to comply with a monitoring requirement shall notify:

(i) The department in accordance with WAC 246-290-480; and

(ii) The owner or operator of any consecutive system served and the appropriate water system users in accordance with 40 CFR 141.201 and Part 7, Subpart A of this chapter.

(2) Selling and receiving water.

(a) Source monitoring. Purveyors, with the exception of those that "wheel" water to their consumers (i.e., sell water that has passed through another purchasing purveyor's distribution system), shall conduct source monitoring in accordance with this chapter for the sources under their control. The level of monitoring shall satisfy the monitoring requirements associated with the total population served by the source.

(b) Distribution system monitoring. The purveyor of a system that receives and distributes water shall perform distribution-related monitoring requirements. Monitoring shall include, but not be limited to, the following:

(i) Collect coliform samples in accordance with subsection (3) of this section;

(ii) Collect trihalomethane samples if required by subsection (6) of this section or disinfection by-product samples if required by subsection (7) of this section;

(iii) Perform the distribution system residual disinfectant concentration monitoring in accordance with subsection (7) of this section, and as required under WAC 246-290-451 or 246-290-694;

(iv) Perform lead and copper monitoring required under 40 CFR 141.86, 141.87, and 141.88;

(v) Perform the distribution system monitoring in accordance with 40 CFR 141.23(b) for asbestos if applicable;

(vi) Other monitoring as required by the department.

(c) Reduced monitoring for regional programs. The receiving purveyor may receive reductions in the coliform, lead and copper, disinfection by-product (including THMs) and distribution system disinfectant residual concentration monitoring requirements, provided the receiving system:

(i) Purchases water from a purveyor that has a department-approved regional monitoring program; and

(ii) Has a written agreement with the supplying system or regional water supplier that is acceptable to the department, and which identifies the responsibilities of both the supplying and receiving system(s) with regards to monitoring, reporting and maintenance of the distribution system.

(d) Periodic review of regional programs. The department may periodically review the sampling records of public water systems participating in a department-approved monitoring program to determine if continued reduced monitoring is appropriate. If the department determines a change in the monitoring requirements of the receiving system is appropriate:

(i) The department shall notify the purveyor of the change in monitoring requirements; and

(ii) The purveyor shall conduct monitoring as directed by the department.

(3) Bacteriological.

(a) The purveyor shall be responsible for collection and submittal of coliform samples from representative points throughout the distribution system. Samples shall be collected after the first service and at regular time intervals each month the system provides water to consumers. Samples shall be collected that represent normal system operating conditions.

(i) Systems providing disinfection treatment shall, when taking a routine or repeat sample, measure residual disinfectant concentration within the distribution system at the same time and location and comply with the residual disinfection monitoring requirements under WAC 246-290-451.

(ii) Systems providing disinfection treatment shall assure that disinfectant residual concentrations are measured and recorded on all coliform sample report forms submitted for compliance purposes.

(b) Coliform monitoring plan.

(i) The purveyor shall prepare a written coliform monitoring plan and base routine monitoring upon the plan. The plan shall include coliform sample collection sites and a sampling schedule.

(ii) The purveyor shall:

(A) Keep the coliform monitoring plan on file with the system and make it available to the department for inspection upon request;

(B) Revise or expand the plan at any time the plan no longer ensures representative monitoring of the system, or as directed by the department; and

(C) Submit the plan to the department for review and approval when requested and as part of the water system plan required under WAC 246-290-100.

(c) Monitoring frequency. The number of required routine coliform samples is based on total population served.

(i) Purveyors of **community** systems shall collect and submit for analysis no less than the number of routine samples listed in Table 2 during each calendar month of operation;

(ii) Unless directed otherwise by the department, purveyors of **noncommunity** systems shall collect and submit for analysis no less than the number of samples required in Table 2, and no less than required under 40 CFR 141.21. Each month's population shall be based on the average daily population and shall include all residents and nonresidents served during that month. During months when the average daily population served is less than twenty-five, routine sample collection is not required when:

(A) Using only protected ground water sources;

(B) No coliform were detected in samples during the previous month; and

(C) One routine sample has been collected and submitted for analysis during one of the previous two months.

(iii) Purveyors of systems serving both a resident and a nonresident population shall base their minimum sampling requirement on the total of monthly populations served, both resident and nonresident as determined by the department, but no less than the minimum required in Table 2; and

(iv) Purveyors of systems with a nonresident population lasting two weeks or less during a month shall sample as directed by the department. Sampling shall be initiated at least two weeks prior to the time service is provided to consumers.

(v) Purveyors of TNC systems shall not be required to collect routine samples in months where the population served is zero or the system has notified the department of an unscheduled closure.

(d) Invalid samples. When a coliform sample is determined invalid under WAC 246-290-320 (2)(d), the purveyor shall:

(i) Not include the sample in the determination of monitoring compliance; and

(ii) Take follow-up action as defined in WAC 246-290-320 (2)(d).

(e) The purveyor using a surface water or GWI source shall collect representative source water samples for bacteriological density analysis in accordance with WAC 246-290-664 and 246-290-694 as applicable.

Table 2
Minimum Monthly Routine Coliform Sampling Requirements

Population Served [1]	Minimum Number of Routine Samples/Calendar Month	
During Month	When NO samples with a coliform presence were collected during the previous month	When ANY samples with a coliform presence were collected during the previous month
1 – 1,000	1*[2]	5
1,001 – 2,500	2*	5
2,501 – 3,300	3*	5
3,301 – 4,100	4*	5
4,101 – 4,900	5	5
4,901 – 5,800	6	6
5,801 – 6,700	7	7
6,701 – 7,600	8	8
7,601 – 8,500	9	9
8,501 – 12,900	10	10
12,901 – 17,200	15	15
17,201 – 21,500	20	20
21,501 – 25,000	25	25
25,001 – 33,000	30	30
33,001 – 41,000	40	40
41,001 – 50,000	50	50
50,001 – 59,000	60	60
59,001 – 70,000	70	70
70,001 – 83,000	80	80
83,001 – 96,000	90	90
96,001 – 130,000	100	100
130,001 – 220,000	120	120
220,001 – 320,000	150	150
320,001 – 450,000	180	180
450,001 – 600,000	210	210
600,001 – 780,000	240	240
780,001 – 970,000	270	270
970,001 – 1,230,000[3]	300	300

[1] Does not include the population of a consecutive system that purchases water. The sampling requirement for consecutive systems is a separate determination based upon the population of that system.

[2] Noncommunity systems using only protected ground water sources and serving less than 25 individuals, may collect and submit for analysis, one sample every three months.

[3] Systems serving populations larger than 1,230,000 shall contact the department for the minimum number of samples required per month.

*In addition to the provisions of subsection (1)(a) of this section, if a system of this size cannot show evidence of having been subject to a sanitary survey on file with the department, or has been determined to be at risk to bacteriological concerns following a survey, the minimum number of samples required per month may be increased by the department after additional consideration of such factors as monitoring history, compliance record, operational problems, and water quality concerns for the system.

(4) Inorganic chemical and physical.

(a) A complete inorganic chemical and physical analysis shall consist of the primary and secondary chemical and physical substances.

(i) Primary chemical and physical substances are antimony, arsenic, asbestos, barium, beryllium, cadmium, chromium, cyanide, fluoride, mercury, nickel, nitrate (as N), nitrite (as N), selenium, sodium, thallium, and for unfiltered surface water, turbidity. (Except that the MCL for arsenic under WAC 246-290-310 does not apply to TNC systems.)

(ii) Secondary chemical and physical substances are chloride, color, hardness, iron, manganese, specific conductivity, silver, sulfate, total dissolved solids*, and zinc.

* Required only when specific conductivity exceeds seven hundred micromhos/centimeter.

(b) Purveyors shall monitor for all primary and secondary chemical and physical substances identified in Table 4 and Table 5. Samples shall be collected in accordance with the monitoring requirements referenced in 40 CFR 141.23 introductory text, 141.23(a) through 141.23(j), excluding (i)(2), and 40 CFR 143.4, except for composite samples for systems serving less than three thousand three hundred one persons. For these systems, compositing among different systems may be allowed if the systems are owned or operated by a department-approved satellite management agency.

(c) Samples required by this subsection shall be taken at designated locations in accordance with 40 CFR 141.23(a) through 141.23(j), excluding (i)(2), and 40 CFR 143.4, and Table 3 herein.

(i) Wellfield samples shall be allowed from department designated wellfields; and

(ii) In accordance with 40 CFR 141.23 (a)(3), alternate sampling locations may be used if approved by the department. The process for determining these alternate sites is described in department guidance. Purveyors of community and NTNC systems may ask the department to approve an alternate sampling location for multiple sources within a single system that are blended prior to entry to the distribution system. Alternate sampling plans shall address the following:

(A) Source vulnerability;

(B) Individual source characteristics;

(C) Previous water quality information;

(D) Status of monitoring waiver applications; and

(E) Other information deemed necessary by the department.

(d) Composite samples:

(i) In accordance with CFR 141.23 (a)(4), purveyors may ask the certified lab to composite samples representing as many as five individual samples from within one system. Sampling procedures and protocols are outlined in department guidance; and

(ii) For systems serving a population of less than three thousand three hundred one, the department may approve composite sampling between systems when those systems are part of an approved satellite management agency.

(e) When the purveyor provides treatment for one or more inorganic chemical or physical contaminants, the department may require the purveyor to sample before and after treatment. The department shall notify the purveyor if and when this additional source sampling is required.

(f) Inorganic monitoring plans.

(i) Purveyors of community and NTNC systems shall prepare an inorganic chemical monitoring plan and base routine monitoring on the plan.

(ii) The purveyor shall:

(A) Keep the monitoring plan on file with the system and make it available to the department for inspection upon request;

(B) Revise or expand the plan at any time the plan no longer reflects the monitoring requirements, procedures or sampling locations, or as directed by the department; and

(C) Submit the plan to the department for review and approval when requested and as part of the water system plan required under WAC 246-290-100.

(g) Monitoring waivers.

(i) Purveyors may request in writing, a monitoring waiver from the department for any nonnitrate/nitrite inorganic chemical and physical monitoring requirements identified in this chapter.

(ii) Purveyors requesting a monitoring waiver shall comply with applicable subsections of 40 CFR 141.23 (b)(3), 141.23 (c)(3), and 141.40 (n)(4).

(iii) Purveyors shall update and resubmit requests for waiver renewals as applicable during each compliance cycle or period or more frequently as directed by the department.

(iv) Failure to provide complete and accurate information in the waiver application shall be grounds for denial of the monitoring waiver.

(h) The department may require the purveyor to repeat sample for confirmation of results.

(i) Purveyors with emergency and seasonal sources shall monitor those sources when they are in use.

(5) Lead and copper. Monitoring for lead and copper shall be conducted in accordance with 40 CFR 141.86 (a) - (f), 141.87, and 141.88.

(6) Trihalomethanes (THMs).

(a) Purveyors of **community** systems serving at least ten thousand people and providing water treated with chlorine or other halogenated disinfectant shall monitor as follows:

(i) Ground water sources. Until December 31, 2003, the purveyor shall collect one sample from each treated ground water source every twelve months. This sample shall be taken at the source before treatment and analyzed for maximum total trihalomethane potential (MTTP). The purveyor may receive approval from the department for an alternate sample location if it would provide essentially the same information as an MTTP analysis regarding the levels of THMs that the consumers are, or could potentially be, exposed to in the drinking water. Beginning January 1, 2004, systems that add a chemical disinfectant shall meet the monitoring requirements in subsection (7) of this section.

(ii) Surface water sources. The purveyor shall meet the monitoring requirements in subsection (7) of this section.

(iii) Purchased surface water sources. Purveyors of consecutive systems that add a chemical disinfectant to either the surface water they purchase, or to additional ground water supplies they use, shall meet the monitoring requirements in subsection (7) of this section.

(b) Until December 31, 2003, purveyors of **community** systems shall monitor for TTHM(s) when serving a population less than ten thousand and providing surface water treated with chlorine or other halogenated disinfectant. The purveyor shall collect one water sample per treated source every three months for one year. The sample shall be taken at the extreme end of the distribution system and analyzed for TTHM(s). After the first year, the purveyor shall monitor surface water sources every thirty-six months. Beginning January 1, 2004, systems that add a chemical disinfectant shall meet the monitoring requirements in subsection (7) of this section.

(c) Until December 31, 2003, purveyors of **community** systems shall monitor for TTHM(s) when serving less than ten thousand people and purchasing surface water treated with chlorine or other halogenated disinfectant or adding a halogenated disinfectant after purchase. The purveyor shall collect one water sample every three months at the extreme end of the distribution system or at a department-acceptable location. The sample shall be analyzed for TTHM(s). After the first year, the purveyor shall monitor every thirty-six months. Beginning January 1, 2004, systems that add a chemical disinfectant to either the surface water they purchase, or to additional ground water supplies they use, shall meet the monitoring requirements in subsection (7) of this section.

(d) After December 31, 2003, subsection (6) of this section no longer applies to any public water system.

(7) Disinfection by-products (DBP), disinfectant residuals, and disinfection by-product precursors (DBPP). Purveyors of community and NTNC systems providing water treated with chemical disinfectants and TNC systems using chlorine dioxide shall monitor as follows:

(a) General requirements.

(i) Systems shall collect samples during normal operating conditions.

(ii) All monitoring shall be conducted in accordance with the analytical requirements in 40 CFR 141.131.

(iii) Systems may consider multiple wells drawing from a single aquifer as one treatment plant for determining the minimum number of TTHM and HAA5 samples required, with department approval in accordance with department guidance.

(iv) Systems required to monitor under this subsection shall prepare and implement a monitoring plan in accordance with 40 CFR 141.132(f).

(A) Community and NTNC surface water systems that add a chemical disinfectant and serve at least ten thousand people shall submit a monitoring plan to the department.

(B) Community and NTNC surface water systems that add a chemical disinfectant and serve less than ten thousand people, but more than three thousand three hundred people, shall submit a monitoring plan to the department by April 10, 2004.

(C) The department may require submittal of a monitoring plan from systems not specified in subsection (7)(a)(iv)(A) or (B) of this section, and may require revision of any monitoring plan.

(D) Failure to monitor will be treated as a violation for the entire period covered by the annual average where compliance is based on a running annual average of monthly or quarterly samples or averages and the systems' failure to monitor makes it impossible to determine compliance with MCL's or MRDL's.

(b) Disinfection by-products - **Community** and **NTNC** systems only.

(i) Compliance dates.

(A) A system that is installing Granular Activated Carbon (GAC) with a minimum ten minutes of empty bed contact time (GAC10) or membrane technology to comply with WAC 246-290-310(5) may apply to the department for an extension of time to comply with this subsection. The extension may not go beyond December 31, 2003.

(B) Surface water systems that serve less than ten thousand people, or systems using only ground water, and that add a chemical disinfectant, including, but not limited to, chlorine, chloramines, chlorine dioxide, and/or ozone, shall comply with the applicable requirements of this subsection beginning January 1, 2004.

(ii) TTHMs and HAA5.

(A) Systems shall monitor for TTHMs and HAA5 in accordance with 40 CFR 141.132 (b)(1)(i).

(B) With department approval, systems may reduce monitoring in accordance with 40 CFR 141.132 (b)(1)(ii).

(C) Systems on department-approved reduced monitoring schedules may be required to return to routine monitoring, or initiate increased monitoring in accordance with 40 CFR 141.132 (b)(1)(iii).

(D) The department may return systems on increased monitoring to routine monitoring if, after one year, annual average results for TTHMs and HAA5 are less than or equal to 0.060 mg/L and 0.045 mg/L, respectively, or monitoring results are consistently below the MCLs indicating that increased monitoring is no longer necessary.

(iii) Chlorite - Only systems that use **chlorine dioxide.**

(A) Systems using chlorine dioxide shall conduct daily and monthly monitoring in accordance with 40 CFR 141.132 (b)(2)(i) and additional chlorite monitoring in accordance with 40 CFR 141.132 (b)(2)(ii).

(B) With department approval, monthly monitoring may be reduced in accordance with 40 CFR 141.132 (b)(2)(iii)(B). Daily monitoring at entry to distribution required by 40 CFR 141.132 (b)(2)(i)(A) may not be reduced.

(iv) Bromate - Only systems that use **ozone.**

(A) Systems using ozone for disinfection or oxidation must conduct bromate monitoring in accordance with 40 CFR 141.132 (b)(3)(i).

(B) With department approval, monthly bromate monitoring may be reduced to once per quarter, in accordance with the provisions and requirements of 40 CFR 141.132 (b)(3)(ii) and 40 CFR 141.132(e).

(c) Disinfectant residuals.

(i) Compliance dates.

(A) Community and NTNC surface water systems that add a chemical disinfectant, including, but not limited to, chlorine, chloramines, chlorine dioxide, and/or ozone, and serve less than ten thousand people, or systems using only ground water, shall comply with the applicable requirements of this section beginning January 1, 2004.

(B) TNC surface water systems that add chlorine dioxide as a disinfectant or oxidant, and serve less than ten thousand people, or systems using only ground water, shall comply with the chlorine dioxide MRDL beginning January 1, 2004.

(ii) Chlorine and chloramines. Systems that use chlorine or chloramines shall monitor and record the residual disinfectant level in the distribution system in accordance with WAC 246-290-451(6), 246-290-664 (6)(a), or 246-290-694 (8)(a).

(iii) Chlorine dioxide. Community, NTNC, or TNC systems that use chlorine dioxide shall monitor in accordance with 40 CFR 141.132 (c)(2) and record results.

(d) Disinfection by-product precursors.

(i) Compliance dates.

Community and NTNC surface water systems serving less than ten thousand people using conventional filtration that employs sedimentation shall comply with the applicable requirements of this subsection beginning January 1, 2004.

(ii) Surface water systems that use conventional filtration with sedimentation shall monitor in accordance with 40 CFR 141.132(d), and meet the requirements of 40 CFR 141.135.

(8) Organic chemicals.

(a) Purveyors of community and NTNC water systems shall comply with monitoring requirements in accordance with 40 CFR 141.24 (a) - (d), 141.24 (f)(1) - (f)(15), 141.24 (f)(18) - (19), 141.24 (f)(21), 141.24 (g)(1) - (9), 141.24 (g)(12) - (14), 141.24 (h)(1) - (11), 141.24 (h)(14) - (17), 141.40(a), 141.40(d), and 141.40(e).

(b) Sampling locations shall be as defined in 40 CFR 141.24(f), 141.24(g), 141.24(h), 141.40(b) and 141.40(c).

(i) Wellfield samples shall be allowed from department designated wellfields; and

(ii) In accordance with 40 CFR 141.24 (f)(3) and 141.24 (h)(3), alternate sampling locations may be allowed if approved by the department. These alternate locations are described in department guidance. Purveyors may ask the department to approve an alternate sampling location for multiple sources within a single system that are blended prior to entry to the distribution system. The alternate sampling location shall consider the following:

(A) Source vulnerability;

(B) An updated organic monitoring plan showing location of all sources with current and proposed sampling locations;

(C) Individual source characteristics;

(D) Previous water quality information;

(E) Status of monitoring waiver applications; and

(F) Other information deemed necessary by the department.

(c) Composite samples:

(i) Purveyors may ask the certified lab to composite samples representing as many as five individual samples from within one system. Sampling procedures and protocols are outlined in department guidance;

(ii) For systems serving a population of less than three thousand three hundred one, the department may approve composite sampling between systems when those systems are part of an approved satellite management agency.

(d) The department may require the purveyor to sample both before and after treatment for one or more organic contaminants. The department shall notify the purveyor if and when this additional source sampling is required.

(e) Organic chemical monitoring plans.

(i) Purveyors of community and NTNC systems shall prepare an organic chemical monitoring plan and base routine monitoring on the plan.

(ii) The purveyor shall:

(A) Keep the monitoring plan on file with the system and make it available to the department for inspection upon request;

(B) Revise or expand the plan at any time the plan no longer reflects the monitoring requirements, procedures or sampling locations, or as directed by the department; and

(C) Submit the plan to the department for review and approval when requested and as part of the water system plan required under WAC 246-290-100.

(f) Monitoring waivers.

(i) Purveyors may request in writing, a monitoring waiver from the department for any organic monitoring requirement except those relating to unregulated VOCs;

(ii) Purveyors requesting a monitoring waiver shall comply with 40 CFR 141.24 (f)(7), 141.24 (f)(10), 141.24 (h)(6), 141.24 (h)(7) or 141.40 (n)(4);

(iii) Purveyors shall update and resubmit requests for waiver renewals as directed by the department; and

(iv) Failure to provide complete and accurate information in the waiver application shall be grounds for denial of the monitoring waiver.

(g) Purveyors with emergency and seasonal sources shall monitor those sources under the applicable requirements of this section when they are actively providing water to consumers.

(9) Unregulated chemicals.

(a) Unregulated inorganic contaminants. Purveyors of community and NTNC systems shall:

(i) Monitor for the unregulated inorganic chemicals listed in 40 CFR 141.40 (n)(12);

(ii) Comply with monitoring methods, frequencies, and sampling locations in accordance with 40 CFR 141.40 (n)(2) through 141.40 (n)(9) and 141.40 (n)(12); and

(iii) Apply in writing for a monitoring waiver according to the conditions outlined in 40 CFR 141.40 (n)(3), and the departmental procedures described in subsection (8)(f) of this section.

(b) Unregulated VOCs. Purveyors shall:

(i) Monitor in accordance with 40 CFR 141.40(e) and 141.40(j);

(ii) Comply with monitoring methods, frequency and sampling locations in accordance with 40 CFR 141.40(a) through 141.40(d), 141.40(g) and 141.40(i); and

(iii) Perform repeat monitoring for these compounds in accordance with 40 CFR 141.40(l).

(c) Unregulated SOCs. Purveyors shall:

(i) Monitor for the unregulated SOCs listed in 40 CFR 141.40 (n)(11); and

(ii) Comply with monitoring methods, frequencies, and sampling locations in accordance with 40 CFR 141.40 (n)(1) through 141.40 (n)(9).

Purveyors may request that the department defer this monitoring if a system has less than one hundred fifty service connections.

(d) Purveyors with emergency and seasonal sources shall monitor those sources under the applicable requirements of this section whenever they are actively providing water to consumers.

(10) Radionuclides. Monitoring for radionuclides shall be conducted in accordance with 40 CFR 141.26.

(11) Other substances.

On the basis of public health concerns, the department may require the purveyor to monitor for additional substances.

Table 3
Monitoring Location

Sample Type	Sample Location
Asbestos	One sample from distribution system or if required by department, from the source.
Bacteriological	From representative points throughout distribution system.
Complete Inorganic Chemical & Physical	From a point representative of the source, after treatment, and prior to entry to the distribution system.
Lead/Copper	From the distribution system at targeted sample tap locations.
Nitrate/Nitrite	From a point representative of the source, after treatment, and prior to entry to the distribution system.
Total Trihalomethanes -Surface Water (WAC 246-290-300(6) only)	From points at extreme end, and at intermediate locations, in the distribution system from the source after treatment.
Potential Trihalomethanes – Ground Water (WAC 246-290-300(6) only)	From the source before treatment.
Disinfection By-Products – TTHMs and HAA5 WAC 246-290-300(7)	In accordance with 40 CFR 141.132 (b)(1).
Disinfection By-Products – Chlorite (Systems adding chlorine dioxide)	In accordance with 40 CFR 141.132 (b)(2).
Disinfection By-Products – Bromate (Systems adding ozone)	In accordance with 40 CFR 141.132 (b)(3).
Disinfectant Residuals - Chlorine and Chloramines	In accordance with 40 CFR 141.132 (c)(1).
Disinfectant Residuals - Chlorine dioxide	In accordance with 40 CFR 141.132 (c)(2).
Disinfection Precursors - Total Organic Carbon (TOC)	In accordance with 40 CFR 141.132(d).
Disinfection Precursors – Bromide (Systems using ozone)	From the source before treatment.
Radionuclides	From a point representative of the source, after treatment and prior to entry to distribution system.
Organic Chemicals (VOCs & SOCs)	From a point representative of the source, after treatment and prior to entry to distribution system.
Other Substances (unregulated chemicals)	From a point representative of the source, after treatment, and prior to entry to the distribution system, or as directed by the department.

[Statutory Authority: RCW 43.20.050 and 70.119A.080. 04-04-056, § 246-290-300, filed 1/30/04, effective 3/1/04. Statutory Authority: RCW 43.20.050 (2) and (3) and 70.119A.080. 03-08-037, § 246-290-300, filed 3/27/03, effective 4/27/03. Statutory Authority: RCW 43.02.050 [43.20.050]. 99-07-021, § 246-290-300, filed 3/9/99, effective 4/9/99. Statutory Authority: RCW 43.20.050. 94-14-001, § 246-290-300, filed 6/22/94, effective 7/23/94; 93-08-011 (Order 352B), § 246-290-300, filed 3/25/93, effective 4/25/93; 92-04-070 (Order 241B), § 246-290-300, filed 2/4/92, effective 3/6/92. Statutory Authority: Chapter 43.20 RCW. 91-07-031 (Order 150B), § 246-290-300, filed 3/15/91, effective 4/15/91. Statutory Authority: RCW 43.20.050. 91-02-051 (Order 124B), recodified as § 246-290-300, filed 12/27/90, effective 1/31/91. Statutory Authority: P.L. 99-339. 89-21-020 (Order 336), § 248-54-165, filed 10/10/89, effective 11/10/89. Statutory Authority: RCW 34.04.045. 88-05-057 (Order 307), § 248-54-165, filed 2/17/88. Statutory Authority: RCW 43.20.050. 83-19-002 (Order 266), § 248-54-165, filed 9/8/83.]

WAC 246-290-310 Maximum contaminant levels (MCLs) and maximum residual disinfectant levels (MRDLs).

(1) General.

(a) The purveyor shall be responsible for complying with the standards of water quality identified in this section. If a substance exceeds its maximum contaminant level (MCL) or its maximum residual disinfectant level (MRDL), the purveyor shall take follow-up action in accordance with WAC 246-290-320.

(b) When enforcing the standards described under this section, the department shall enforce compliance with the primary standards as its first priority.

(2) Bacteriological.

(a) MCLs under this subsection shall be considered primary standards.

(b) Notwithstanding subsection (1) of this section, if coliform presence is detected in any sample, the purveyor shall take follow-up action in accordance with WAC 246-290-320(2).

(c) Acute MCL. An acute MCL for coliform bacteria occurs when there is:

(i) Fecal coliform presence in a repeat sample;

(ii) *E. coli* presence in a repeat sample; or

(iii) Coliform presence in any repeat samples collected as a follow-up to a sample with fecal coliform or *E. coli* presence.

Note: For the purposes of the public notification requirements in Part 7, Subpart A of this chapter, an acute MCL is a violation that requires Tier 1 public notification.

(d) Nonacute MCL. A nonacute MCL for coliform bacteria occurs when:

(i) Systems taking less than forty routine samples during the month have more than one sample with coliform presence; or

(ii) Systems taking forty or more routine samples during the month have more than 5.0 percent with coliform presence

(e) MCL compliance. The purveyor shall determine compliance with the coliform MCL for each month the system provides drinking water to the public. In determining MCL compliance, the purveyor shall:

(i) Include:

(A) Routine samples; and

(B) Repeat samples.

(ii) Not include:

(A) Samples invalidated under WAC 246-290-320 (2)(d); and

(B) Special purpose samples.

(3) Inorganic chemical and physical.

(a) The primary and secondary MCLs are listed in Table 4 and 5:

Table 4
Inorganic Chemical Characteristics

Substance	Primary MCLs (mg/L)
Antimony (Sb)	0.006
Arsenic (As)	0.010 *
Asbestos	7 million fibers/liter (longer than 10 microns)
Barium (Ba)	2.0
Beryllium (Be)	0.004
Cadmium (Cd)	0.005
Chromium (Cr)	0.1
Copper (Cu)	**
Cyanide (HCN)	0.2
Fluoride (F)	4.0
Lead (Pb)	**
Mercury (Hg)	0.002
Nickel (Ni)	0.1
Nitrate (as N)	10.0
Nitrite (as N)	1.0
Selenium (Se)	0.05
Sodium (Na)	**
Thallium (Tl)	0.002
Substance	Secondary MCLs (mg/L)
Chloride (Cl)	250.0
Fluoride (F)	2.0
Iron (Fe)	0.3
Manganese (Mn)	0.05
Silver (Ag)	0.1
Sulfate (SO_4)	250.0
Zinc (Zn)	5.0

Note* Does not apply to TNC systems. With regard to community and NTNC water systems, new systems or systems that use a new source of water, certified as complete in accordance with WAC 246-290-120(5) after January 22, 2004, must demonstrate compliance with this MCL within a period of time specified by the department. With regard to existing community and NTNC water systems, this arsenic MCL is effective January 23, 2006, for the purpose of compliance. Until that time, the MCL is 0.05 mg/L.

Note** Although the state board of health has not established MCLs for copper, lead, and sodium, there is sufficient public health significance connected with copper, lead, and sodium levels to require inclusion in inorganic chemical and physical source monitoring. For lead and copper, the EPA has established distribution system related levels at which a system is required to consider corrosion control. These levels, called "action levels," are 0.015 mg/L for lead and 1.3 mg/L for copper and are applied to the highest concentration in ten percent of all samples collected from the distribution system. The EPA has also established a recommended level of twenty mg/L for sodium as a level of concern for those consumers that may be restricted for daily sodium intake in their diets.

Table 5
Physical Characteristics

Substance	Secondary MCLs
Color	15 Color Units
Specific Conductivity	700 umhos/cm
Total Dissolved Solids (TDS)	500 mg/L

(b) Compliance with the MCLs in this subsection is determined by a running annual average at each sampling point. The system will not be considered in violation of the MCL until it has completed one year of quarterly sampling and at least one sampling point is in violation of the MCL. If one sampling point is in violation of the MCL, the system is in violation of the MCL.

(i) If any sample will cause the running annual average to exceed the MCL at any sampling point, the system is out of compliance with the MCL immediately.

(ii) If a system fails to collect the required number of samples, compliance will be based on the total number of samples collected.

(iii) If a sample result is less than the detection limit, zero will be used to calculate the running annual average.

(4) Trihalomethanes.

(a) The department shall consider standards under this subsection primary standards.

(b) The MCL for total trihalomethanes (TTHMs) is 0.10 mg/L calculated on the basis of a running annual average of quarterly samples. The concentrations of each of the trihalomethane compounds (trichloromethane, dibromochloromethane, bromodichloromethane, and tribromomethane) are totaled to determine the TTHM level.

(c) There is no MCL for maximum total trihalomethane potential (MTTP). When the MTTP value exceeds 0.10 mg/L, the purveyor shall follow up as described under WAC 246-290-320(6).

(d) The MCL for total trihalomethanes in this subsection applies only to monitoring required under WAC 246-290-300(6). After December 31, 2003, this section no longer applies to any public water system.

(5) Disinfection by-products.

(a) The department shall consider standards under this subsection as primary standards. The MCLs in this subsection apply to monitoring required by WAC 246-290-300(7).

(b) The MCLs for disinfection by-products are as follows:

Disinfection By-Product	MCL (mg/L)
Total Trihalomethanes (TTHMs)	0.080
Haloacetic acids (five) (HAA5)	0.060
Bromate	0.010
Chlorite	1.0

(c) Whether a system has exceeded MCLs shall be determined in accordance with 40 CFR 141.133.

(6) Disinfectant residuals.

(a) The department shall consider standards under this subsection primary standards. The MRDLs in this subsection apply to monitoring required by WAC 246-290-300(7).

(b) The MRDL for disinfectants is as follows:

Disinfectant Residual	MRDL (mg/L)
Chlorine	4.0 (as $C1_2$)
Chloramines	4.0 (as $C1_2$)
Chlorine Dioxide	0.8 (as $C1O_2$)

(c) Whether a system has exceeded MRDLs shall be determined in accordance with 40 CFR 141.133.

(7) Radionuclides.

(a) The department shall consider standards under this subsection primary standards.

(b) The MCLs for radium-226 and radium-228, gross alpha particle activity, beta particle and photon radioactivity, and uranium shall be as listed in 40 CFR 141.66.

(8) Organic chemicals.

(a) The department shall consider standards under this subsection primary standards.

(b) VOCs.

(i) The MCLs for VOCs shall be as listed in 40 CFR 141.61(a).

(ii) The department shall determine compliance with this subsection based on compliance with 40 CFR 141.24(f).

(c) SOCs.

(i) MCLs for SOCs shall be as listed in 40 CFR 141.61(c).

(ii) The department shall determine compliance with this subsection based on compliance with 40 CFR 141.24(h).

(9) Other chemicals.

(a) The state board of health shall determine maximum contaminant levels for any additional substances.

(b) Purveyors may be directed by the department to comply with state advisory levels (SALs) for contaminants that do not have a MCL established in chapter 246-290 WAC. SALs shall be:

(i) MCLs that have been promulgated by the EPA, but which have not yet been adopted by the state board of health; or

(ii) State board of health adopted levels for substances recommended by the department and not having an EPA established MCL. A listing of these may be found in the department document titled *Procedures and References for the Determination of State Advisory Levels for Drinking Water Contaminants* dated June 1996, that has been approved by the state board of health and is available.

[Statutory Authority: RCW 43.20.050 and 70.119A.080. 04-04-056, § 246-290-310, filed 1/30/04, effective 3/1/04. Statutory Authority: RCW 43.20.050 (2) and (3) and 70.119A.080. 03-08-037, § 246-290-310, filed 3/27/03, effective 4/27/03. Statutory Authority: RCW 43.02.050 [43.20.050]. 99-07-021, § 246-290-310, filed 3/9/99, effective 4/9/99. Statutory Authority: RCW 43.20.050. 94-14-001, § 246-290-310, filed 6/22/94, effective 7/23/94; 93-08-011 (Order 352B), § 246-290-310, filed 3/25/93, effective 4/25/93; 92-04-070 (Order 241B), § 246-290-310, filed 2/4/92, effective 3/6/92. Statutory Authority: Chapter 43.20 RCW. 91-07-031 (Order 150B), § 246-290-310, filed 3/15/91, effective 4/15/91. Statutory Authority: RCW 43.20.050. 91-02-051 (Order 124B), recodified as § 246-290-310, filed 12/27/90, effective 1/31/91. Statutory Authority: P.L. 99-339. 89-21-020 (Order 336), § 248-54-175, filed 10/10/89, effective 11/10/89. Statutory Authority: RCW 34.04.045. 88-05-057 (Order 307), § 248-54-175, filed 2/17/88. Statutory Authority: RCW 43.20.050. 83-19-002 (Order 266), § 248-54-175, filed 9/8/83.]

WAC 246-290-320 Follow-up action.

(1) General.

(a) When an MCL or MRDL violation or exceedance occurs, the purveyor shall take follow-up action as described in this section.

(b) When a primary standard violation occurs, the purveyor shall:

(i) Notify the department in accordance with WAC 246-290-480;

(ii) Notify the consumers served by the system and the owner or operator of any consecutive system served in accordance with 40 CFR 141.201 through 208, and Part 7, Subpart A of this chapter;

(iii) Determine the cause of the contamination; and

(iv) Take action as directed by the department.

(c) When a secondary standard violation occurs, the purveyor shall notify the department and take action as directed by the department.

(d) The department may require additional sampling for confirmation of results.

(2) Bacteriological.

(a) When coliform bacteria are present in any sample and the sample is not invalidated under (d) of this subsection, the purveyor shall ensure the following actions are taken:

(i) The sample is analyzed for fecal coliform or E. coli. When a sample with a coliform presence is not analyzed for E. coli or fecal coliforms, the sample shall be considered as having a fecal coliform presence for MCL compliance purposes;

(ii) Repeat samples are collected in accordance with (b) of this subsection;

(iii) The department is notified in accordance with WAC 246-290-480; and

(iv) The cause of the coliform presence is determined and corrected.

(b) Repeat samples.

(i) The purveyor shall collect repeat samples in order to confirm the original sample results and to determine the cause of the coliform presence. Additional treatment, such as batch or shock chlorination, shall not be instituted prior to the collection of repeat samples unless prior authorization by the department is given. Following collection of repeat samples, and before the analytical results are known, there

may be a need to provide interim precautionary treatment or other means to insure public health protection. The purveyor shall contact the department to determine the best interim approach in this situation.

(ii) The purveyor shall collect and submit for analysis a set of repeat samples for every sample in which the presence of coliforms is detected. A set of repeat coliform samples consists of:

(A) Four repeat samples for systems collecting one routine coliform sample each month; or

(B) Three repeat samples for all systems collecting more than one routine coliform sample each month.

(iii) The purveyor shall collect repeat sample sets according to Table 7;

(iv) The purveyor shall collect one set of repeat samples for each sample with a coliform presence. All samples in a set of repeat samples shall be collected on the same day and submitted for analysis within twenty-four hours after notification by the laboratory of a coliform presence, or as directed by the department.

(v) When repeat samples have coliform presence, the purveyor shall:

(A) Contact the department and collect a minimum of one additional set of repeat samples as directed by the department; or

(B) Collect one additional set of repeat samples for each sample where coliform presence was detected.

(vi) The purveyor of a system providing water to consumers via a single service shall collect repeat samples from the same location as the sample with a coliform presence. The set of repeat samples shall be collected:

(A) On the same collection date;

(B) Over consecutive days with one sample collected each day until the required samples in the set of repeat samples are collected; or

(C) As directed by the department.

(vii) If a sample with a coliform presence was collected from the first two or last two active services, the purveyor shall monitor as directed by the department;

(viii) The purveyor may change a previously submitted routine sample to a sample in a set of repeat samples when the purveyor:

(A) Collects the sample within five adjacent service connections of the location from which the initial sample with a coliform presence was collected;

(B) Collects the sample after the initial sample with a coliform presence was submitted for analysis;

(C) Collects the sample on the same day as other samples in the set of repeat samples, except under (b)(iv) of this subsection; and

(D) Requests and receives approval from the department for the change.

(ix) The department may determine that sets of repeat samples specified under this subsection are not necessary during a month when a nonacute coliform MCL violation is determined for the system.

Table 7
Repeat Sample Requirements

# of routine samples collected each month	# of samples in a set of repeat samples	Locations for repeat samples (collect at least one sample per site)
1	4	• Site of previous sample with a coliform presence • Within 5 active services upstream of site of sample with a coliform presence • Within 5 active services downstream of site of sample with a coliform presence • At any other active service or from a location most susceptible to contamination (i.e., well or reservoir)
more than 1	3	• Site of previous sample with a coliform presence • Within 5 active services upstream of site of sample with a coliform presence • Within 5 active services downstream of site of sample with a coliform presence

(c) Monitoring frequency following a coliform presence. Systems having one or more coliform presence samples that were not invalidated during the previous month shall collect and submit for analysis the minimum number of samples shown in the last column of Table 2.

(i) The purveyor may obtain a reduction in the monitoring frequency requirement when one or more samples with a coliform presence were collected during the previous month, if the purveyor proves to the satisfaction of the department;

(A) The cause of the sample with a coliform presence; and

(B) The problem is corrected before the end of the next month the system provides water to the public.

(ii) If the monitoring frequency requirement is reduced, the purveyor shall collect and submit at least the minimum number of samples required when no samples with a coliform presence were collected during the previous month.

(d) Invalid samples. Coliform samples may be determined to be invalid under any of the following conditions:

(i) A certified laboratory determines that the sample results show:

(A) Multiple tube technique cultures that are turbid without appropriate gas production;

(B) Presence-absence technique cultures that are turbid in the absence of an acid reaction;

(C) Occurrence of confluent growth patterns or growth of TNTC (too numerous to count) colonies without a surface sheen using a membrane filter analytic technique;

(ii) The analyzing laboratory determines there is excess debris in the sample.

(iii) The analyzing laboratory establishes that improper sample collection or analysis occurred;

(iv) The department determines that a nondistribution system problem has occurred as indicated by:

(A) All samples in the set of repeat samples collected at the same location, including households, as the original coliform presence sample also are coliform presence; and

(B) All other samples from different locations (households, etc.) in the set of repeat samples are free of coliform.

(v) The department determines a coliform presence result is due to a circumstance or condition that does not reflect water quality in the distribution system.

(e) Follow-up action when an invalid sample is determined. The purveyor shall take the following action when a coliform sample is determined to be invalid:

(i) Collect and submit for analysis an additional coliform sample from the same location as each invalid sample within twenty-four hours of notification of the invalid sample; or

(ii) In the event that it is determined that the invalid sample resulted from circumstances or conditions not reflective of distribution system water quality, collect a set of samples in accordance with Table 7; and

(iii) Collect and submit for analysis samples as directed by the department.

(f) Invalidated samples shall not be included in determination of the sample collection requirement for compliance with this chapter.

(3) Inorganic chemical and physical follow-up monitoring shall be conducted in accordance with the following:

(a) For nonnitrate/nitrite primary inorganic chemicals, 40 CFR 141.23 (a)(4), 141.23 (b)(8), 141.23 (c)(7), 141.23 (c)(9), 141.23 (f)(1), 141.23(g), 141.23(m) and 141.23(n);

(b) For nitrate, 40 CFR 141.23 (a)(4), 141.23 (d)(2), 141.23 (d)(3), 141.23 (f)(2), 141.23(g), 141.23(m), 141.23(n), and 141.23(o);

(c) For nitrite, 40 CFR 141.23 (a)(4), 141.23 (e)(3), 141.23 (f)(2), and 141.23(g); or

(d) The purveyor of any public water system providing service that has secondary inorganic MCL exceedances shall take follow-up action as required by the department. Follow-up action shall be commensurate with the degree of consumer acceptance of the water quality and their willingness to bear the costs of meeting the secondary standard. For new community water systems and new nontransient noncommunity water systems without active consumers, treatment for secondary contaminant MCL exceedances will be required.

(4) Lead and copper follow-up monitoring shall be conducted in accordance with 40 CFR 141.85(d), 141.86 (d)(2), 141.86 (d)(3), 141.87(d) and 141.88(b) through 141.88(d).

(5) Turbidity.

Purveyors monitoring turbidity in accordance with Part 6 of this chapter shall provide follow-up in accordance with WAC 246-290-634.

(6) Trihalomethanes. For public water systems subject to WAC 246-290-300(6):

(a) When the average of all samples taken during any twelve-month period exceeds the MCL for total trihalomethanes as referenced in WAC 246-290-310 (4)(b), the violation is confirmed and the purveyor shall take corrective action as required by the department, and consistent with 40 CFR 141.30 (b)(3). When the maximum trihalomethane potential (MTTP) result is equal to or greater than 0.10 mg/L and the result is confirmed by a promptly collected repeat sample, the purveyor shall provide for additional monitoring and take action as directed by the department.

(7) Organic chemicals. Follow-up monitoring shall be conducted in accordance with the following:

(a) For VOCs, 40 CFR 141.24 (f)(11) through 141.24 (f)(15), and 141.24 (f)(22); or

(b) For SOCs, 40 CFR 141.24(b), 141.24(c) and 141.24 (h)(7) through 141.24 (h)(11), and 141.24 (h)(20).

(8) Unregulated inorganic and organic chemicals.

(a) Follow-up monitoring shall be conducted in accordance with 40 CFR 141.40 (n)(8) and 141.40 (n)(9).

(b) When an unregulated chemical is verified at a concentration above the detection limit, the purveyor shall:

(i) Submit the sample analysis results to the department within seven days of receipt from the laboratory; and

(ii) Sample the source a minimum of once every three months for one year and then annually thereafter during the three-month period when the highest previous measurement occurred.

(c) If the department determines that an unregulated chemical is verified at a level greater than a SAL, the department shall notify the purveyor in writing. The purveyor shall repeat sample the source as soon as possible after initial department notice that a SAL has been exceeded. The purveyor shall submit the analysis results to the department within seven days of receipt from the laboratory. If any repeat sample confirms that a SAL has been exceeded, the purveyor shall:

(i) Provide consumer information in accordance with Part 7, Subpart A of this chapter;

(ii) Investigate the cause of the contamination; and

(iii) Take follow-up or corrective action as required by the department.

(d) The department may reduce the purveyor's monitoring requirement for a source detecting an unregulated chemical if the source has been monitored annually for at least three years, and all analysis results are less than the SAL.

(9) Radionuclide follow-up monitoring shall be conducted in accordance with 40 CFR 141.26 (a)(2)(iv), 141.26 (a)(3)(ii) through (v), 141.26 (a)(4), 141.26 (b)(6), and 141.26 (c)(5).

(10) The department shall determine the purveyor's follow-up action when a substance not included in this chapter is detected.

[Statutory Authority: RCW 43.20.050 and 70.119A.080. 04-04-056, § 246-290-320, filed 1/30/04, effective 3/1/04. Statutory Authority: RCW 43.20.050 (2) and (3) and 70.119A.080. 03-08-037, § 246-290-320, filed 3/27/03, effective 4/27/03. Statutory Authority: RCW 43.02.050 [43.20.050]. 99-07-021, § 246-290-320, filed 3/9/99, effective 4/9/99. Statutory Authority: RCW 43.20.050. 94-14-001, § 246-290-320, filed 6/22/94, effective 7/23/94; 93-08-011 (Order 352B), § 246-290-320, filed 3/25/93, effective 4/25/93; 92-04-070 (Order 241B), § 246-290-320, filed 2/4/92, effective 3/6/92. Statutory Authority: Chapter 43.20 RCW. 91-07-031 (Order 150B), § 246-290-320, filed 3/15/91, effective 4/15/91. Statutory Authority: RCW 43.20.050. 91-02-051 (Order 124B), recodified as § 246-290-320, filed 12/27/90, effective 1/31/91. Statutory Authority: P.L. 99-339. 89-21-020 (Order 336), § 248-54-185, filed 10/10/89, effective 11/10/89. Statutory Authority: RCW 34.04.045. 88-05-057 (Order 307), § 248-54-185, filed 2/17/88. Statutory Authority: RCW 43.20.050. 83-19-002 (Order 266), § 248-54-185, filed 9/8/83.]

Part 5. Water System Operations

WAC 246-290-415 Operations and maintenance.

(1) The purveyor shall ensure that the system is operated in accordance with the operations and maintenance program as established in the approved water system plan required under WAC 246-290-100 or the small water system management program under WAC 246-290-105.

(2) The operations and maintenance program shall include the following elements as applicable:

(a) Water system management and personnel;

(b) Operator certification;

(c) Comprehensive monitoring plan for all contaminants under WAC 246-290-300;

(d) Emergency response program;

(e) Cross-connection control program; and

(f) Maintenance of service reliability in accordance with WAC 246-290-420.

(3) The purveyor shall ensure that the system is operated in accordance with good operations procedures such as those available in texts, handbooks, and manuals available from the following sources:

(a) American Water Works Association (AWWA), 6666 West Quincy Avenue, Denver, Colorado 80235;

(b) American Society of Civil Engineers (ASCE), 345 East 47th Street, New York, New York 10017-2398;

(c) Ontario Ministry of the Environment, 135 St. Clair Avenue West, Toronto, Ontario M4V1B5, Canada;

(d) The Chlorine Institute, 2001 "L" Street NW, Washington, D.C. 20036;

(e) California State University, 600 "J" Street, Sacramento, California 95819;

(f) Health Research Inc., Health Education Services Division, P.O. Box 7126, Albany, New York 12224; and

(g) Any other standards acceptable to the department.

(4) The purveyor shall not establish or maintain a bypass to divert water around any feature of a treatment process, except by written approval from the department.

(5) The purveyor shall take preventive or corrective action as directed by the department when results of an inspection conducted by the department indicate conditions which are currently or may become a detriment to system operation.

(6) The purveyor of a system using surface water or GWI shall meet operational requirements specified in Part 6 of this chapter.

(7) The purveyor shall have a certified operator if required under chapter 70.119 RCW and chapter 246-292 WAC.

(8) The purveyor shall at all times employ reasonable security measures to assure the raw water intake facilities, water treatment processes, water storage facilities, and the distribution system are protected from possible damage or compromise by unauthorized persons, animals, vegetation, or similar intruding agents. Such measures include elements such as locks on hatches, fencing of facilities, screening of reservoir vents or openings, and other recommendations as may be found in the current edition of the *Recommended Standards for Water Works, A Committee Report of the Great Lakes - Upper Mississippi River Board of State Public Health and Environmental Managers.*

(9) All purveyors utilizing ground water wells shall monitor well levels from ground level to the static water level on a seasonal basis, including low demand and high demand periods, to document the continuing availability of the source to meet projected, long-term demands. Purveyors shall maintain this data and provide it to the department upon request.

(10) All operation and maintenance practices shall conform to Part 5 of this chapter.

[Statutory Authority: RCW 43.02.050 [43.20.050]. 99-07-021, § 246-290-415, filed 3/9/99, effective 4/9/99.]

WAC 246-290-416 Sanitary surveys.

(1) All public water systems shall submit to a sanitary survey conducted by the department, or the department's designee, based upon the following schedule:

(a) For community and nontransient noncommunity water systems, every five years, or more frequently as determined by the department. The sanitary surveys shall be consistent with the schedules presented in 40 CFR 141.21; and

(b) For transient noncommunity water systems, every five years unless the system uses only disinfected ground water and has an approved wellhead protection program, in which case the survey shall be every ten years. The sanitary surveys shall be conducted consistent with schedules presented in 40 CFR 141.21.

(c) For community public water systems that use a surface water or GWI source, every three years. Surveys may be reduced to every five years upon written approval from the department.

(2) All public water system purveyors shall be responsible for:

(a) Ensuring cooperation in scheduling sanitary surveys with the department, or its designee; and

(b) Ensuring the unrestricted availability of all facilities and records at the time of the sanitary survey.

(3) All public water systems that use a surface water or GWI source shall, within forty-five days following receipt of a sanitary survey report that identifies significant deficiencies, identify in writing to the department how the system will correct the deficiencies and propose a schedule to complete the corrections. The department may modify the schedule if necessary to protect the health of water system users.

[Statutory Authority: RCW 43.20.050 (2) and (3) and 70.119A.080. 03-08-037, § 246-290-416, filed 3/27/03, effective 4/27/03. Statutory Authority: RCW 43.02.050 [43.20.050]. 99-07-021, § 246-290-416, filed 3/9/99, effective 4/9/99.]

WAC 246-290-420 Reliability and emergency response.

(1) All public water systems shall provide an adequate quantity and quality of water in a reliable manner at all times consistent with the requirements of this chapter.

(2) During normal operating conditions, for both average and peak demand periods, water pressure at the consumer's service meter, or property line if a meter is not used, shall be maintained at the approved design pressure, but in no case be less than 20 psi (140 kPa). Water quality shall be maintained as required in Part 4 and Part 6 of this chapter.

(3) When fire flow is required, 20 psi (140 kPa) at the operating hydrant and at least positive pressure shall be maintained throughout the system under fire flow conditions.

(4) The purveyor shall address abnormal operating conditions, such as those associated with fires, floods, unscheduled power outages, facility failures, and system maintenance, by using measures consistent with applicable regulations and industry standards to ensure the system is constructed, maintained, and operated to protect against the risk of contamination by cross-connections as a result of loss of system pressure.

(5) For operations during abnormal conditions, the purveyor shall establish the level of reliability, in accordance with consumer expectations, to ensure prevention of loss of pressure or prompt restoration of pressure when a loss of pressure has occurred. Consumer expectations may be established by a simple majority of the affected consumers within the system's service area, or within specific, definable pressure zones when different levels of service may be encountered. A simple majority of consumers can be associated with either a vote of the consumers for privately owned and operated systems, or of the system's governing body, such as council, board, or commission, for publicly governed systems. Consumer expectations shall not be used by a purveyor to justify a failure to address routine or repeated loss of pressure within the system, or within specific, definable pressure zones, because of the purveyor's failure to properly construct, maintain, or operate the system. The level of reliability established under this subsection, and measures for achieving such reliability, shall be identified in the operations

and maintenance program and incorporated into the water system design, and shall be approved by the department. The level of reliability shall not affect the purveyor's obligations under subsections (1) through (4) of this section.

(6) The purveyor shall implement all appropriate measures necessary to meet the identified level of reliability for normal and abnormal operating conditions. Procedures for system operation during normal and abnormal operating conditions shall be documented in an operations and maintenance and emergency response program in accordance with WAC 246-290-415 and shall be implemented in a timely and reasonable manner.

(7) If a purveyor is unable to satisfactorily address departmental concerns or consumer complaints regarding the level of reliability associated with normal or abnormal operating conditions, the purveyor may be required to prepare a project report pursuant to WAC 246-290-110 that addresses an evaluation of the problem, impacts on affected consumers, and recommended corrective action. Unless the department determines that public health protection requires otherwise, improvements related to abnormal operating conditions described under subsection (5) of this section will be required commensurate with the established level of reliability for abnormal operating conditions.

(8) Restrictions on designed, or historically documented, normal water uses shall not be allowed except under the following conditions:

(a) Whenever there is clear evidence that, unless limitations are imposed, water use at normal levels will lead to a relatively rapid depletion of water source reserves, such as in drought situations or when significant facility failures occur;

(b) Whenever a water system observes that demands for water exceed the available supply, as a result of such events as miscalculated planning, inattentive operation, or unforeseen problems with sources and that limitations would be necessary to insure basic levels of service while additional sources were being sought or developed, or the situation was being otherwise remedied; or

(c) Whenever the water system institutes restrictions as part of a water conservation program which has been accepted by the system consumers through appropriate public decision-making processes within existing governance mechanisms, or has been mandated under state regulatory authority.

(9) A purveyor shall provide the department with the current names, addresses, and telephone numbers of the owners, operators, and emergency contact persons for the system, including any changes to this information. The purveyor shall also maintain twenty-four-hour phone availability and shall respond to consumer concerns and service complaints in a timely manner.

[Statutory Authority: RCW 43.02.050 [43.20.050]. 99-07-021, § 246-290-420, filed 3/9/99, effective 4/9/99. Statutory Authority: RCW 43.20.050. 93-08-011 (Order 352B), § 246-290-420, filed 3/25/93, effective 4/25/93; 91-02-051 (Order 124B), recodified as § 246-290-420, filed 12/27/90, effective 1/31/91. Statutory Authority: P.L. 99-339. 89-21-020 (Order 336), § 248-54-201, filed 10/10/89, effective 11/10/89. Statutory Authority: RCW 34.04.045. 88-05-057 (Order 307), § 248-54-201, filed 2/17/88.]

WAC 246-290-451 Disinfection of drinking water.

(1) No portion of a public water system containing potable water shall be put into service, nor shall service be resumed until the facility has been effectively disinfected.

(a) In cases of new construction, drinking water shall not be furnished to the consumer until satisfactory bacteriological samples have been analyzed by a laboratory certified by the state; and

(b) In cases of existing water mains, when the integrity of the main is lost resulting in a significant loss of pressure that places the main at risk to cross-connection contamination, the purveyor shall use standard industry practices such as flushing, disinfection, and/or bacteriological sampling to ensure adequate and safe water quality prior to the return of the line to service;

(c) If a cross-connection is confirmed, the purveyor shall satisfy the reporting requirements as described under WAC 246-290-490(8).

(2) The procedure used for disinfection shall conform to standards published by the American Water Works Association, or other industry standards acceptable to the department.

(3) The purveyor of a system using ground water and required to disinfect, shall meet the following disinfection requirements, unless otherwise directed by the department:

(a) Minimum contact time at a point at or before the first consumer of:

(i) Thirty minutes if 0.2 mg/L free chlorine residual is maintained;

(ii) Ten minutes if 0.6 mg/L free chlorine residual is maintained; or

(iii) Any combination of free chlorine residual concentration (C), measured in mg/L, and contact time (T), measured in minutes, that results in a CT product (C X T) of greater than or equal to six; or

(iv) Contact time (T) for surface water or GWI sources shall be determined in accordance with WAC 246-290-636.

(b) Detectable residual disinfectant concentration in all active parts of the distribution system, measured as total chlorine, free chlorine, combined chlorine, or chlorine dioxide;

(c) Water in the distribution system with an HPC level less than or equal to 500 organisms/mL is considered to have a detectable residual disinfectant concentration.

(4) The department may require the purveyor to provide longer contact times, higher chlorine residuals, or additional treatment to protect the health of consumers served by the public water system.

(5) The purveyor of a system using surface water or GWI shall meet disinfection requirements specified in Part 6 of this chapter.

(6) The purveyor of a system adding a chemical disinfectant shall monitor residual disinfectant concentration at representative points in the system on a daily basis, and at the same time and location of routine and repeat coliform sample collection. Frequency of disinfection residual monitoring may be reduced upon written request to the department if it can be shown that disinfection residuals can be maintained on a reliable basis without the provision of daily monitoring, but shall be no less frequent than specified in WAC 246-290-300 (3)(a)(i).

(7) The analyses shall be conducted in accordance with "standard methods." To assure adequate monitoring of chlorine residual, the department may require the use of continuous chlorine residual analyzers and recorders.

[Statutory Authority: RCW 43.20.050 (2) and (3) and 70.119A.080. 03-08-037, § 246-290-451, filed 3/27/03, effective 4/27/03. Statutory Authority: RCW 43.02.050 [43.20.050]. 99-07-021, § 246-290-451, filed 3/9/99, effective 4/9/99.]

WAC 246-290-455 Operation of chemical contaminant treatment facilities.

(1) Purveyors shall ensure finished drinking water from chemical contaminant treatment facilities complies with the minimum water quality standards established in WAC 246-290-310. This section does not apply to facilities used only for corrosion control treatment purposes.

(2) The purveyor shall collect finished drinking water samples at a point directly downstream of the treatment system prior to the first consumer on a monthly basis.

   (a) Finished drinking water samples from treatment systems utilized for removal of contaminants with established primary MCLs shall be submitted to a certified laboratory for analysis of the specific contaminant(s) of concern.

   (b) Finished drinking water samples from treatment systems utilized for removal of contaminants with established secondary MCLs shall be submitted to a certified laboratory for analysis or analyzed for the specific contaminant(s) of concern by the purveyor through department-approved on-site methods.

   (c) Additional finished drinking water monitoring may be required by the department based on the complexity or size of the water system.

(3) If primary MCLs following treatment are exceeded in four or more months of a consecutive twelve-month compliance period, the purveyor shall submit a project report to the department that addresses the failure to maintain compliance. The project report shall include methods and schedules to correct the treatment deficiency and/or indicate schedules for implementing an alternate source of supply or an effective treatment technology.

(4) If secondary MCLs following treatment are exceeded in four or more months of a consecutive twelve-month compliance period, the purveyor shall take action per WAC 246-290-320 (3)(d).

[Statutory Authority: RCW 43.02.050 [43.20.050]. 99-07-021, § 246-290-455, filed 3/9/99, effective 4/9/99.]

WAC 246-290-460 Fluoridation of drinking water.

(1) Purveyors shall obtain written department approval of fluoridation treatment facilities before placing them in service.

(2) Where fluoridation is practiced, purveyors shall maintain fluoride concentrations in the range 0.8 through 1.3 mg/L throughout the distribution system.

(3) Where fluoridation is practiced, purveyors shall take the following actions to ensure that concentrations remain at optimal levels and that fluoridation facilities and monitoring equipment are operating properly:

(a) Daily monitoring.

(i) Take daily monitoring samples for each point of fluoride addition and analyze the fluoride concentration. Samples must be taken downstream from each fluoride injection point at the first sample tap where adequate mixing has occurred.

(ii) Record the results of daily analyses in a monthly report format acceptable to the department. A report must be made for each point of fluoride addition.

(iii) Submit monthly monitoring reports to the department within the first ten days of the month following the month in which the samples were collected.

(b) Monthly split sampling.

(i) Take a monthly split sample at the same location where routine daily monitoring samples are taken. A monthly split sample must be taken for each point of fluoride addition.

(ii) Analyze a portion of the sample and record the results on the lab sample submittal form and on the monthly report form.

(iii) Forward the remainder of the sample, along with the completed sample form to the state public health laboratory, or other state-certified laboratory, for fluoride analysis.

(iv) If a split sample is found by the certified lab to be:

(A) Not within the range of 0.8 to 1.3 mg/l, the purveyor's fluoridation process shall be considered out of compliance.

(B) Differing by more than 0.30 mg/l from the purveyor's analytical result, the purveyor's fluoride testing shall be considered out of control.

(4) Purveyors shall conduct analyses prescribed in subsection (3) of this section in accordance with procedures listed in the most recent edition of *Standard Methods for the Examination of Water and Wastewater*.

(5) The purveyor may be required by the department to increase the frequency, and/or change the location of sampling prescribed in subsection (3) of this section to ensure the adequacy and consistency of fluoridation.

[Statutory Authority: RCW 43.02.050 [43.20.050]. 99-07-021, § 246-290-460, filed 3/9/99, effective 4/9/99. Statutory Authority: RCW 43.20.050. 91-02-051 (Order 124B), recodified as § 246-290-460, filed 12/27/90, effective 1/31/91. Statutory Authority: RCW 34.04.045. 88-05-057 (Order 307), § 248-54-235, filed 2/17/88. Statutory Authority: RCW 43.20.050. 83-19-002 (Order 266), § 248-54-235, filed 9/8/83.]

WAC 246-290-470 Uncovered distribution reservoirs.

(1) Existing uncovered distribution reservoirs shall be operated based on a plan of operation approved by the department.

(2) Purveyors with uncovered distribution reservoirs shall have a department-approved plan and schedule to cover all reservoirs on file with the department.

(3) The plan of operation shall address the following elements as a minimum:

(a) Assurance of the means and levels associated with the provision of continuous disinfection at all times water is being delivered to the public, including the reliability provisions outlined in WAC 246-290-420;

(b) Description of the means for control of debris, algal, or other aquatic organism growths, surface water runoff, and atmospheric or avian-borne airborne contamination;

(c) Procedures for ensuring that construction will not lead to reservoir contamination;

(d) Provisions for ensuring adequate security measures are provided; and

(e) Any required, or department-directed, monitoring and reporting.

[Statutory Authority: RCW 43.02.050 [43.20.050]. 99-07-021, § 246-290-470, filed 3/9/99, effective 4/9/99. Statutory Authority: RCW 43.20.050. 93-08-011 (Order 352B), § 246-290-470, filed 3/25/93, effective 4/25/93; 91-02-051 (Order 124B), recodified as § 246-290-470, filed 12/27/90, effective 1/31/91; 83-19-002 (Order 266), § 248-54-245, filed 9/8/83.]

WAC 246-290-480 Recordkeeping and reporting.

(1) Records. The purveyor shall keep the following records of operation and water quality analyses:

(a) Bacteriological and turbidity analysis results shall be kept for five years. Chemical analysis results shall be kept for as long as the system is in operation. Records of daily source meter readings shall be kept for ten years. Other records of operation and analyses required by the department shall be kept for three years. All records shall bear the signature of the operator in responsible charge of the water system or his or her representative. Systems shall keep these records available for inspection by the department and shall send the records to the department if requested. Actual laboratory reports may be kept or data may be transferred to tabular summaries, provided the following information is included:

(i) The date, place, and time of sampling, and the name of the person collecting the sample;

(ii) Identification of the sample type (routine distribution system sample, repeat sample, source or finished water sample, or other special purpose sample);

(iii) Date of analysis;

(iv) Laboratory and person responsible for performing analysis;

(v) The analytical method used; and

(vi) The results of the analysis.

(b) Records of action taken by the system to correct violations of primary drinking water standards. For each violation, records of actions taken to correct the violation, and copies of public notifications shall be kept for no less than three years after the last corrective action taken.

(c) Copies of any written reports, summaries, or communications relating to sanitary surveys or SPIs of the system conducted by system personnel, by a consultant or by any local, state, or federal agency, shall be kept for ten years after completion of the sanitary survey or SPI involved.

(d) Copies of project reports, construction documents and related drawings, inspection reports and approvals shall be kept for the life of the facility.

(e) Where applicable, daily records of the following shall be kept for a minimum of three years:

(i) Chlorine residual;

(ii) Fluoride level;

(iii) Water treatment plant performance including, but not limited to:

(A) Type of chemicals used and quantity;

(B) Amount of water treated; and

(C) Results of analyses.

(iv) Turbidity;

(v) Source meter readings; and

(vi) Other information as specified by the department.

(f) The purveyor shall retain copies of public notices made in accordance with Part 7, Subpart A of this chapter and certifications made to the department under 40 CFR 141.33(e) for a period of at least three years after issuance.

(g) Purveyors using conventional, direct, or in-line filtration that recycle spent filter backwash water, thickener supernatant, or liquids from dewatering processes within their treatment plant shall, beginning no later than June 8, 2004, collect and retain on file the following information for review and evaluation by the department:

(i) A copy of the recycle notification and information submitted to the department in accordance with WAC 246-290-660 (4)(a)(i).

(ii) A list of all recycle flows and the frequency with which they are returned.

(iii) Average and maximum backwash flow rate through the filters and the average and maximum duration of the filter backwash process in minutes.

(iv) Typical filter run length and a written summary of how filter run length is determined.

(v) The type of treatment provided for the recycle flow.

(vi) Data on the physical dimensions of the equalization and/or treatment units, typical and maximum hydraulic loading rates, type of treatment chemicals used and average dose and frequency of use, and frequency at which solids are removed, if applicable.

(h) Purveyors required to conduct disinfection profiling and benchmarking in accordance with 40 CFR 141.530 though 141.544 shall retain the results on file indefinitely.

(2) Reporting.

(a) Unless otherwise specified in this chapter, the purveyor shall report to the department within forty-eight hours the failure to comply with any national primary drinking water regulation (including failure to comply with any monitoring requirements) as set forth in this chapter. For violations assigned to Tier 1 in WAC 246-290-71001, the department must be notified as soon as possible, but no later than twenty-four hours after the violation is known.

(b) The purveyor shall submit to the department reports required by this chapter, including tests, measurements, and analytic reports. Monthly reports are due before the tenth day of the following month, unless otherwise specified in this chapter.

(c) The purveyor shall submit to the department copies of any written summaries or communications relating to the status of monitoring waivers during each monitoring cycle or as directed by the department.

(d) Source meter readings shall be made available to the department.

(e) Water facilities inventory form (WFI).

(i) Purveyors of **community** and **NTNC** systems shall submit an annual WFI update to the department;

(ii) Purveyors of **TNC** systems shall submit an updated WFI to the department as requested;

(iii) Purveyors shall submit an updated WFI to the department within thirty days of any change in name, category, ownership, or responsibility for management of the water system, or addition of source or storage facilities; and

(iv) At a minimum the completed WFI shall provide the current names, addresses, and telephone numbers of the owners, operators, and emergency contact persons for the system.

(v) Purveyors shall provide in the WFI total annual water production and use, including

(A) Total annual water production for each source;

(B) Monthly and annual totals for water purchased from or sold to other purveyors; and

(C) For purveyors with more than one thousand service connections, monthly and annual totals for purveyor consumer classes. Monthly data may be estimated if the water system bills less frequently than monthly.

(f) Bacteriological.

(i) The purveyor shall notify the department of the presence of:

(A) Coliform in a sample, within ten days of notification by the laboratory; and

(B) Fecal coliform or E. coli in a sample, by the end of the business day in which the purveyor is notified by the laboratory. If the purveyor is notified of the results after normal close of business, then the purveyor shall notify the department before the end of the next business day.

(g) Systems monitoring for unregulated contaminants in accordance with WAC 246-290-300(9), shall send a copy of the results of such monitoring to the department within thirty days of receipt of analytical results.

(h) Systems monitoring for disinfection by-products in accordance with WAC 246-290-300(7) shall report information to the department as specified in 40 CFR 141.134.

(i) Systems monitoring for disinfectant residuals in accordance with WAC 246-290-300(7) shall report information to the department as specified in subsection (2)(a) of this section, and 40 CFR 141.134(c).

(j) Systems required to monitor for disinfection by-product precursor removal in accordance with WAC 246-290-300(7) shall report information to the department as specified in 40 CFR 141.134(d).

(k) Systems shall submit to the department, in accordance with 40 CFR 141.31(d), a certification that the system has complied with the public notification regulations (Part 7, Subpart A of this chapter) when a public notification is required. Along with the certification, the system shall submit a representative copy of each type of notice.

[Statutory Authority: RCW 43.20.050 and 70.119A.080. 04-04-056, § 246-290-480, filed 1/30/04, effective 3/1/04. Statutory Authority: RCW 43.20.050 (2) and (3) and 70.119A.080. 03-08-037, § 246-290-480, filed 3/27/03, effective 4/27/03. Statutory Authority: RCW 43.02.050 [43.20.050]. 99-07-021, § 246-290-480, filed 3/9/99, effective 4/9/99. Statutory Authority: RCW 43.20.050. 94-14-001, § 246-290-480, filed 6/22/94, effective 7/23/94; 93-08-011 (Order 352B), § 246-290-480, filed 3/25/93, effective 4/25/93; 92-04-070 (Order 241B), § 246-290-480, filed 2/4/92, effective 3/6/92; 91-02-051 (Order 124B), recodified as § 246-290-480, filed 12/27/90, effective 1/31/91. Statutory Authority: P.L. 99-339. 89-21-020 (Order 336), § 248-54-265, filed 10/10/89, effective 11/10/89. Statutory Authority: RCW 34.04.045. 88-05-057 (Order 307), § 248-54-265, filed 2/17/88. Statutory Authority: RCW 43.20.050. 83-19-002 (Order 266), § 248-54-265, filed 9/8/83.]

WAC 246-290-490 Cross-connection control.

(1) Applicability, purpose, and responsibility.

(a) All community water systems shall comply with the cross-connection control requirements specified in this section.

(b) All noncommunity water systems shall apply the principles and provisions of this section, including subsection (4)(b) of this section, as applicable to protect the public water system from contamination via cross-connections. Noncommunity systems that comply with subsection (4)(b) of this section and the provisions of WAC 51-56-0600 of the UPC (which addresses the installation of backflow preventers at points of water use within the potable water system) shall be considered in compliance with the requirements of this section.

(c) The purpose of the purveyor's cross-connection control program shall be to protect the public water system, as defined in WAC 246-290-010, from contamination via cross-connections.

(d) The purveyor's responsibility for cross-connection control shall begin at the water supply source, include all the public water treatment, storage, and distribution facilities, and end at the point of delivery to the consumer's water system, which begins at the downstream end of the service connection or water meter located on the public right of way or utility-held easement.

(e) Under the provisions of this section, purveyors are not responsible for eliminating or controlling cross-connections within the consumer's water system. Under chapter 19.27 RCW, the responsibility for cross-connection control within the consumer's water system, i.e., within the property lines of the consumer's premises, falls under the jurisdiction of the local administrative authority.

(2) General program requirements.

(a) The purveyor shall develop and implement a cross-connection control program that meets the requirements of this section, but may establish a more stringent program through local ordinances, resolutions, codes, bylaws, or operating rules.

(b) Purveyors shall ensure that good engineering and public health protection practices are used in the development and implementation of cross-connection control programs. Department publications and the most recently published editions of references, such as, but not limited to, those listed below, may be used as guidance for cross-connection program development and implementation:

(i) *Manual of Cross-Connection Control* published by the Foundation for Cross-Connection Control and Hydraulic Research, University of Southern California (USC Manual); or

(ii) *Cross-Connection Control Manual, Accepted Procedure and Practice* published by the Pacific Northwest Section of the American Water Works Association (PNWS-AWWA Manual).

(c) The purveyor may implement the cross-connection control program, or any portion thereof, directly or by means of a contract with another agency or party acceptable to the department.

(d) The purveyor shall coordinate with the local administrative authority in all matters concerning cross-connection control. The purveyor shall document and describe such coordination, including delineation of responsibilities, in the written cross-connection control program required in (e) of this subsection.

(e) The purveyor shall include a written description of the cross-connection control program in the water system plan required under WAC 246-290-100 or the small water system management program required under WAC 246-290-105. The cross-connection control program shall include the minimum program elements described in subsection (3) of this section.

(f) The purveyor shall ensure that cross-connections between the distribution system and a consumer's water system are eliminated or controlled by the installation of an approved backflow preventer commensurate with the degree of hazard. This can be accomplished by implementation of a cross-connection program that relies on:

(i) Premises isolation as defined in WAC 246-290-010; or

(ii) Premises isolation and in-premises protection as defined in WAC 246-290-010.

(g) Purveyors with cross-connection control programs that rely both on premises isolation and in-premises protection:

(i) Shall comply with the premises isolation requirements specified in subsection (4)(b) of this section; and

(ii) May reduce premises isolation requirements and rely on in-premises protection for premises other than the type not addressed in subsection (4)(b) of this section, if the conditions in (h) of this subsection are met.

(h) Purveyors may rely on in-premises protection only when the following conditions are met:

(i) The in-premises backflow preventers provide a level of protection commensurate with the purveyor's assessed degree of hazard;

(ii) Backflow preventers which provide the in-premises backflow protection meet the definition of approved backflow preventers as described in WAC 246-290-010;

(iii) The approved backflow preventers are installed, inspected, tested (if applicable), maintained, and repaired in accordance with subsections (6) and (7) of this section;

(iv) Records of such backflow preventers are maintained in accordance with subsections (3)(j) and (8) of this section; and

(v) The purveyor has reasonable access to the consumer's premises to conduct an initial hazard evaluation and periodic reevaluations to determine whether the in-premises protection is adequate to protect the purveyor's distribution system.

(i) The purveyor shall take appropriate corrective action within its authority if:

(i) A cross-connection exists that is not controlled commensurate to the degree of hazard assessed by the purveyor; or

(ii) A consumer fails to comply with the purveyor's requirements regarding the installation, inspection, testing, maintenance or repair of approved backflow preventers required by this chapter.

(j) The purveyor's corrective action may include, but is not limited to:

(i) Denying or discontinuing water service to a consumer's premises until the cross-connection hazard is eliminated or controlled to the satisfaction of the purveyor;

(ii) Requiring the consumer to install an approved backflow preventer for premises isolation commensurate with the degree of hazard; or

(iii) The purveyor installing an approved backflow preventer for premises isolation commensurate with the degree of hazard.

(k) Purveyors denying or discontinuing water service to a consumer's premises for one or more of the reasons listed in (i) of this subsection shall notify the local administrative authority prior to taking such action except in the event of an emergency.

(l) The purveyor shall prohibit the intentional return of used water to the purveyor's distribution system. Such water would include, but is not limited to, water used for heating, cooling, or other purposes within the consumer's water system.

(3) Minimum elements of a cross-connection control program.

(a) To be acceptable to the department, the purveyor's cross-connection control program shall include the minimum elements identified in this subsection.

(b) Element 1: The purveyor shall adopt a local ordinance, resolution, code, bylaw, or other written legal instrument that:

(i) Establishes the purveyor's legal authority to implement a cross-connection control program;

(ii) Describes the operating policies and technical provisions of the purveyor's cross-connection control program; and

(iii) Describes the corrective actions used to ensure that consumers comply with the purveyor's cross-connection control requirements.

(c) Element 2: The purveyor shall develop and implement procedures and schedules for evaluating new and existing service connections to assess the degree of hazard posed by the consumer's premises to the purveyor's distribution system and notifying the consumer within a reasonable time frame of the hazard evaluation results. At a minimum, the program shall meet the following:

(i) For new connections made on or after the effective date of these regulations, procedures shall ensure that an initial evaluation is conducted before service is provided;

(ii) For existing connections made prior to the effective date of these regulations, procedures shall ensure that an initial evaluation is conducted in accordance with a schedule acceptable to the department; and

(iii) For all service connections, once an initial evaluation has been conducted, procedures shall ensure that periodic reevaluations are conducted in accordance with a schedule acceptable to the department and whenever there is a change in the use of the premises.

(d) Element 3: The purveyor shall develop and implement procedures and schedules for ensuring that:

(i) Cross-connections are eliminated whenever possible;

(ii) When cross-connections cannot be eliminated, they are controlled by installation of approved backflow preventers commensurate with the degree of hazard; and

(iii) Approved backflow preventers are installed in accordance with the requirements of subsection (6) of this section.

(e) Element 4: The purveyor shall ensure that personnel, including at least one person certified as a CCS, are provided to develop and implement the cross-connection control program.

(f) Element 5: The purveyor shall develop and implement procedures to ensure that approved backflow preventers are inspected and/or tested (as applicable) in accordance with subsection (7) of this section.

(g) Element 6: The purveyor shall develop and implement a backflow prevention assembly testing quality control assurance program, including, but not limited to, documentation of tester certification and test kit calibration, test report contents, and time frames for submitting completed test reports.

(h) Element 7: The purveyor shall develop and implement (when appropriate) procedures for responding to backflow incidents.

(i) Element 8: The purveyor shall include information on cross-connection control in the purveyor's existing program for educating consumers about water system operation. Such a program may include periodic bill inserts, public service announcements, pamphlet distribution, notification of new consumers and consumer confidence reports.

(j) Element 9: The purveyor shall develop and maintain cross-connection control records including, but not limited to, the following:

(i) A master list of service connections and/or consumer's premises where the purveyor relies upon approved backflow preventers to protect the public water system from contamination, the assessed hazard level of each, and the required backflow preventer(s);

(ii) Inventory information on:

(A) Approved air gaps installed in lieu of approved assemblies including exact air gap location, assessed degree of hazard, installation date, history of inspections, inspection results, and person conducting inspections;

(B) Approved backflow assemblies including exact assembly location, assembly description (type, manufacturer, model, size, and serial number), assessed degree of hazard, installation date, history of inspections, tests and repairs, test results, and person performing tests; and

(C) Approved AVBs used for irrigation system applications including location, description (manufacturer, model, and size), installation date, history of inspection(s), and person performing inspection(s).

(iii) Cross-connection program summary reports and backflow incident reports required under subsection (8) of this section.

(k) Element 10: Purveyors who distribute and/or have facilities that receive reclaimed water within their water service area shall meet any additional cross-connection control requirements imposed by the department under a permit issued in accordance with chapter 90.46 RCW.

(4) Approved backflow preventer selection.

(a) The purveyor shall ensure that a CCS:

(i) Assesses the degree of hazard posed by the consumer's water system upon the purveyor's distribution system; and

(ii) Determines the appropriate method of backflow protection for premises isolation in accordance with Table 8.

Table 8
Appropriate Methods of Backflow Protection for Premises Isolation

Degree of Hazard	Application Condition	Appropriate Approved Backflow Preventer
High health cross-connection hazard	Backsiphonage or backpressure backflow	AG, RPBA, or RPDA
Low health cross-connection hazard	Backsiphonage or backpressure backflow	AG, RPBA, RPDA, DCVA, or DCDA

(b) Premises isolation requirements.

(i) For service connections with remises posing a high health cross-connection hazard including, but not limited to, those premises listed in Table 9, the purveyor shall ensure that an approved air gap or RPBA is installed for premises isolation.

(ii) If the purveyor's CCS determines that no hazard exists for a connection serving premises of the type listed in Table 9, the requirements of (b)(i) of this subsection do not apply.

(iii) The purveyor shall document, on a case-by-case basis, the reasons for not applying the requirements of (b)(i) of this subsection to a connection serving premises of the type listed in Table 9 and include such documentation in the cross-connection control program summary report required in subsection (8) of this section.

Table 9
High Health Cross-Connection Hazard Premises Requiring Premises Isolation by AG or RPBA

- Agricultural (farms and dairies)
- Beverage bottling plants
- Car washes
- Chemical plants
- Commercial laundries and dry cleaners
- Premises where both reclaimed water and potable water are provided
- Film processing facilities
- Food processing plants
- Hospitals, medical centers, nursing homes, veterinary, medical and dental clinics, and blood plasma centers
- Premises with separate irrigation systems using the purveyor's water supply and with chemical addition[+]
- Laboratories
- Metal plating industries
- Mortuaries
- Petroleum processing or storage plants
- Piers and docks
- Radioactive material processing plants or nuclear reactors[*]
- Survey access denied or restricted
- Wastewater lift stations and pumping stations
- Wastewater treatment plants[*]
- Premises with an unapproved auxiliary water supply interconnected with the potable water supply

+ For example, parks, playgrounds, golf courses, cemeteries, estates, etc.

* RPBAs for connections serving these premises are acceptable only when used in combination with an in-plant approved air gap; otherwise, the purveyor shall require an approved air gap at the service connection.

(c) Backflow protection for single-family residences.

(i) For single-family residential service connections, the purveyor shall comply with the requirements of (b) of this subsection when applicable.

(ii) If the requirements of (b) of this subsection do not apply and the requirements specified in subsection (2)(h) of this section are met, the purveyor may rely on backflow protection provided at the point of hazard in accordance with WAC 51-56-0600 of the UPC for hazards such as, but not limited to:

(A) Irrigation systems;

(B) Swimming pools or spas;

(C) Ponds; and

(D) Boilers.

For example, the purveyor may accept an approved AVB on a residential irrigation system, if the AVB is properly installed in accordance with the UPC.

(d) Backflow protection for fire protection systems.

(i) Backflow protection is not required for residential flow-through or combination fire protection systems constructed of potable water piping and materials.

(ii) For service connections with fire protection systems other than flow-through or combination systems, the purveyor shall ensure that backflow protection consistent with WAC 51-56-0600 of the UPC is installed. The UPC requires minimum protection as follows:

(A) An RPBA or RPDA for fire protection systems with chemical addition or using unapproved auxiliary water supply; and

(B) A DCVA or DCDA for all other fire protection systems.

(iii) For new connections made on or after the effective date of these regulations, the purveyor shall ensure that backflow protection is installed before water service is provided.

(iv) For existing fire protection systems:

(A) With chemical addition or using unapproved auxiliary supplies, the purveyor shall ensure that backflow protection is installed within ninety days of the purveyor notifying the consumer of the high health cross-connection hazard or in accordance with an alternate schedule acceptable to the purveyor.

(B) Without chemical addition, without on-site storage, and using only the purveyor's water (i.e., no unapproved auxiliary supplies on or available to the premises), the purveyor shall ensure that backflow protection is installed in accordance with a schedule acceptable to the purveyor or at an earlier date if required by the agency administering the Uniform Building Code as adopted under chapter 19.27 RCW.

(C) When establishing backflow protection retrofitting schedules for fire protection systems that have the characteristics listed in (d)(iv)(B) of this subsection, the purveyor may consider factors such as, but not limited to, impacts of assembly installation on sprinkler performance, costs of retrofitting, and difficulty of assembly installation.

(e) Purveyors may require backflow preventers commensurate with the degree of hazard determined by the purveyor to be installed for premises isolation for connections serving premises that have characteristics such as, but not limited to, the following:

(i) Complex plumbing arrangements or plumbing potentially subject to frequent changes that make it impracticable to assess whether cross-connection hazards exist;

(ii) A repeated history of cross-connections being established or reestablished; or

(iii) Cross-connection hazards are unavoidable or not correctable, such as, but not limited to, tall buildings.

(5) Approved backflow preventers.

(a) The purveyor shall ensure that all backflow prevention assemblies relied upon by the purveyor are models included on the current list of backflow prevention assemblies approved for use in Washington state. The current approved assemblies list is available from the department upon request.

(b) The purveyor may rely on testable backflow prevention assemblies that are not currently approved by the department, if the assemblies:

(i) Were included on the department and/or USC list of approved backflow prevention assemblies at the time of installation;

(ii) Have been properly maintained;

(iii) Are commensurate with the purveyor's assessed degree of hazard; and

(iv) Have been inspected and tested at least annually and have successfully passed the annual tests.

(c) The purveyor shall ensure that an unlisted backflow prevention assembly is replaced by an approved assembly commensurate with the degree of hazard, when the unlisted assembly:

(i) Does not meet the conditions specified in (b)(i) through (iv) of this subsection;

(ii) Is moved; or

(iii) Cannot be repaired using spare parts from the original manufacturer.

(d) The purveyor shall ensure that AVBs meet the definition of approved atmospheric vacuum breakers as described in WAC 246-290-010.

(6) Approved backflow preventer installation.

(a) The purveyor shall ensure that approved backflow preventers are installed in the orientation for which they are approved (if applicable).

(b) The purveyor shall ensure that approved backflow preventers are installed in a manner that:

(i) Facilitates their proper operation, maintenance, inspection, and/or in-line testing (as applicable) using standard installation procedures acceptable to the department such as those in the USC Manual or PNWS-AWWA Manual;

(ii) Ensures that the assembly will not become submerged due to weather-related conditions such as flooding; and

(iii) Ensures compliance with all applicable safety regulations.

(c) The purveyor shall ensure that approved backflow assemblies for premises isolation are installed at a location adjacent to the meter or property line or an alternate location acceptable to the purveyor.

(d) When premises isolation assemblies are installed at an alternate location acceptable to the purveyor, the purveyor shall ensure that there are no connections between the point of delivery from the public water system and the approved backflow assembly, unless the installation of such a connection meets the purveyor's cross-connection control requirements and is specifically approved by the purveyor.

(e) The purveyor shall ensure that approved backflow preventers are installed in accordance with the following time frames:

(i) For new connections made on or after the effective date of these regulations, the following conditions shall be met before service is provided:

(A) The provisions of subsection (3)(d)(ii) of this section; and

(B) Satisfactory completion of a test by a BAT in accordance with subsection (7) of this section.

(ii) For existing connections where the purveyor identifies a high health cross-connection hazard, the provisions of (3)(d)(ii) of this section shall be met:

(A) Within ninety days of the purveyor notifying the consumer of the high health cross-connection hazard; or

(B) In accordance with an alternate schedule acceptable to the purveyor.

(iii) For existing connections where the purveyor identifies a low health cross-connection hazard, the provisions of subsection (3)(d)(ii) of this section shall be met in accordance with a schedule acceptable to the purveyor.

(f) The purveyor shall ensure that bypass piping installed around any approved backflow preventer is equipped with an approved backflow preventer that:

(i) Affords at least the same level of protection as the approved backflow preventer that is being bypassed; and

(ii) Complies with all applicable requirements of this section.

(7) Approved backflow preventer inspection and testing.

(a) The purveyor shall ensure that:

(i) A CCS inspects backflow preventer installations to ensure that protection is provided commensurate with the assessed degree of hazard;

(ii) Either a BAT or CCS inspects:

(A) Air gaps installed in lieu of approved backflow prevention assemblies for compliance with the approved air gap definition; and

(B) Backflow prevention assemblies for correct installation and approval status.

(iii) A BAT tests approved backflow prevention assemblies for proper operation.

(b) The purveyor shall ensure that inspections and/or tests of approved air gaps and approved backflow assemblies are conducted:

(i) At the time of installation;

(ii) Annually after installation, or more frequently, if required by the purveyor for connections serving premises or systems that pose a high health cross-connection hazard or for assemblies that repeatedly fail;

(iii) After a backflow incident; and

(iv) After an assembly is repaired, reinstalled, or relocated or an air gap is replumbed.

(c) The purveyor shall ensure that inspections of AVBs installed on irrigation systems are conducted:

(i) At the time of installation;

(ii) After a backflow incident; and

(iii) After repair, reinstallation, or relocation.

(d) The purveyor shall ensure that approved backflow prevention assemblies are tested using procedures acceptable to the department, such as those specified in the most recently published edition of the USC Manual. When circumstances, such as, but not limited to, configuration or location of the assembly, preclude the use of USC test procedures, the purveyor may allow, on a case-by-case basis, the use of alternate (non-USC) test procedures acceptable to the department.

(e) The purveyor shall ensure that results of backflow prevention assembly inspections and tests are documented and reported in a manner acceptable to the purveyor.

(f) The purveyor shall ensure that an approved backflow prevention assembly or AVB, whenever found to be improperly installed, defective, not commensurate with the degree of hazard, or failing a test (if applicable) is properly reinstalled, repaired, overhauled, or replaced.

(g) The purveyor shall ensure that an approved air gap, whenever found to be altered or improperly installed, is properly replumbed or, if commensurate with the degree of hazard, is replaced by an approved RPBA.

(8) Recordkeeping and reporting.

(a) Purveyors shall keep cross-connection control records for the following time frames:

(i) Records pertaining to the master list of service connections and/or consumer's premises required in subsection (3)(j)(i) of this section shall be kept as long as the premises pose a cross-connection hazard to the purveyor's distribution system;

(ii) Records regarding inventory information required in subsection (3)(j)(ii) of this section shall be kept for five years or for the life of the approved backflow preventer whichever is shorter; and

(iii) Records regarding backflow incidents and annual summary reports required in subsection (3)(j)(iii) of this section shall be kept for five years.

(b) Purveyors may maintain cross-connection control records in original form or transfer data to tabular summaries.

(c) Purveyors may maintain records or data in any media, such as paper, film, or electronic format.

(d) The purveyor shall complete the cross-connection control program summary report annually. Report forms and guidance on completing the report are available from the department.

(e) The purveyor shall make all records and reports required in subsection (3)(j) of this section available to the department or its representative upon request.

(f) The purveyor shall notify the department, local administrative authority, and local health jurisdiction as soon as possible, but no later than the end of the next business day, when a backflow incident is known by the purveyor to have:

(i) Contaminated the public water system; or

(ii) Occurred within the premises of a consumer served by the purveyor.

(g) The purveyor shall:

(i) Document details of backflow incidents on a form acceptable to the department such as the backflow incident report form included in the most recent edition of the PNWS-AWWA Manual; and

(ii) Include all backflow incident report(s) in the annual cross-connection program summary report referenced in (d) of this subsection, unless otherwise requested by the department.

[Statutory Authority: RCW 43.20.050 (2) and (3) and 70.119A.080. 03-08-037, § 246-290-490, filed 3/27/03, effective 4/27/03. Statutory Authority: RCW 43.02.050 [43.20.050]. 99-07-021, § 246-290-490, filed 3/9/99, effective 4/9/99. Statutory Authority: RCW 43.20.050. 91-02-051 (Order 124B), recodified as § 246-290-490, filed 12/27/90, effective 1/31/91. Statutory Authority: P.L. 99-339. 89-21-020 (Order 336), § 248-54-285, filed 10/10/89, effective 11/10/89. Statutory Authority: RCW 34.04.045. 88-05-057 (Order 307), § 248-54-285, filed 2/17/88. Statutory Authority: RCW 43.20.050. 83-19-002 (Order 266), § 248-54-285, filed 9/8/83.]

WAC 246-290-500 Severability.

If any provision of this chapter or its application to any person or circumstances is held invalid, the remainder of this chapter, or the application of the provision to other persons or circumstances, shall not be affected.

[Statutory Authority: RCW 43.20.050. 91-02-051 (Order 124B), recodified as § 246-290-500, filed 12/27/90, effective 1/31/91. Statutory Authority: RCW 34.04.045. 88-05-057 (Order 307), § 248-54-291, filed 2/17/88.]

Part 6. Surface Water Treatment

Subpart A - Introduction and General Requirements

WAC 246-290-601 Purpose of surface water treatment.

(1) Part 6 of chapter 246-290 WAC establishes filtration and disinfection as treatment technique requirements for water systems using surface or GWI sources. The Part 6 treatment technique requirements are established in lieu of maximum contaminant levels (MCLs) for the following contaminants:

(a) *Giardia lamblia*;

(b) Viruses;

(c) Heterotrophic plate count bacteria;

(d) *Legionella*;

(e) *Cryptosporidium* for systems serving at least ten thousand people and beginning January 14, 2005, for systems serving less than ten thousand people; and

(f) Turbidity.

(2) For water systems using unfiltered surface sources, in whole or part, and that have been required to install, but have yet to complete the installation and operation of, filtration facilities, the turbidity levels at entry points to distribution and sampling/analytical requirements shall be in accordance with 40 CFR 141.13 and 40 CFR 141.22, respectively.

[Statutory Authority: RCW 43.20.050 and 70.119A.080. 04-04-056, § 246-290-601, filed 1/30/04, effective 3/1/04. Statutory Authority: RCW 43.20.050 (2) and (3) and 70.119A.080. 03-08-037, § 246-290-601, filed 3/27/03, effective 4/27/03. Statutory Authority: RCW 43.02.050 [43.20.050]. 99-07-021, § 246-290-601, filed 3/9/99, effective 4/9/99. Statutory Authority: RCW 43.20.050. 93-08-011 (Order 352B), § 246-290-601, filed 3/25/93, effective 4/25/93.]

WAC 246-290-620 Applicability of surface water treatment requirements.

(1) The requirements of Part 6 of this chapter apply to water systems that:

(a) Use surface sources or ground water sources under the direct influence of surface water (GWI); or

(b) Purchase surface or GWI water from an approved public water system or other entity acceptable to the department.

(2) The requirements of Part 6 of this chapter do not apply to water systems that use unfiltered surface or GWI sources as emergency sources, provided the source is physically disconnected from the system at all times until it is needed, and the purveyor meets the following conditions:

(a) Has a department-approved emergency response plan; and

(b) Provides disinfection treatment that meets the requirements under WAC 246-290-662 (2)(d).

(3) The requirements of WAC 246-290-640 apply to **Group A** systems that use sources potentially under the influence of surface water as determined by the department.

[Statutory Authority: RCW 43.02.050 [43.20.050]. 99-07-021, § 246-290-620, filed 3/9/99, effective 4/9/99. Statutory Authority: RCW 43.20.050. 93-08-011 (Order 352B), § 246-290-620, filed 3/25/93, effective 4/25/93.]

WAC 246-290-630 General requirements.

(1) The purveyor shall ensure that treatment is provided for surface and GWI sources consistent with the treatment technique requirements specified in Part 6 of chapter 246-290 WAC.

(2) The purveyor shall install and properly operate water treatment processes to ensure at least:

(a) 99.9 percent (3 log) removal and/or inactivation of *Giardia lamblia* cysts;

(b) 99.99 percent (4 log) removal and/or inactivation of viruses; and

(c) 99 percent (2 log) removal of *Cryptosporidium* oocysts if required to filter.

(3) The purveyor shall ensure that the requirements of subsection (2) of this section are met between a point where the source water is not subject to contamination by untreated surface water and a point at or before the first consumer.

(4) The department may require higher levels of removal and/or inactivation of *Giardia lamblia* cysts, *Cryptosporidium* oocysts, and viruses than specified in subsection (2) of this section if deemed necessary to protect the health of consumers served by the system.

(5) The purveyor shall ensure that personnel operating a system subject to Part 6 of chapter 246-290 WAC meet the requirements under chapter 70.119 RCW and chapter 246-292 WAC.

(6) The purveyor of a **Group A community** system serving water from a surface or GWI source to the public before January 1, 1991, shall comply with applicable minimum treatment requirements. The purveyor shall meet either:

(a) The filtration and disinfection requirements under WAC 246-290-660 and 246-290-662 respectively;

(b) The criteria to remain unfiltered under WAC 246-290-690 and the disinfection requirements under WAC 246-290-692; or

(c) The criteria to provide a limited alternative to filtration under WAC 246-290-691 and the disinfection requirements under WAC 246-290-692.

(7) The purveyor of a **Group A noncommunity** system serving water from a surface or GWI source, shall meet either:

(a) The filtration and disinfection requirements under WAC 246-290-660 and 246-290-662, respectively; or

(b) The criteria to provide a limited alternative to filtration under WAC 246-290-691 and the disinfection requirements under WAC 246-290-692.

(8) The purveyor of a **Group A** system first serving water from a surface or GWI source to the public after December 31, 1990, shall meet either:

(a) The filtration and disinfection requirements under WAC 246-290-660 and 246-290-662, respectively; or

(b) The criteria to provide a limited alternative to filtration under WAC 246-290-691 and the disinfection requirements under WAC 246-290-692.

(9) The purveyor of a system required to install filtration may choose to provide a limited alternative to filtration or abandon the surface or GWI source as a permanent or seasonal source and develop an alternate, department-approved source. Purveyors that develop alternate ground water sources or purchase water from a department-approved public water system using a ground water source shall no longer be subject to Part 6 of chapter 246-290 WAC, once the alternate source is approved by the department and is on line.

(10) A purveyor that chooses to provide a limited alternative to filtration shall submit an application to the department that contains the information necessary to determine whether the source can meet the criteria.

(11) If a limited alternative to filtration is provided, then the purveyor shall install and properly operate treatment processes to ensure greater removal and/or inactivation efficiencies of *Giardia lamblia* cysts, viruses, or other pathogenic organisms of public health concern (including *Cryptosporidium* oocysts) than would be achieved by the combination of filtration and chlorine disinfection.

(12) Systems that were required to develop a disinfection profile under 40 CFR 141.172 shall provide that profile and a calculated disinfection benchmark, as described in 40 CFR 141.172 (c)(2) and (3), along with other project information specified in WAC 246-290-110, when proposing any change to the disinfection treatment system. The proposal for change shall include an analysis of how the proposed change will affect the current level of disinfection. The profile must also be available for inspection during routine sanitary surveys conducted under WAC 246-290-416.

(13) Community and nontransient noncommunity systems serving less than ten thousand persons must meet the disinfection profiling and benchmarking provisions required in accordance with 40 CFR 141.530 through 141.544.

(14) Systems required to develop a disinfection profile under 40 CFR 141.530 shall provide that profile and a calculated disinfection benchmark, as described in 40 CFR 141.543 along with other project information specified in WAC 246-290-100, when proposing any change to the disinfection treatment system. The proposal for change shall include an analysis of how the proposed change will affect the current level of disinfection. The profile must also be available for inspection during routine sanitary surveys conducted in accordance with WAC 246-290-416.

(15) A system using conventional, direct, or in-line filtration that must arrange for the conduct of a comprehensive performance evaluation (CPE), in accordance with 40 CFR 141.175 (b)(4) or 40 CFR 141.563, may be required to arrange for comprehensive technical assistance (CTA). The department will determine the need for CTA on a case-by-case basis.

[Statutory Authority: RCW 43.20.050 and 70.119A.080. 04-04-056, § 246-290-630, filed 1/30/04, effective 3/1/04. Statutory Authority: RCW 43.20.050 (2) and (3) and 70.119A.080. 03-08-037, § 246-290-630, filed 3/27/03, effective 4/27/03. Statutory Authority: RCW 43.20.050. 99-07-021 and 99-10-076, § 246-290-630, filed 3/9/99 and 5/4/99, effective 4/9/99 and 6/4/99; 93-08-011 (Order 352B), § 246-290-630, filed 3/25/93, effective 4/25/93.]

WAC 246-290-632 Treatment technique violations.

(1) A treatment technique violation shall be considered a violation of a primary drinking water standard and in the case of an unfiltered system, may result in the purveyor of an unfiltered system being required to install filtration.

(2) A treatment technique violation occurs when a system using a surface or GWI source is identified by the department as the source of a waterborne disease outbreak or any of the following occur as applicable:

(a) The purveyor providing filtration delivers unfiltered water or fails to meet one or more of the following requirements:

(i) Filtration treatment in accordance with WAC 246-290-660; or

(ii) Disinfection treatment in accordance with WAC 246-290-662.

(b) The purveyor required to install filtration:

(i) Fails to meet the interim disinfection requirements in accordance with WAC 246-290-672 or as otherwise directed by the department; or

(ii) Fails to install filtration or develop an alternate source by the applicable time lines specified in WAC 246-290-670.

(c) The purveyor of an unfiltered surface water, or GWI source, meeting the criteria to remain unfiltered:

(i) Delivers water with a turbidity level exceeding 5.0 NTU measured at a point immediately prior to the point of primary disinfection; or

(ii) Fails to meet one or more of the disinfection requirements in accordance with WAC 246-290-692 after the dates specified in WAC 246-290-686.

(d) The purveyor of an unfiltered source meeting the criteria to provide a limited alternative to filtration:

(i) Delivers water with a turbidity level exceeding 5.0 NTU measured at a point immediately prior to the point of primary disinfection; or

(ii) Fails to meet one or more of the disinfection requirements in accordance with WAC 246-290-692.

(e) A purveyor supplies water from an unfiltered source that has not been previously approved by the department.

(f) A purveyor of a department approved unfiltered source that fails to meet the on-going criteria to remain unfiltered:

(i) Delivers water with a turbidity level exceeding 5.0 NTU measured at a point immediately prior to the point of primary disinfection; or

(ii) Fails to meet one or more of the disinfection requirements in accordance with WAC 246-290-692.

(g) A purveyor of a department approved unfiltered source that has failed to meet the criteria to provide a limited alternative to filtration:

(i) Delivers water with a turbidity level exceeding 5.0 NTU measured at a point immediately prior to the point of primary disinfection; or

(ii) Fails to meet one or more of the disinfection requirements in accordance with WAC 246-290-692.

[Statutory Authority: RCW 43.02.050 [43.20.050]. 99-07-021, § 246-290-632, filed 3/9/99, effective 4/9/99. Statutory Authority: RCW 43.20.050. 94-14-001, § 246-290-632, filed 6/22/94, effective 7/23/94; 93-08-011 (Order 352B), § 246-290-632, filed 3/25/93, effective 4/25/93.]

WAC 246-290-634 Follow-up to treatment technique violations.

When a treatment technique violation occurs, the purveyor:

(1) Shall report to the department in accordance with:

(a) WAC 246-290-666 for purveyors providing filtration or required to filter;

(b) WAC 246-290-674 for purveyors installing filtration; or

(c) WAC 246-290-696 for purveyors meeting the criteria to remain unfiltered or providing a limited alternative to filtration;

(2) Shall notify the public in accordance with Part 7, Subpart A of this chapter;

(3) Shall determine the cause of the violation;

(4) Shall take action as directed by the department; and

(5) May be subject to enforcement under WAC 246-290-050.

[Statutory Authority: RCW 43.20.050 (2) and (3) and 70.119A.080. 03-08-037, § 246-290-634, filed 3/27/03, effective 4/27/03. Statutory Authority: RCW 43.02.050 [43.20.050]. 99-07-021, § 246-290-634, filed 3/9/99, effective 4/9/99. Statutory Authority: RCW 43.20.050. 93-08-011 (Order 352B), § 246-290-634, filed 3/25/93, effective 4/25/93.]

WAC 246-290-636 Determination of disinfectant contact time (T).

(1) The purveyor shall calculate T at peak hourly flow for each surface or GWI source.

(2) For pipelines, the purveyor shall calculate T by dividing the internal volume of the pipe by the peak hourly flow rate through that pipe.

(3) For all other system components used for inactivation of *Giardia lamblia* cysts, viruses, and other microorganisms of public health concern, the purveyor shall use tracer studies or empirical methods to determine T.

(4) The purveyor shall use the T10 value determined by tracer studies or other methods acceptable to the department as T in all CT calculations.

(5) Tracer studies.

(a) The purveyor shall conduct field tracer studies on all system components with configurations (geometry and/or baffling) for which analogous contact times are not documented.

(b) Before conducting tracer studies, the purveyor shall obtain the department's approval of a tracer study plan. The plan shall identify at a minimum:

(i) How the purveyor will conduct the study;

(ii) The tracer material to be used;

(iii) Flow rates to be used; and

(iv) The names, titles, and qualifications of the persons conducting the study.

(c) A professional engineer registered in the state of Washington shall direct the conduct of all tracer studies.

(d) Tracer studies shall be conducted in accordance with good engineering practices using methods acceptable to the department such as those described in department guidance on surface water treatment.

(e) The department may require the purveyor to conduct additional tracer studies when:

(i) Modifications impacting flow distribution or T are made; or

(ii) Increases in flow exceed the conditions of the previous tracer studies.

(6) Empirical methods.

(a) Empirical methods may be used to calculate T10, if the purveyor demonstrates to the department's satisfaction that system components have configurations analogous to components on which tracer studies have been conducted and results have been documented.

(b) The purveyor shall submit to the department for review and approval engineering justification for determining T10 using empirical methods. As-built drawings of system components in their current configurations shall be submitted with the engineering justification.

(c) A professional engineer registered in the state of Washington shall prepare the engineering justification for determining T10 using empirical methods.

[Statutory Authority: RCW 43.02.050 [43.20.050]. 99-07-021, § 246-290-636, filed 3/9/99, effective 4/9/99. Statutory Authority: RCW 43.20.050. 93-08-011 (Order 352B), § 246-290-636, filed 3/25/93, effective 4/25/93.]

WAC 246-290-638 Analytical requirements.

(1) The purveyor shall ensure that only qualified persons conduct measurements for pH, temperature, turbidity, and residual disinfectant concentrations. In this section, qualified shall mean:

(a) A person certified under chapter 246-292 WAC;

(b) An analyst, with experience conducting these measurements, from the state public health laboratory or another laboratory certified by the department; or

(c) A state or local health agency professional experienced in conducting these measurements.

(2) The purveyor shall ensure that measurements for temperature, turbidity, pH, and residual disinfectant concentration are made in accordance with "standard methods," or other EPA approved methods.

(3) The purveyor shall ensure that samples for coliform and HPC analysis are:

(a) Collected and transported in accordance with department-approved methods; and

(b) Submitted to the state public health laboratory or another laboratory certified by the department to conduct the analyses.

(4) Turbidity monitoring.

(a) The purveyor shall equip the system's water treatment facility laboratory with a:

(i) Bench model turbidimeter; and

(ii) Continuous turbidimeter and recorder if required under WAC 246-290-664 or 246-290-694.

(b) The purveyor shall ensure that bench model and continuous turbidimeters are:

(i) Designed to meet the criteria in "standard methods," EPA Method 180.1, or Great Lakes Instruments Method 2; and

(ii) Properly operated, calibrated, and maintained at all times in accordance with the manufacturer's recommendations.

(c) The purveyor shall validate continuous turbidity measurements for accuracy as follows:

(i) Calibrate turbidity equipment based upon a primary standard in the expected range of measurements; and

(ii) Verify continuous turbidimeter performance on a weekly basis, not on consecutive days, with grab sample measurements made using a properly calibrated bench model turbidimeter.

(d) When continuous turbidity monitoring equipment fails, the purveyor shall measure turbidity on grab samples collected at least every four hours from the combined filter effluent and individual filters while the system serves water to the public and the equipment is being repaired or replaced. The purveyor shall have continuous monitoring equipment on-line within five working days of failure.

[Statutory Authority: RCW 43.20.050 (2) and (3) and 70.119A.080. 03-08-037, § 246-290-638, filed 3/27/03, effective 4/27/03. Statutory Authority: RCW 43.02.050 [43.20.050]. 99-07-021, § 246-290-638, filed 3/9/99, effective 4/9/99. Statutory Authority: RCW 43.20.050. 93-08-011 (Order 352B), § 246-290-638, filed 3/25/93, effective 4/25/93.]

WAC 246-290-639 SWTR records.

(1) Purveyors using surface or GWI sources shall maintain accurate and complete operations records.

(2) Operations records shall include, but not be limited to, the following as applicable:

(a) Results of all monitoring conducted under Part 6 of chapter 246-290 WAC;

(b) Quantity of water produced, plant flow rates, and hours of operation;

(c) Types and quantities of chemicals used;

(d) Dates and information pertaining to filter and/or disinfection system maintenance;

(e) Dates and results of filter and/or disinfection system inspections including records of filtration and backwash rates; and

(f) Dates and descriptions of major equipment and/or treatment process failures and corrective actions taken.

(3) Operations records not reported to the department under WAC 246-290-666 or 246-290-696 shall be maintained at the purveyor's treatment facility.

[Statutory Authority: RCW 43.20.050. 93-08-011 (Order 352B), § 246-290-639, filed 3/25/93, effective 4/25/93.]

WAC 246-290-640 Determination of GWI sources.

(1) Until the department has made a source GWI determination, the purveyor shall monitor in accordance with the requirements for ground water sources in WAC 246-290-300 or as directed by the department and provide follow-up in accordance with WAC 246-290-320.

(2) The purveyor, after being notified by the department that one or more of the system sources have been classified as potential GWI, may elect to seek approval from the department to modify the potential GWI source to mitigate surface water influences prior to compliance with subsection (3) of this section, and if so, shall:

(a) Complete a project report, for departmental approval, that describes the proposed source-related modifications, including the schedule for their completion and an explanation of why the source should be reclassified upon completion of the source modifications; and

(b) Demonstrate compliance, if directed by the department, with the requirements of subsection (3) of this section upon completion of the source-related modifications.

(3) The purveyor using a source identified as a potential GWI shall provide to the department all information necessary to determine whether the source is under direct surface water influence. Information shall include, but not be limited to:

(a) Site-specific source water quality data, including temperature, conductivity, and/or other appropriate parameters as determined by the department;

(b) Documentation of source construction characteristics;

(c) Documentation of hydrogeology;

(d) Distance to surface water; and

(e) Water quality results from nearby surface water(s), including temperature, conductivity, and/or other appropriate parameters as determined by the department.

(4) Upon a determination by the department that one or more potential GWI source(s) being used are in hydraulic connection to a surface water, the purveyor shall:

(a) Secure the services of a professional engineer to direct further evaluation and actions regarding the source;

(b) Provide disinfection treatment of the source in accordance with WAC 246-290-451; and

(c) Provide microscopic particulate analyses (MPA) results for review by the department based upon a sampling plan approved by the department.

(5) A purveyor notified by the department that one or more GWI sources are in use shall:

(a) Within ninety days of notification submit a project report to the department that includes an implementation schedule for compliance with the treatment techniques specified in Part 6 of this chapter;

(b) Notify consumers served by the system; and

(c) Comply with the applicable requirements of WAC 246-290-670.

(6) After completion of the requirements in subsection (3) of this section, the purveyor may modify a GWI source to mitigate direct surface influence. In such cases, the purveyor shall:

(a) Include in a project report, for submittal to the department for approval, a description of the proposed approaches and schedule for source modification; and

(b) Comply again with subsection (3) of this section upon completion of source modifications to be considered for source reclassification.

(7) The department may reevaluate a ground water source for direct surface influence, if conditions impacting source classification have changed.

[Statutory Authority: RCW 43.02.050 [43.20.050]. 99-07-021, § 246-290-640, filed 3/9/99, effective 4/9/99. Statutory Authority: RCW 43.20.050. 93-08-011 (Order 352B), § 246-290-640, filed 3/25/93, effective 4/25/93.]

Subpart B - Requirements for Filtered Systems

WAC 246-290-650 Compliance requirements for filtered systems.

(1) In addition to the requirements of Parts 1 through 5 of chapter 246-290 WAC, Subpart B of Part 6 of chapter 246-290 WAC applies to purveyors of systems using surface or GWI sources and providing filtration, including:

(a) Systems with water treatment facilities that produced water served to the public before January 1, 1991;

(b) Unfiltered systems installing filtration, once the new water treatment facilities are on-line; and

(c) New systems using surface or GWI sources. For the purpose of the Part 6 chapter 246-290 WAC requirements, new systems are defined as systems first serving water to the public after December 31, 1990.

(2) The purveyor of a new system using a surface or GWI source shall comply with the requirements of Part 6 subparts A and B chapter 246-290 WAC and be subject to the treatment technique violations specified in WAC 246-290-632 beginning when the system first serves water to the public and thereafter.

[Statutory Authority: RCW 43.02.050 [43.20.050]. 99-07-021, § 246-290-650, filed 3/9/99, effective 4/9/99. Statutory Authority: RCW 43.20.050. 93-08-011 (Order 352B), § 246-290-650, filed 3/25/93, effective 4/25/93.]

WAC 246-290-652 Filtration technology and design criteria for existing filtered systems.

(1) The purveyor shall treat all surface and GWI sources using one of the following filtration technologies unless another technology is acceptable to the department:

(a) Conventional;

(b) Direct;

(c) Diatomaceous earth; or

(d) Slow sand.

(2) Purveyors not using one of the filtration technologies in subsection (1) of this section or not complying with the design criteria specified in WAC 246-290-676 shall submit a project report to the department that demonstrates to the department's satisfaction that the existing water treatment facility can be operated to reliably produce, by June 29, 1993, water meeting the operating and performance requirements of WAC 246-290-654 and 246-290-660, respectively. The project report shall comply with the requirements of WAC 246-290-110.

(3) The purveyor shall make the demonstration required under subsection (2) of this section using the latest twelve months of operating data, results of special studies conducted to test the performance of the water treatment facility under adverse water quality conditions or other means acceptable to the department.

(4) For water treatment facilities currently unable to meet the performance and operation requirements, the project report shall specify the modifications needed to upgrade the facility. Purveyors upgrading existing water treatment facilities shall comply with the design and reliability requirements under WAC 246-290-676 and 246-290-678, respectively.

(5) The purveyor of a new system using a surface or GWI source shall be subject to the:

(a) Design and reliability requirements under WAC 246-290-676 and 246-290-678, respectively; and

(b) Operating criteria for new water treatment facilities under WAC 246-290-654.

[Statutory Authority: RCW 43.02.050 [43.20.050]. 99-07-021, § 246-290-652, filed 3/9/99, effective 4/9/99. Statutory Authority: RCW 43.20.050. 93-08-011 (Order 352B), § 246-290-652, filed 3/25/93, effective 4/25/93.]

WAC 246-290-654 Treatment criteria for filtered systems.

(1) The purveyor shall operate filters so that maximum flow rates do not exceed those specified in Table 10. The purveyor may operate filters at higher flow rates, if the purveyor demonstrates to the department's satisfaction that filtration at the higher rate consistently achieves at least 99 percent (2 log) removal of *Giardia lamblia* cysts and 99 percent (2 log) removal of *Cryptosporidium* oocysts and meets the turbidity performance requirements of Table 11.

Table 10
Filtration Operation Criteria

Filtration Technology/Media	Maximum Filtration Rate (gpm/ft^2)
Conventional, Direct and In-Line	
Gravity Filters with Single Media	3
Gravity Filters with Deep Bed, Dual or Mixed Media	6
Pressure Filters with Single Media	2
Pressure Filters with Deep Bed, Dual or Mixed Media	3
Slow Sand	0.1
Diatomaceous Earth	1.0

(2) The purveyor using conventional, direct or in-line filtration shall ensure that effective coagulation is in use at all times the water treatment facility produces water served to the public.

(3) The purveyor using conventional, direct, or in-line filtration shall demonstrate treatment effectiveness for *Giardia lamblia* cyst and *Cryptosporidium* oocyst removal by one of the following methods:

(a) Turbidity reduction method.

(i) The purveyor shall make source and filtered water turbidity measurements in accordance with WAC 246-290-664 (2) and (3) respectively.

(ii) The purveyor shall achieve:

(A) The turbidity performance requirements specified in WAC 246-290-660(1) and at least an eighty percent reduction in source turbidity based on an average of the daily turbidity reductions measured in a calendar month; or

(B) An average daily filtered water turbidity less than or equal to 0.1 NTU.

(b) Particle counting method. The purveyor shall:

(i) Use a particle counting protocol acceptable to the department; and

(ii) Demonstrate at a frequency acceptable to the department at least the following log reduction of particles in the size range of five to fifteen microns (*Giardia lamblia* cyst-sized particles) and three to five microns (*Cryptosporidium* oocyst-sized particles), as applicable:

(A) 2.5 log reduction in *Giardia lamblia* cyst-sized particles and a 2 log reduction in *Cryptosporidium* particles for systems using conventional filtration; or

(B) 2.0 log reduction for systems using direct or in-line filtration.

(c) Microscopic particulate analysis method. The purveyor shall:

(i) Use a protocol acceptable to the department; and

(ii) Demonstrate at a frequency acceptable to the department at least the following log reduction of *Giardia lamblia* cysts and *Cryptosporidium* oocysts or *Giardia lamblia* cyst and *Cryptosporidium* oocyst surrogate indicators as applicable:

(A) 2.5 log reduction in *Giardia lamblia* cysts or surrogates and a 2 log reduction in *Cryptosporidium* oocyst or surrogates for systems using conventional filtration; and

(B) 2.0 log reduction for systems using direct or in-line filtration.

(d) Other methods acceptable to the department.

(4) The purveyor shall ensure continuous disinfection of all water delivered to the public and shall:

(a) Maintain an adequate supply of disinfection chemicals and keep back-up system components and spare parts on hand;

(b) Develop, maintain, and post at the water treatment facility a plan detailing:

(i) How water delivered to the public will be continuously and adequately disinfected; and

(ii) The elements of an emergency notification plan to be implemented whenever the residual disinfectant concentration at entry to distribution falls below 0.2 mg/L for more than one hour.

(c) Implement the plan during an emergency affecting disinfection.

(5) Operations program.

(a) For each water treatment facility treating a surface or GWI source, the purveyor shall develop an operations program and make it available to the department for review upon request.

(b) The program shall be submitted to the department as an addendum to the purveyor's water system plan (WAC 246-290-100) or small water system management program (WAC 246-290-105).

(c) The program shall detail how the purveyor will produce optimal filtered water quality at all times the water treatment facility produces water to be served to the public.

(d) The purveyor shall operate the water treatment facility in accordance with the operations program.

(e) The operations program shall include, but not be limited to, a description of:

(i) For conventional, direct or in-line filtration, procedures used to determine and maintain optimized coagulation as demonstrated by meeting the requirements of WAC 246-290-654(3);

(ii) Procedures used to determine chemical dose rates;

(iii) How and when each unit process is operated;

(iv) Unit process equipment maintenance program;

(v) Treatment plant performance monitoring program;

(vi) Laboratory procedures;

(vii) Records;

(viii) Reliability features; and

(ix) Response plans for water treatment facility emergencies, including disinfection failure and watershed emergencies.

(f) The purveyor shall ensure the operations program is:

(i) Readily available at the water treatment facility for use by operators and for department inspection;

(ii) Consistent with department guidelines for operations procedures such as those described in department guidance on surface water treatment and water system planning; and

(iii) Updated as needed to reflect current water treatment facility operations.

(6) Pressure filters. Purveyors using pressure filters shall:

(a) Inspect and evaluate the filters, at least every six months, for conditions that would reduce their effectiveness in removing *Giardia lamblia* cysts;

(b) Maintain, and make available for department review, a written record of pressure filter inspections; and

(c) Be prepared to conduct filter inspections in the presence of a department representative, if requested.

[Statutory Authority: RCW 43.20.050 (2) and (3) and 70.119A.080. 03-08-037, § 246-290-654, filed 3/27/03, effective 4/27/03. Statutory Authority: RCW 43.02.050 [43.20.050]. 99-07-021, § 246-290-654, filed 3/9/99, effective 4/9/99. Statutory Authority: RCW 43.20.050. 94-14-001, § 246-290-654, filed 6/22/94, effective 7/23/94; 93-08-011 (Order 352B), § 246-290-654, filed 3/25/93, effective 4/25/93.]

WAC 246-290-660 Filtration.

(1) Turbidity performance requirements.

(a) The purveyor shall ensure that the turbidity level of representative filtered water samples:

(i) Complies with the performance standards in Table 11(A) until January 14, 2005, and Table 11(B) beginning January 14, 2005; and

(ii) Never exceeds 5.0 NTU for any system using slow sand, diatomaceous earth;

(iii) Never exceeds 5.0 NTU for any system serving less than ten thousand people and using conventional, direct, or in-line filtration until January 14, 2005, and never exceeds 1.0 NTU beginning January 14, 2005;

(iv) Never exceeds 1.0 NTU for any system serving at least ten thousand people and using conventional, direct, or in-line filtration;

(v) Never exceeds the maximum allowable turbidity determined by the department on a case-by-case basis for any system using an alternate filtration technology approved under WAC 246-290-676 (2)(b).

Table 11(A)
Turbidity Performance Requirements (Until January 14, 2005)

Filtration Technology	Filtered water turbidity (in NTUs) shall be less than or equal to this value in at least 95% of the measurements made each calendar month	
	Systems serving < 10,000 people	Systems serving > 10,000 people
Conventional, Direct and In-line	0.50	0.30
Slow Sand	1.0	1.0
Diatomaceous Earth	1.0	1.0
Alternate Technology	As determined by the department through case-by-case approval of technology, in accordance with WAC 246-290-676 (2)(b).	

Table 11(B)
Turbidity Performance Standards (Beginning January 14, 2005)

Filtration Technology	Filtered water turbidity (in NTUs) shall be less than or equal to this value in at least 95% of the measurements made each calendar month
Conventional, Direct and In-line	0.30
Slow Sand	1.0
Diatomaceous Earth	1.0
Alternate Technology	As determined by the department through case-by-case approval of technology, in accordance with WAC 246-290-676 (2)(b).

(b) The department may allow the turbidity of filtered water from a system using slow sand filtration to exceed 1.0 NTU, but never 5.0 NTU, if the system demonstrates to the department's satisfaction that the higher turbidity level will not endanger the health of consumers served by the system. As a condition of being allowed to produce filtered water with a turbidity exceeding 1.0 NTU, the purveyor may be required to monitor one or more parameters in addition to the parameters specified under WAC 246-290-664. The department shall notify the purveyor of the type and frequency of monitoring to be conducted.

(2) *Giardia lamblia, Cryptosporidium,* and virus removal credit.

(a) The department shall notify the purveyor of the removal credit granted for the system's filtration process. The department shall specify removal credit for:

(i) Existing filtration facilities based on periodic evaluations of performance and operation; and

(ii) New or modified filtration facilities based on results of pilot plant studies or full scale operation.

(b) Conventional, direct, and in-line filtration.

(i) The removal credit the department may grant to a system using conventional, direct, or in-line filtration and demonstrating effective treatment is as follows:

Percent Removal Credit (log)

Filtration Technology	*Giardia*		Virus		*Cryptosporidium*	
	Percent	Log	Percent	Log	Percent	Log
Conventional	99.7	2.5	99	2.0	99	2.0
Direct and in-line	99	2.0	90	1.0	99	2.0

(ii) A system using conventional, direct, or in-line filtration shall be considered to provide effective treatment, if the purveyor demonstrates to the satisfaction of the department that the system meets the:

(A) Turbidity performance requirements under subsection (1) of this section; and

(B) Operations requirements of WAC 246-290-654.

(iii) The department may grant a higher level of *Giardia lamblia, Cryptosporidium,* and virus removal credit than listed under (b)(i) of this subsection, if the purveyor demonstrates to the department's satisfaction that the higher level can be consistently achieved.

(iv) As a condition of maintaining the maximum removal credit, purveyors may be required to periodically monitor one or more parameters not routinely monitored under WAC 246-290-664. The department shall notify the purveyor of the type and frequency of monitoring to be conducted.

(v) The department shall not grant removal credit to a system using conventional, direct, or in-line filtration that:

(A) Fails to meet the minimum turbidity performance requirements under subsection (1) of this section; or

(B) Fails to meet the operating requirements under WAC 246-290-654.

(c) Slow sand filtration.

The department may grant a system using slow sand filtration 99 percent (2 log) *Giardia lamblia* cyst and *Cryptosporidium* oocyst removal credit and 99 percent (2 log) virus removal credit, if the system meets the department design requirements under WAC 246-290-676 and meets the minimum turbidity performance requirements in subsection (1) of this section.

(d) Diatomaceous earth filtration.

The department may grant a system using diatomaceous earth filtration 99 percent (2 log) *Giardia lamblia* cyst and *Cryptosporidium* oocyst removal credit and 90 percent (1 log) virus removal credit, if the system meets the department design requirements under WAC 246-290-676 and meets the minimum turbidity performance requirements in subsection (1) of this section.

(e) Alternate filtration technology.

The department shall grant, on a case-by-case basis, *Giardia lamblia* cyst, *Cryptosporidium* oocyst, and virus removal credit for systems using alternate filtration technology based on results of product testing acceptable to the department.

(f) The purveyor granted no *Giardia lamblia* cyst removal credit and no *Cryptosporidium* oocyst removal credit shall:

(i) Provide treatment in accordance with WAC 246-290-662 (2) (d); and

(ii) Within ninety days of department notification regarding removal credit, submit an action plan to the department for review and approval. The plan shall:

(A) Detail how the purveyor plans to comply with the turbidity performance requirements in subsection (1) of this section and operating requirements of WAC 246-290-654; and

(B) Identify the proposed schedule for implementation.

(iii) Be considered in violation of the treatment technique specified in WAC 246-290-632 (2)(a)(i) and shall take follow-up action specified in WAC 246-290-634.

(3) Disinfection by-product precursor removal requirements.

(a) Conventional systems using sedimentation shall meet the treatment technique requirements for control of disinfection by-product precursors specified in 40 CFR 141.135.

(i) Applicability of this requirement shall be determined in accordance with 40 CFR 141.135(a).

(ii) Enhanced coagulation and enhanced softening shall be provided in accordance with 40 CFR 141.135(b), if applicable.

(iii) Compliance with the treatment technique requirements for control of disinfection by-product precursors shall be determined in accordance with 40 CFR 141.135(c).

(b) For the purposes of compliance with (a) of this subsection, sedimentation shall be considered applicable when:

(i) Surface overflow rates and other design parameters are in conformance with traditionally accepted industry standards and textbook values, such as those prescribed in nationally accepted standards, including the most recent version of the *Recommended Standards for Water Works, A Committee Report of the Great Lakes - Upper Mississippi River Board of State Public Health and Environmental Managers*; and

(ii) The system has received pathogen removal credit for the sedimentation basin.

(4) Filter backwash recycling requirements.

(a) By no later than December 8, 2003, purveyors using conventional, direct, or in-line filtration must **report** to the department, in writing, whether they recycle spent filter backwash water, thickener supernatant, or liquids from dewatering processes within the treatment plant.

(i) Purveyors that **do** recycle spent filter backwash water, thickener supernatant, or liquids from dewatering processes must also report the following information:

(A) A plant schematic showing the origin of all flows that are recycled (including, but not limited to, spent filter backwash water, thickener supernatant, and liquids from dewatering processes), the hydraulic conveyance (i.e., pipe, open channel) used to transport them, and the location where they are reintroduced back into the treatment plant.

(B) Typical recycle flow in gallons per minute (gpm), the highest observed plant flow experienced in the previous year (gpm), design flow for the treatment plant (gpm), and the approved operating capacity for the plant.

(b) By no later than June 8, 2004, purveyors using conventional, direct, or in-line filtration that recycle spent filter backwash water, thickener supernatant, or liquids from dewatering processes within the treatment plant shall:

(i) Return the recycled flow prior to, or concurrent with the location where primary coagulant is introduced into the flow stream.

(ii) By no later than June 8, 2006, complete any capital improvements (physical modifications requiring engineering planning, design, and construction) necessary to meet the requirements of (b)(i) of this subsection.

(iii) On a case-by-case basis, the department may approve an alternate location for the return of recycle flows.

[Statutory Authority: RCW 43.20.050 and 70.119A.080. 04-04-056, § 246-290-660, filed 1/30/04, effective 3/1/04. Statutory Authority: RCW 43.20.050 (2) and (3) and 70.119A.080. 03-08-037, § 246-290-660, filed 3/27/03, effective 4/27/03. Statutory Authority: RCW 43.02.050 [43.20.050]. 99-07-021, § 246-290-660, filed 3/9/99, effective 4/9/99. Statutory Authority: RCW 43.20.050. 94-14-001, § 246-290-660, filed 6/22/94, effective 7/23/94; 93-08-011 (Order 352B), § 246-290-660, filed 3/25/93, effective 4/25/93.]

WAC 246-290-662 Disinfection for filtered systems.

(1) General requirements.

(a) The purveyor shall provide continuous disinfection to ensure that filtration and disinfection together achieve, at all times the system serves water to the public, at least the following:

(i) 99.9 percent (3 log) inactivation and removal of *Giardia lamblia* cysts; and

(ii) 99.99 percent (4 log) inactivation and/or removal of viruses.

(b) Where sources receive sewage discharges and/or agricultural runoff, purveyors may be required to provide greater levels of removal and inactivation of *Giardia lamblia* cysts and viruses to protect the health of consumers served by the system.

(c) Regardless of the removal credit granted for filtration, purveyors shall, at a minimum, provide continuous disinfection to achieve at least 68 percent (0.5 log) inactivation of *Giardia lamblia* cysts and 99 percent (2 log) inactivation of viruses.

(2) Establishing the level of inactivation.

(a) The department shall establish the level of disinfection (log inactivation) to be provided by the purveyor.

(b) The required level of inactivation shall be based on source quality and expected levels of *Giardia lamblia* cyst and virus removal achieved by the system's filtration process.

(c) Based on periodic reviews, the department may adjust, as necessary, the level of disinfection the purveyor shall provide to protect the health of consumers served by the system.

(d) Systems granted no *Giardia lamblia* cyst removal credit and no *Cryptosporidium* oocyst removal credit shall:

(i) Unless directed otherwise by the department, provide interim disinfection to:

(A) Ensure compliance with the monthly coliform MCL under WAC 246-290-310;

(B) Achieve at least 99.9 percent (3 log) inactivation of *Giardia lamblia* cysts; and

(C) Maintain a detectable residual disinfectant concentration, or an HPC level less than 500 organisms/ml, within the distribution system in accordance with subsection (6) of this section.

(ii) Comply with the interim disinfection requirements until the system can demonstrate to the department's satisfaction that it complies with the operating requirements and turbidity performance requirements under WAC 246-290-654 and 246-290-660(1), respectively.

(3) Determining the level of inactivation.

(a) Unless the department has approved a reduced CT monitoring schedule for the system, each day the system serves water to the public, the purveyor, using procedures and CT values acceptable to the department such as those presented in department guidance of surface water treatment, shall determine:

(i) CTcalc values using the system's treatment parameters and calculate the total inactivation ratio achieved by disinfection; and

(ii) Whether the system's disinfection process is achieving the minimum levels of inactivation of *Giardia lamblia* cysts and viruses required by the department.

(b) The department may allow a purveyor to determine the level of inactivation using lower CT values than those specified in (a) of this subsection, provided the purveyor demonstrates to the department's satisfaction that the required levels of inactivation of *Giardia lamblia* cysts and viruses can be achieved.

(4) Determining compliance with the required level of inactivation.

(a) A purveyor shall be considered in compliance with the inactivation requirement when a total inactivation ratio equal to or greater than 1.0 is achieved.

(b) Failure to provide the required level of inactivation on more than one day in any calendar month shall be considered a treatment technique violation.

(5) Residual disinfectant concentration entering the distribution system.

(a) The purveyor shall ensure that all water entering the distribution system contains a residual disinfectant concentration, measured as free or combined chlorine, of at least 0.2 mg/L at all times the system serves water to the public; and

(b) Failure to provide a 0.2 mg/L residual at entry to distribution for more than four hours on any day shall be considered a treatment technique violation.

(6) Residual disinfectant concentration within the distribution system.

(a) The purveyor shall ensure that the residual disinfectant concentration in the distribution system, measured as total chlorine, free chlorine, combined chlorine, or chlorine dioxide, is detectable in at least ninety-five percent of the samples taken each calendar month.

(b) Water in the distribution system with an HPC less than or equal to 500 organisms/ml is considered to have a detectable residual disinfectant concentration for the purposes of compliance with WAC 246-290-662 (6)(a).

[Statutory Authority: RCW 43.20.050 (2) and (3) and 70.119A.080. 03-08-037, § 246-290-662, filed 3/27/03, effective 4/27/03. Statutory Authority: RCW 43.02.050 [43.20.050]. 99-07-021, § 246-290-662, filed 3/9/99, effective 4/9/99. Statutory Authority: RCW 43.20.050. 94-14-001, § 246-290-662, filed 6/22/94, effective 7/23/94; 93-08-011 (Order 352B), § 246-290-662, filed 3/25/93, effective 4/25/93.]

WAC 246-290-664 Monitoring for filtered systems.

(1) Source coliform monitoring.

(a) The purveyor shall ensure that source water samples of each surface or GWI source are:

(i) Collected before the first point of disinfectant application and before coagulant chemical addition; and

(ii) Analyzed for fecal coliform density in accordance with methods acceptable to the department.

(b) At a minimum, the purveyor shall ensure source samples are collected for fecal coliform analysis at a frequency equal to ten percent of the number of routine coliform samples collected within the distribution system each month under WAC 246-290-300, or once per calendar month, whichever is greater up to a maximum of one sample per day.

(2) Source turbidity monitoring.

(a) The purveyor using conventional, direct, or in-line filtration shall measure source turbidity at least once per day on a representative sample collected before disinfection and coagulant addition.

(b) Grab sampling or continuous turbidity monitoring and recording may be used to meet the requirement specified in (a) of this subsection.

(c) Purveyors using continuous turbidity monitoring shall record continuous turbidity measurements at equal intervals, at least every four hours, in accordance with a department-approved sampling schedule.

(d) Purveyors using an approved alternate filtration technology may be required to monitor source water turbidity at least once per day on a representative sample as determined by the department.

(3) Filtered water turbidity monitoring.

(a) The purveyor using direct, conventional, or in-line filtration shall:

(i) Continuously monitor turbidity on representative samples from each individual filter unit and from the system's combined filter effluent, prior to clearwell storage;

(ii) For systems serving at least ten thousand people, record continuous turbidity measurements from each individual filter unit at equal intervals of at least every fifteen minutes, and for all systems, from the combined filter effluent at equal intervals of at least every four hours, in accordance with a department-approved sampling schedule;

(iii) Beginning January 14, 2005, systems serving less than ten thousand people shall record continuous turbidity measurements from each individual filter unit at equal intervals of at least every fifteen minutes;

(iv) Systems serving less than ten thousand people and consisting of two or fewer filters may record continuous turbidity measurements from the combined filter effluent at equal intervals of at least fifteen minutes in lieu of recording individual filter turbidity measurements; and

(v) Conduct monitoring in accordance with the analytical techniques under WAC 246-290-638.

(b) The purveyor using slow sand or diatomaceous earth filtration shall:

(i) Continuously monitor turbidity on representative samples from each individual filter unit and from the system's combined filter effluent, prior to clearwell storage;

(ii) Record continuous turbidity measurements from the combined filter effluent at equal intervals of at least every four hours in accordance with a department-approved sampling schedule; and

(iii) Conduct monitoring in accordance with the analytical techniques under WAC 246-290-638.

(c) Purveyors using an alternate filtration technology approved under WAC 246-290-676 shall provide monitoring in accordance with the technology-specific approval conditions determined by the department.

(d) Purveyors using slow sand filtration or an alternate filtration technology may reduce filtered water turbidity monitoring to one grab sample per day with departmental approval. Reduced turbidity monitoring shall be allowed only where the purveyor demonstrates to the department's satisfaction that a reduction in monitoring will not endanger the health of consumers served by the water system.

(4) Monitoring the level of inactivation and removal.

(a) Each day the system is in operation, the purveyor shall determine the total level of inactivation and removal of *Giardia lamblia* cysts, viruses, and *Cryptosporidium* oocysts achieved.

(b) The purveyor shall determine the total level of inactivation and removal based on:

(i) *Giardia lamblia* cyst, *Cryptosporidium* oocyst, and virus removal credit granted by the department for filtration; and

(ii) Level of inactivation of *Giardia lamblia* cysts and viruses achieved through disinfection.

(c) At least once per day, purveyors shall monitor the following to determine the level of inactivation achieved through disinfection:

(i) Temperature of the disinfected water at each residual disinfectant concentration sampling point used for CT calculations; and

(ii) If using chlorine, pH of the disinfected water at each chlorine residual disinfectant concentration sampling point used for CT calculations.

(d) Each day during peak hourly flow (based on historical information), the purveyor shall:

(i) Determine disinfectant contact time, T, to the point at which C is measured; and

(ii) Measure the residual disinfectant concentration, C, of the water at the point for which T is calculated. The C measurement point shall be located before or at the first consumer.

(e) The department may reduce CT monitoring requirements for purveyors that demonstrate to the department's satisfaction that the required levels of inactivation are consistently

exceeded. Reduced CT monitoring shall only be allowed where the purveyor demonstrates to the department's satisfaction that a reduction in monitoring will not endanger the health of consumers.

(5) Monitoring the residual disinfectant concentration entering the distribution system.

(a) Systems serving more than thirty-three hundred people per month.

(i) The purveyor shall continuously monitor and record the residual disinfectant concentration of water entering the distribution system and report the lowest value each day.

(ii) If the continuous monitoring equipment fails, the purveyor shall measure the residual disinfectant concentration on grab samples collected at least every four hours at the entry to the distribution system while the equipment is being repaired or replaced. The purveyor shall have continuous monitoring equipment back on-line within five working days following failure.

(b) Systems serving thirty-three hundred or less people per month.

(i) The purveyor shall collect grab samples or use continuous monitoring and recording to measure the residual disinfectant concentration entering the distribution system.

(ii) Purveyors of **community** systems choosing to take grab samples shall collect:

(A) Samples at the following minimum frequencies:

Population Served	Number/day
25 - 500	1
501 - 1,000	2
1,001 - 2,500	3
2,501 - 3,300	4

(B) At least one of the grab samples at peak hourly flow; and

(C) The remaining samples evenly spaced over the time the system is disinfecting water that will be delivered to the public.

(iii) Purveyors of **noncommunity** systems choosing to take grab samples shall collect samples for disinfectant residual concentration entering the distribution system as directed by the department.

(iv) When grab samples are collected and the residual disinfectant concentration at the entry to distribution falls below 0.2 mg/L, purveyors shall collect a grab sample every four hours until the residual disinfectant concentration is 0.2 mg/L or more.

(6) Monitoring residual disinfectant concentrations within the distribution system.

(a) The purveyor shall measure the residual disinfectant concentration at representative points within the distribution system on a daily basis or as otherwise approved by the department.

(b) At a minimum, the purveyor shall measure the residual disinfectant concentration within the distribution system at the same time and location that a routine or repeat coliform sample is collected in accordance with WAC 246-290-300(3) or 246-290-320(2).

(c) The purveyor may measure HPC within the distribution system in lieu of measuring the residual disinfectant concentration in accordance with this subsection.

[Statutory Authority: RCW 43.20.050 and 70.119A.080. 04-04-056, § 246-290-664, filed 1/30/04, effective 3/1/04. Statutory Authority: RCW 43.20.050 (2) and (3) and 70.119A.080. 03-08-037, § 246-290-664, filed 3/27/03, effective 4/27/03. Statutory Authority: RCW 43.02.050 [43.20.050]. 99-07-021, § 246-290-664, filed 3/9/99, effective 4/9/99. Statutory Authority: RCW 43.20.050. 94-14-001, § 246-290-664, filed 6/22/94, effective 7/23/94; 93-08-011 (Order 352B), § 246-290-664, filed 3/25/93, effective 4/25/93.]

WAC 246-290-666 Reporting for filtered systems.

(1) The purveyor shall notify the department, as soon as possible, but no later than twenty-four hours after the purveyor learns of the following events:

(a) A waterborne disease outbreak potentially attributable to the water system occurs;

(b) The turbidity of the combined filter effluent exceeds 5.0 NTU at any time for any system using slow sand, diatomaceous earth, or for any system serving less than ten thousand people and using conventional, direct, or in-line filtration;

(c) The turbidity of the combined filter effluent:

(i) Exceeds 1.0 NTU at any time for a system serving at least ten thousand people and using conventional, direct, or in-line filtration;

(ii) Beginning January 14, 2005, the turbidity of the combined filter effluent exceeds 1.0 NTU at any time for a system serving less than ten thousand people using conventional, direct, or in-line filtration;

(d) The turbidity of the combined filter effluent exceeds the maximum specified level for an alternative filtration technology approved by the department;

(e) The residual disinfection concentration falls below 0.2 mg/L at the entry point to the distribution system. The purveyor shall also report whether the residual was restored to 0.2 mg/L or more within four hours; or

(f) An event occurs that may affect the ability of the water treatment facility to produce drinking water that complies with this chapter including, but not limited to:

(i) Spills of hazardous materials in the watershed; and

(ii) Treatment process failures.

(2) The purveyor shall report results of monitoring conducted in accordance with WAC 246-290-664 to the department. Monthly report forms shall be submitted within ten days after the end of each month the system served water to the public.

(3) The purveyor shall report, at a minimum, all the information requested by the department using a department-approved form or format including:

(a) Water treatment facility operations information;

(b) Turbidity monitoring results, including:

(i) Source monitoring, if required under WAC 246-290-664(2);

(ii) Combined filter effluent. Continuous measurements shall be reported at equal intervals, at least every four hours, in accordance with a department-approved schedule;

(iii) Individual filter turbidity monitoring results. Systems serving at least ten thousand people and using conventional, direct, or in-line filtration shall report and take follow-up action as prescribed in 40 CFR 141.175(b). Beginning January 14, 2005, systems serving less than ten thousand people shall report and take follow-up action as prescribed by 40 CFR 141.563 and 141.570. Required follow-up action may include development of a filter profile, a filter self-assessment, as described in 40 CFR 141.175 (b)(3) and 141.563(b), or the completion of a comprehensive performance evaluation (CPE).

(c) Disinfection monitoring information including:

(i) Level of inactivation achieved;

(ii) Residual disinfectant concentrations entering the distribution system; and

(iii) Residual disinfectant concentrations within the distribution system.

(d) Total level of removal and inactivation; and

(e) A summary of water quality complaints received from consumers served by the water system.

(4) A person certified under chapter 246-292 WAC shall complete and sign the monthly report forms required in this section.

[Statutory Authority: RCW 43.20.050 and 70.119A.080. 04-04-056, § 246-290-666, filed 1/30/04, effective 3/1/04. Statutory Authority: RCW 43.20.050 (2) and (3) and 70.119A.080. 03-08-037, § 246-290-666, filed 3/27/03, effective 4/27/03. Statutory Authority: RCW 43.02.050 [43.20.050]. 99-07-021, § 246-290-666, filed 3/9/99, effective 4/9/99. Statutory Authority: RCW 43.20.050. 94-14-001, § 246-290-666, filed 6/22/94, effective 7/23/94; 93-08-011 (Order 352B), § 246-290-666, filed 3/25/93, effective 4/25/93.]

WAC 246-290-668 Watershed control.

(1) The purveyor shall, to the extent possible, exercise surveillance over conditions and activities in the watershed affecting source water quality. The purveyor shall develop and implement a department-approved watershed control program.

(2) The purveyor shall ensure that an evaluation of the watershed is completed at least every six years. Watershed evaluations shall be performed such that results of the survey are included in the purveyor's water system plan in accordance with WAC 246-290-100 or small water system management program in accordance with WAC 246-290-105, whichever is applicable.

(3) A professional engineer registered in the state of Washington shall direct the conduct of the watershed evaluation and develop a watershed evaluation report.

(4) The purveyor shall submit the report to the department within sixty days of completion of the watershed evaluation.

(5) The report shall describe the watershed, characterize the watershed hydrology, and discuss the purveyor's watershed control program. The report shall also describe:

(a) Conditions/activities in the watershed that are adversely affecting source water quality;

(b) Changes in the watershed that could adversely affect source water quality that have occurred since the last watershed evaluation;

(c) The monitoring program the purveyor uses to assess the adequacy of watershed protection including an evaluation of sampling results; and

(d) Recommendations for improved watershed control.

[Statutory Authority: RCW 43.02.050 [43.20.050]. 99-07-021, § 246-290-668, filed 3/9/99, effective 4/9/99. Statutory Authority: RCW 43.20.050. 93-08-011 (Order 352B), § 246-290-668, filed 3/25/93, effective 4/25/93.]

Subpart C - Requirements for Systems Installing Filtration Facilities

WAC 246-290-670 Compliance requirements for existing unfiltered systems installing filtration.

(1) The purveyor of an existing unfiltered system shall:

(a) Install filtration within eighteen months after department notification; and

(b) Be subject to the interim compliance requirements as determined by the department and in conformance with 40 CFR 141.13 and WAC 246-290-632.

(2) The purveyor under an enforcement action or compliance agreement that is dated prior to the effective date of Part 6 of chapter 246-290 WAC, shall adhere to the compliance schedule for installation of filtration established in the departmental order or bilateral compliance agreement in lieu of the dates specified in subsection (1) of this section.

(3) The purveyor required to install filtration shall submit an action plan and schedule to the department for review and approval. The plan shall:

(a) Be submitted within ninety days of departmental notification; and

(b) Document the purveyor's plan and implementation schedule to comply with one of the following:

(i) Subparts A and B of Part 6 of chapter 246-290 WAC, if continuing to use the surface or GWI source as a permanent source and installing filtration;

(ii) Subparts A and D of Part 6 of chapter 246-290 WAC, if abandoning the surface or GWI source and purchasing completely treated water from a department-approved public water system using surface or GWI water; or

(iii) All other applicable sections of this chapter, if abandoning the surface or GWI source and developing an alternate department-approved ground water source.

(4) Between written departmental notification of the filtration requirement and installation of filtration, the purveyor shall meet:

(a) The interim disinfection requirements under WAC 246-290-672 or as otherwise directed by the department;

(b) The interim monitoring and reporting requirements under WAC 246-290-674; and

(c) All other applicable requirements of this chapter.

(5) The purveyor installing filtration shall ensure that when completed, the final treatment processes, consisting of filtration and disinfection, will comply with the requirements under WAC 246-290-660 and 246-290-662, respectively.

[Statutory Authority: RCW 43.02.050 [43.20.050]. 99-07-021, § 246-290-670, filed 3/9/99, effective 4/9/99. Statutory Authority: RCW 43.20.050. 94-14-001, § 246-290-670, filed 6/22/94, effective 7/23/94; 93-08-011 (Order 352B), § 246-290-670, filed 3/25/93, effective 4/25/93.]

WAC 246-290-672 Interim treatment requirements.

(1) Purveyors of existing unfiltered systems installing filtration shall provide interim disinfection treatment to:

(a) Ensure compliance with the monthly coliform MCL under WAC 246-290-310;

(b) Achieve inactivation levels of *Giardia lamblia* cysts on a daily basis each month the system serves water to the public as directed by the department; and

(c) Maintain a detectable residual disinfectant concentration in the distribution system, measured as total chlorine, free chlorine, or combined chlorine in 95 percent or more of the samples taken each calendar month. Water in the distribution system with an HPC level less than or equal to 500 organisms/ml is considered to have a detectable residual disinfectant concentration for the purposes of compliance with this subsection.

(2) Failure to provide the required level of inactivation in subsection (1)(b) of this section on more than one day in any calendar month shall be considered a treatment technique violation.

(3) The department may require the purveyor to provide higher levels of treatment than specified in subsection (1)(b) of this section when necessary to protect the health of consumers served by the public water system.

(4) Interim treatment requirements shall be met in accordance with a schedule acceptable to the department.

[Statutory Authority: RCW 43.20.050 (2) and (3) and 70.119A.080. 03-08-037, § 246-290-672, filed 3/27/03, effective 4/27/03. Statutory Authority: RCW 43.02.050 [43.20.050]. 99-07-021, § 246-290-672, filed 3/9/99, effective 4/9/99. Statutory Authority: RCW 43.20.050. 93-08-011 (Order 352B), § 246-290-672, filed 3/25/93, effective 4/25/93.]

WAC 246-290-674 Interim monitoring and reporting.

(1) Monitoring. Unless directed otherwise by the department, the purveyor of an existing unfiltered system installing filtration shall:

(a) Conduct interim monitoring in accordance with 40 CFR 141.22;

(b) Measure the residual disinfectant concentration within the distribution system at the same time and location that a routine or repeat sample is collected in accordance with WAC 246-290-300(3) or 246-290-320(2); and

(c) Measure residual disinfection concentrations at entry to the distribution system on a daily basis, or as directed by the department.

(2) Reporting.

(a) The purveyor installing filtration shall report to the department as soon as possible, but no later than twenty-four hours after the purveyor learns of any of the following events:

(i) A waterborne disease outbreak potentially attributable to the water system occurs;

(ii) The turbidity of water delivered to the public exceeds 5.0 NTU; or

(iii) The interim disinfection requirements under WAC 246-290-672 are not met.

(b) The purveyor shall report results of monitoring to the department. Monthly report forms shall be submitted within ten days after the end of each month the system served water to the public.

(c) The purveyor shall report, at a minimum, all the information requested by the department using a department-approved form or format including:

(i) Water quality information, including results of monitoring in accordance with WAC 246-290-300 and 246-290-320;

(ii) Disinfection monitoring information;

(iii) A summary of water quality complaints received from consumers served by the system.

[Statutory Authority: RCW 43.20.050 (2) and (3) and 70.119A.080. 03-08-037, § 246-290-674, filed 3/27/03, effective 4/27/03. Statutory Authority: RCW 43.02.050 [43.20.050]. 99-07-021, § 246-290-674, filed 3/9/99, effective 4/9/99. Statutory Authority: RCW 43.20.050. 93-08-011 (Order 352B), § 246-290-674, filed 3/25/93, effective 4/25/93.]

WAC 246-290-676 Filtration technology and design criteria.

(1) General.

(a) The purveyor proposing to construct new water treatment facilities or to make additions to existing water treatment facilities for surface and GWI sources shall ensure that the facilities comply with the treatment, design, and reliability requirements of Part 6 of chapter 246-290 WAC.

(b) The purveyor shall submit an engineering report to the department describing how the treatment facilities will be designed to comply with the requirements specified in Subparts A, B, and C of Part 6 of chapter 246-290 WAC.

(2) Filtration technology.

(a) The purveyor shall select a filtration technology acceptable to the department using criteria such as those outlined in department guidance on surface water treatment. The following filtration technologies are considered acceptable:

(i) Conventional;

(ii) Direct;

(iii) Diatomaceous earth; and

(iv) Slow sand.

(b) In addition to the technologies specified in subsection (1) of this section, alternate filtration technologies may be acceptable, if the purveyor demonstrates to the department's satisfaction all of the following:

(i) Through acceptable third party testing, that system components do not leach or otherwise add substances to the finished water that would violate drinking water standards, or otherwise pose a threat to public health;

(ii) The technology's effectiveness in achieving at least 99 percent (2 log) removal of *Giardia lamblia* cysts or cyst surrogate particles, and at least 99 percent (2 log) removal of *Cryptosporidium* oocysts or oocyst surrogate particles. The purveyor shall further demonstrate the technology's removal capability through research conducted:

(A) By a party acceptable to the department; and

(B) In accordance with protocol and standards acceptable to the department.

(iii) Through on-site pilot plant studies or other means, that the filtration technology:

(A) In combination with disinfection treatment consistently achieves 99.9 percent (3 log) removal and inactivation of *Giardia lamblia* cysts and 99.99 percent (4 log) removal and inactivation of viruses; and

(B) Meets the applicable turbidity performance requirements as determined by the department for the specific treatment process being considered, but in no case to exceed 1.0 NTU for the finished water.

(3) Pilot studies.

(a) The purveyor shall ensure pilot studies are conducted for all proposed filtration facilities, except where waived based on engineering justification acceptable to the department.

(b) The purveyor shall obtain department approval for the pilot study plan before the pilot filter is constructed and before the pilot study is undertaken.

(c) The pilot study plan shall identify at a minimum:

(i) Pilot filter design;

(ii) Water quality and operational parameters to be monitored;

(iii) Type of data to be collected, frequency of data collection, and length of pilot study; and

(iv) Pilot plant operator qualifications.

(d) The purveyor shall ensure that the pilot study is:

(i) Conducted to simulate proposed full-scale design conditions;

(ii) Conducted over a time period that will demonstrate the effectiveness and reliability of the proposed treatment system during changes in seasonal and climatic conditions; and

(iii) Designed and operated in accordance with good engineering practices and that ANSI/NSF standards 60 and 61 are considered.

(e) When the pilot study is complete, the purveyor shall submit a project report to the department for approval in accordance with WAC 246-290-110.

(4) Design criteria.

(a) The purveyor shall ensure that water treatment facilities for surface and GWI sources are designed and constructed in accordance with good engineering practices documented in references such as those identified in WAC 246-290-200.

(b) Filtration facilities.

(i) The purveyor shall ensure that all new filtration facilities and improvements to any existing filtration facilities (excluding disinfection) are designed to achieve at least 99 percent (2 log) removal of *Giardia lamblia* cysts, and 99 percent (2 log) removal of *Cryptosporidium* oocysts; and

(ii) The purveyor shall ensure that all new filtration facilities contain provisions for filtering to waste with appropriate measures for backflow prevention.

(c) The purveyor shall ensure that disinfection systems for new filtration facilities or improvements to existing disinfection facilities are designed to meet the requirements of WAC 246-290-662.

[Statutory Authority: RCW 43.20.050 (2) and (3) and 70.119A.080. 03-08-037, § 246-290-676, filed 3/27/03, effective 4/27/03. Statutory Authority: RCW 43.02.050 [43.20.050]. 99-07-021, § 246-290-676, filed 3/9/99, effective 4/9/99. Statutory Authority: RCW 43.20.050. 93-08-011 (Order 352B), § 246-290-676, filed 3/25/93, effective 4/25/93.]

WAC 246-290-678 Reliability for filtered systems.

(1) The purveyor shall ensure that reliability features are included in all water treatment facilities used to treat surface or GWI sources.

(2) Reliability features shall include but not be limited to:

(a) Alarm devices to provide warning of treatment process failures including coagulation, filtration, and disinfection. Alarm devices shall warn individuals responsible for taking corrective action and/or provide for automatic plant shutdown until corrective action can be taken;

(b) Standby replacement equipment available to assure continuous operation and control of coagulation, clarification, filtration and disinfection processes;

(c) Multiple filter units that provide redundant capacity when filters are out of service for backwash or maintenance, except where waived based on engineering justification acceptable to the department.

(3) The department may accept alternatives to the requirements specified in subsection (2) of this section, if the purveyor demonstrates to the department's satisfaction that the proposed alternative will assure an equal degree of reliability.

[Statutory Authority: RCW 43.02.050 [43.20.050]. 99-07-021, § 246-290-678, filed 3/9/99, effective 4/9/99. Statutory Authority: RCW 43.20.050. 93-08-011 (Order 352B), § 246-290-678, filed 3/25/93, effective 4/25/93.]

Subpart D - Requirements for Other Unfiltered Systems

WAC 246-290-686 Compliance requirements for unfiltered systems.

(1) The purveyor using an unfiltered surface or GWI source shall comply with:

(a) Subparts A and D of Part 6 of chapter 246-290 WAC; and

(b) All other applicable sections of this chapter.

(2) The purveyor purchasing water from a system using a surface or GWI source shall comply with:

(a) The applicable requirements of Subpart A of Part 6 of chapter 246-290 WAC;

(b) The disinfection, monitoring and reporting requirements under WAC 246-290-692 (5)(b), 246-290-694 (8)(b) and 246-290-696(4) respectively when purchasing completely treated surface or GWI water; or

(c) The treatment technique, monitoring and reporting requirements as directed by the department when the purveyor is purchasing incompletely treated surface or GWI water.

(3) The purveyor using an unfiltered GWI source shall be subject to the effective dates, compliance requirements, and violations specified in Table 12.

Table 12
Compliance Requirements for Systems Using Unfiltered GWI Sources

Requirements Become Effective	Applicable Part 6 Requirements	Violation Type	
		Turbidity MCL	Treatment Technique
Six months after GWI determination	Only Analytical, Monitoring and Reporting Requirements (WAC 246-290-638, 246- 290-694 and 246-290- 696 respectively)	Refer to 40 CFR 141.13 and 141.22	Not in effect yet
Eighteen months after GWI determination	Subparts A and D	No longer in effect	In effect as defined in WAC 246- 290-632

(4) Purveyors of **community** systems using surface water sources had the option to remain unfiltered if they demonstrated compliance with the department's criteria to remain unfiltered by December 30, 1991.

(5) A purveyor that served water to the public before January 1, 1991, using a GWI source may have that source remain unfiltered, if, within eighteen months of GWI determination, the purveyor complies with Part 6 of this chapter and, the source water quality and site-specific conditions under WAC 246-290-690 or 246-290-691 as demonstrated through monitoring conducted in accordance with WAC 246-290-694.

(6) The purveyor with sources that are approved to remain unfiltered shall comply with the source water quality and site-specific conditions under WAC 246-290-690 or 246-290-691 as demonstrated through monitoring conducted in accordance with WAC 246-290-694.

(7) The purveyor shall install filtration when the system fails to meet one or more of the source water quality and site-specific conditions under WAC 246-290-690 and 246-290-691, or the department determines that installation of filtration is necessary to protect the health of consumers served by the water system.

(8) The purveyor, in response to a written notification by the department, shall install filtration within eighteen months.

(9) The purveyor may comply with the requirements to install filtration by:

(a) Constructing a water treatment facility that is designed, operated, and maintained in accordance with Subparts A, B, and C of Part 6 of this chapter;

(b) Satisfying the source water quality and site-specific criteria specified in WAC 246-290-691 and constructing treatment facilities that are designed, operated, and maintained to provide a limited alternative to filtration in accordance with WAC 246-290-692; or

(c) Abandoning the surface water or GWI source, and:

(i) Developing an alternate, department-approved ground water source; or

(ii) Purchasing completely treated water from a department-approved public water system.

[Statutory Authority: RCW 43.02.050 [43.20.050]. 99-07-021, § 246-290-686, filed 3/9/99, effective 4/9/99. Statutory Authority: RCW 43.20.050. 94-14-001, § 246-290-686, filed 6/22/94, effective 7/23/94; 93-08-011 (Order 352B), § 246-290-686, filed 3/25/93, effective 4/25/93.]

WAC 246-290-690 Criteria to remain unfiltered.

(1) For a system not using the "limited alternative to filtration" option to remain unfiltered, the purveyor using a surface water or GWI source shall meet the source water quality and site-specific conditions under this section, as demonstrated through monitoring conducted in accordance with WAC 246-290-694.

(2) Source water quality conditions necessary to remain unfiltered.

(a) Coliform limits.

(i) The purveyor shall ensure that representative source water samples taken before the first point of disinfection have a fecal coliform density less than or equal to 20/100 ml in ninety percent or more of all samples taken during the six previous calendar months the system served water to the public. Samples collected on days

when source water turbidity exceeds 1.0 NTU shall be included when determining compliance with this requirement.

(ii) The purveyor shall submit a written report to the department if no source fecal coliform data has been submitted for days when source turbidity exceeded 1.0 NTU. The report shall document why sample results are not available and shall be submitted with the routine monitoring reports for the month in which the sample results are not available.

(b) Turbidity limits.

(i) The purveyor shall ensure that the turbidity level in representative source water samples taken before primary disinfection does not exceed 5.0 NTU.

(ii) A system failing to meet the turbidity requirements in (b)(i) of this subsection may remain unfiltered, if:

(A) The purveyor demonstrates to the department's satisfaction that the most recent turbidity event was caused by unusual and unpredictable circumstances; and

(B) Including the most recent turbidity event, there have not been more than:

(I) Two turbidity events in the twelve previous calendar months the system served water to the public; or

(II) Five turbidity events in the one-hundred-twenty previous calendar months the system served water to the public.

(iii) The purveyor of a system experiencing a turbidity event shall submit a written report to the department documenting why the turbidity event(s) occurred. The purveyor shall submit the report with the routine monitoring reports for the month in which the turbidity event(s) occurred.

(iv) The purveyor of a system with alternate, department-approved sources or sufficient treated water storage may avoid a turbidity event by implementing operational adjustments to prevent water with a turbidity exceeding 5.0 NTU from being delivered to consumers.

(v) When an alternate source or treated water storage is used during periods when the turbidity of the surface or GWI source exceeds 5.0 NTU, the purveyor shall not put the surface or GWI source back on-line, until the source water turbidity is 5.0 NTU or less.

(3) Site-specific conditions to remain unfiltered.

(a) Level of inactivation.

(i) The purveyor shall ensure that the *Giardia lamblia* cyst and virus inactivation levels required under WAC 246-290-692(1) are met in at least eleven of the twelve previous calendar months that the system served water to the public.

(ii) A system failing to meet the inactivation requirements during two of the twelve previous calendar months that the system served water to the public may remain unfiltered, if the purveyor demonstrates to the department's satisfaction that at least one of the failures was caused by unusual and unpredictable circumstances.

(iii) To make such a demonstration, the purveyor shall submit to the department a written report documenting the reasons for the failure. The purveyor shall submit the report with the routine monitoring reports for the month in which the failure occurred.

(b) Redundant disinfection components or automatic shut-off.

The purveyor shall ensure that the requirement for redundant disinfection system components or automatic shut-off of water to the distribution system under WAC 246-290-692(3) is met at all times the system serves water to the public.

(c) Disinfectant residual entering the distribution system.

(i) The purveyor shall ensure that the requirement for having a residual entering the distribution system under WAC 246-290-692(4) is met at all times the system serves water to the public.

(ii) A system failing to meet the disinfection requirement under (c)(i) of this subsection may remain unfiltered, if the purveyor demonstrates to the department's satisfaction that the failure was caused by unusual and unpredictable circumstances.

(iii) To make such a demonstration, the purveyor shall submit to the department a written report documenting the reasons for the failure. The purveyor shall submit the report with the routine monitoring reports for the month in which the failure occurred.

(d) Disinfectant residuals within the distribution system.

(i) The purveyor shall ensure that the requirement for maintaining a residual within the distribution system under WAC 246-290-692(5) is met on an ongoing basis.

(ii) A system failing to meet the disinfection requirements under (d)(i) of this subsection may remain unfiltered, if the purveyor demonstrates to the department's satisfaction that the failure was caused by something other than a deficiency in source water treatment.

(iii) To make such a demonstration, the purveyor shall submit to the department a written report documenting the reasons for the failure. The purveyor shall submit the report with the routine monitoring reports for the month in which the failure occurred.

(e) Watershed control.

(i) The purveyor shall develop and implement a department-approved watershed control program.

(ii) The purveyor shall monitor, limit, and control all facilities and activities in the watershed affecting source quality to preclude degradation of the physical, chemical, microbiological (including viral contamination and contamination by *Cryptosporidium* oocysts), and radiological quality of the source. The purveyor shall demonstrate, through ownership and/or written agreements acceptable to the department, control of all human activities that may adversely impact source quality.

(iii) At a minimum, the purveyor's watershed control program shall:

(A) Characterize the watershed hydrology and land ownership;

(B) Identify watershed characteristics and activities that may adversely affect source water quality; and

(C) Monitor the occurrence of activities that may adversely affect source water quality.

(iv) If the department determines significant changes have occurred in the watershed, the purveyor shall submit, within ninety days of notification, an updated watershed control program to the department for review and approval.

(v) The department may require an unfiltered system to conduct additional monitoring to demonstrate the adequacy of the watershed control program.

(vi) A purveyor shall be considered out of compliance when failing to:

(A) Have a department-approved watershed control program;

(B) Implement the watershed control program to the satisfaction of the department; or

(C) Conduct additional monitoring as directed by the department.

(f) On-site inspections.

(i) The department shall conduct on-site inspections to assess watershed control and disinfection treatment.

(ii) The department shall conduct annual inspections unless more frequent inspections are deemed necessary to protect the health of consumers served by the system.

(iii) For a system to remain unfiltered, the on-site inspection shall indicate to the department's satisfaction that the watershed control program and disinfection treatment comply with (e) of this subsection and WAC 246-290-692, respectively.

(iv) The purveyor with unsatisfactory on-site inspection results shall take action as directed by the department in accordance with a department-established schedule.

(g) Waterborne disease outbreak.

(i) To remain unfiltered, a system shall not have been identified by the department as the cause of a waterborne disease outbreak attributable to a failure in treatment of the surface or GWI source.

(ii) The purveyor of a system identified by the department as the cause of a waterborne disease outbreak may remain unfiltered, if the purveyor demonstrates to the department's satisfaction that system facilities and/or operations have been sufficiently modified to prevent another waterborne disease outbreak.

(h) Total coliform MCL.

(i) For a system to remain unfiltered, the purveyor shall ensure that the MCL for total coliform under WAC 246-290-310 is met in at least eleven of the twelve previous calendar months the system served water to the public.

(ii) A system failing to meet the criteria in (i) of this subsection, may remain unfiltered, if the purveyor demonstrates to the department's satisfaction that the total coliform MCL violations were not caused by a deficiency in source water treatment.

(iii) The department shall determine the adequacy of source water treatment based on results of total coliform monitoring at the entry to the distribution system in accordance with WAC 246-290-694(3).

(i) Disinfectant residuals MRDL and disinfection by-products MCLs - Monitoring and compliance.

For a system to remain unfiltered, the purveyor shall comply with the monitoring and MCL requirements under WAC 246-290-300(7) and 246-290-310 (5) and (6), respectively.

(j) Laboratory services.

(i) For a system to remain unfiltered, the purveyor shall retain the services of the public health laboratory or another laboratory certified by the department to analyze samples for total and fecal coliform. Laboratory services shall be available on an as needed basis, seven days a week, including holidays. The purveyor shall identify in the annual comprehensive report required under WAC 246-290-696 the certified laboratory providing these services.

(ii) The department may waive this requirement, if the purveyor demonstrates to the department's satisfaction that an alternate, department-approved source is used when the turbidity of the surface or GWI source exceeds 1.0 NTU.

[Statutory Authority: RCW 43.20.050 (2) and (3) and 70.119A.080. 03-08-037, § 246-290-690, filed 3/27/03, effective 4/27/03. Statutory Authority: RCW 43.02.050 [43.20.050]. 99-07-021, § 246-290-690, filed 3/9/99, effective 4/9/99. Statutory Authority: RCW 43.20.050. 93-08-011 (Order 352B), § 246-290-690, filed 3/25/93, effective 4/25/93.]

WAC 246-290-691 Criteria for unfiltered systems with a "limited alternative to filtration" to remain unfiltered.

(1) For a system providing a limited alternative to filtration, the purveyor using a surface water or GWI source shall meet the source quality and site-specific conditions under this section.

(2) Source water turbidity requirements.

(a) The purveyor shall ensure that the turbidity level in representative source water samples taken before primary disinfection does not exceed 5.0 NTU.

(b) A system with more than two turbidity events in the twelve previous calendar months the water was served to the public or more than five turbidity events in the one hundred twenty previous calendar months the water was served to the public shall expand the scope of its next annual comprehensive report required under WAC 246-290-696(6) to include:

(i) A description of the events;

(ii) A summary of previous turbidity events;

(iii) A proposed plan of corrective action; and

(iv) A schedule for implementing the action plan.

(3) Site-specific requirements.

(a) Level of inactivation.

(i) The purveyor shall ensure that the removal and/or inactivation levels required under WAC 246-290-630(11) are met in at least eleven of the twelve previous calendar months that the system served water to the public.

(ii) A system failing to meet the inactivation requirements in (a)(i) of this subsection in two or more months of the previous twelve calendar months the system served water to the public shall expand the scope of its annual comprehensive report required under WAC 246-290-696(6) to include:

(A) A description of the failure(s);

(B) A summary of previous inactivation failures;

(C) A proposed plan of corrective action; and

(D) A schedule for implementing the action plan.

(b) Watershed control.

(i) The watershed must not be allowed to be inhabited, except for those designated individuals and for those periods of time each year that would be directly associated with the protection of the watershed.

(ii) The purveyor shall develop and implement a department-approved watershed control program.

(iii) The purveyor shall monitor, limit, and control all facilities and activities in the watershed affecting source quality to preclude degradation of the physical, chemical, microbiological (including viral and *Cryptosporidium* oocysts contamination), and radiological quality of the source. The purveyor shall demonstrate, through ownership and/or written agreements acceptable to the department, control of all human activities that may adversely impact source quality.

(iv) At a minimum, the purveyor's watershed control program shall:

(A) Characterize the watershed hydrology and land ownership;

(B) Identify watershed characteristics and activities that may adversely affect source water quality; and

(C) Monitor the occurrence of activities that may adversely affect source water quality.

(v) If the department determines significant changes have occurred in the watershed, the purveyor shall submit, within ninety days of notification, an updated watershed control program to the department for review and approval.

(vi) The purveyor may be required to conduct additional monitoring to demonstrate the adequacy of the watershed control program.

(vii) A purveyor shall be considered out of compliance when failing to:

(A) Have a department-approved watershed control program;

(B) Implement the watershed control program to the satisfaction of the department;

(C) Conduct additional monitoring as directed by the department; or

(D) Prevent the human inhabitation of the watershed, except during the periods of time when conducting watershed protection activities as provided in (b)(i) of this subsection.

(c) On-site inspections.

(i) The purveyor shall submit to on-site inspections by the department to assess watershed control and disinfection treatment.

(ii) The purveyor shall submit to annual inspections by the department unless more frequent inspections are deemed necessary to protect the health of consumers served by the system.

(iii) The purveyor with unsatisfactory on-site inspection results shall take action as directed by the department in accordance with a department-established schedule.

(d) Waterborne disease outbreak.

(i) The system shall not be identified by the department as the cause of a waterborne disease outbreak attributable to a failure in treatment of the surface or GWI source.

(ii) A system identified by the department as the cause of a waterborne disease in (d)(i) of this subsection shall expand the scope of its annual comprehensive report required under WAC 246-290-696(6) to include:

(A) A description of the outbreak;

(B) A summary of previous waterborne disease outbreaks attributed to the system;

(C) A proposed plan of corrective action; and

(D) A schedule for implementing the action plan.

[Statutory Authority: RCW 43.20.050 (2) and (3) and 70.119A.080. 03-08-037, § 246-290-691, filed 3/27/03, effective 4/27/03. Statutory Authority: RCW 43.02.050 [43.20.050]. 99-07-021, § 246-290-691, filed 3/9/99, effective 4/9/99.]

WAC 246-290-692 Disinfection for unfiltered systems.

(1) General requirements.

(a) The purveyor without a limited alternative to filtration shall provide continuous disinfection treatment to ensure at least 99.9 percent (3 log) inactivation of *Giardia lamblia* cysts and 99.99 percent (4 log) inactivation of viruses at all times the system serves water to the public.

(b) The purveyor with a limited alternative to filtration shall meet the treatment requirements in WAC 246-290-630(11) at all times the system serves water to the public.

(c) The purveyor may be required to provide greater levels of inactivation of *Giardia lamblia* cysts, other pathogenic microorganisms of public health concern, and viruses to protect the health of consumers.

(d) Failure to meet the inactivation level requirements of WAC 246-290-690 (3)(a) or 246-290-691 (3)(a) shall be considered a violation.

(2) Determining the level of inactivation.

(a) Each day the system without a limited alternative to filtration serves water to the public, the purveyor, using procedures and $CT_{99.9}$ values specified in 40 CFR 141.74, Vol. 54, No. 124, (published June 29, 1989, and copies of which are available from the department), shall determine:

(i) CT values using the system's treatment parameters and calculate the total inactivation ratio achieved by disinfection; and

(ii) Whether the system's disinfection treatment process is achieving the minimum levels of inactivation of *Giardia lamblia* cysts and viruses required by the department. For purposes of determining compliance with the inactivation requirements specified in subsection (1) of this section, no credit shall be granted for disinfection applied to a source water with a turbidity greater than 5.0 NTU.

(b) Each day the system with a limited alternative to filtration serves water to the public, the purveyor, using appropriate guidance, shall determine:

(i) CT values using the system's treatment parameters and calculate the total inactivation ratio achieved by disinfection; and

(ii) Whether the system's treatment process is achieving the minimum levels of inactivation of *Giardia lamblia* cysts, viruses, or other pathogenic organisms of health concern including *Cryptosporidium* oocysts that would be greater than what would be expected from the combination of filtration plus chlorine disinfection.

(c) The purveyor shall be considered in compliance with the daily inactivation requirement when a total inactivation ratio equal to or greater than 1.0 is achieved.

(d) The purveyor of a system using a disinfectant or combination of disinfectants may use CT values lower than those specified in (a) of this subsection, if the purveyor demonstrates to the department's satisfaction that the required levels of inactivation of *Giardia lamblia* cysts, viruses, and, if providing a limited alternative to filtration, any other pathogenic organisms of public health concern including *Cryptosporidium* oocysts, can be achieved using the lower CT values.

(e) The purveyor of a system using preformed chloramines or adding ammonia to the water before chlorine shall demonstrate to the department's satisfaction that the system achieves at least 99.99 percent (4 log) inactivation of viruses.

(3) The purveyor using either unfiltered or "limited alternative to filtration" treated sources shall ensure that disinfection facilities provide either:

(a) Redundant components, including an auxiliary power supply with automatic start-up and alarm, to ensure continuous disinfection. Redundancy shall ensure that both the minimum inactivation requirements and the requirement for a 0.2 mg/L residual disinfectant concentration at entry to the distribution system are met at all times water is delivered to the distribution system; or

(b) Automatic shut-off of delivery of water to the distribution system when the residual disinfectant concentration in the water is less than 0.2 mg/L. Automatic shut-off shall be allowed only in systems where the purveyor demonstrates to the department's satisfaction that automatic shutoff will not endanger health or interfere with fire protection.

(4) Disinfectant residual entering the distribution system.

(a) The purveyor shall ensure that water entering the distribution system contains a residual disinfectant concentration, measured as free or combined chlorine, of at least 0.2 mg/L at all times the system serves water to the public; and

(b) Failure to provide a 0.2 mg/L residual at entry to distribution for more than four hours on any day shall be considered a treatment technique violation.

(5) Disinfectant residuals within the distribution system.

(a) The purveyor shall ensure that the residual disinfectant concentration in the distribution system, measured as total chlorine, free chlorine, combined chlorine, or chlorine dioxide, is detectable in at least ninety-five percent of the samples taken each calendar month.

(b) The purveyor of a system that purchases completely treated surface or GWI water as determined by the department shall comply with the requirements specified in (a) of this subsection.

(c) Water in the distribution system with an HPC level less than or equal to 500 organisms/ml is considered to have a detectable residual disinfectant concentration.

[Statutory Authority: RCW 43.20.050 (2) and (3) and 70.119A.080. 03-08-037, § 246-290-692, filed 3/27/03, effective 4/27/03. Statutory Authority: RCW 43.02.050 [43.20.050]. 99-07-021, § 246-290-692, filed 3/9/99, effective 4/9/99. Statutory Authority: RCW 43.20.050. 94-14-001, § 246-290-692, filed 6/22/94, effective 7/23/94; 93-08-011 (Order 352B), § 246-290-692, filed 3/25/93, effective 4/25/93.]

WAC 246-290-694 Monitoring for unfiltered systems.

(1) Source coliform monitoring for systems without a limited alternative to filtration.

(a) The purveyor shall ensure that source water samples of each surface or GWI source are representative and:

(i) Collected before the first point of disinfectant application; and

(ii) Analyzed for fecal coliform density in accordance with methods acceptable to the department.

(b) The purveyor shall ensure source samples are collected for fecal coliform analysis each week the system serves water to the public based on the following schedule:

Population Served	Minimum Number/week*
25 - 500	1
501 - 3,300	2
3,301 - 10,000	3
10,001 - 25,000	4
>25,000	5

*Must be taken on separate days.

(c) Each day the system serves water to the public and the turbidity of the source water exceeds 1.0 NTU, the purveyor shall ensure one representative source water sample is collected before the first point of disinfectant application and analyzed for fecal coliform density. This sample shall count toward the weekly source coliform sampling requirement.

(d) A purveyor shall not be considered in violation of (c) of this subsection, if the purveyor demonstrates to the department's satisfaction that, for valid logistical reasons outside the purveyor's control, the additional fecal coliform sample could not be analyzed within a time frame acceptable to the department.

(2) Source coliform monitoring for systems with a limited alternative to filtration.

(a) The purveyor shall ensure that source water samples of each surface or GWI source are:

(i) Collected before the first point of primary disinfection; and

(ii) Analyzed for fecal coliform density in accordance with methods acceptable to the department.

(b) At a minimum, the purveyor shall ensure source samples are collected for fecal coliform analysis at a frequency equal to ten percent the number of routine coliform samples collected within the distribution system each month under WAC 246-290-300, or once per calendar month, whichever is greater, up to a maximum of one sample per day.

(3) Coliform monitoring at entry to distribution for systems without a limited alternative to filtration.

(a) The purveyor shall collect and have analyzed one coliform sample at the entry point to the distribution system each day that a routine or repeat coliform sample is collected within the distribution system under WAC 246-290-300(3) or 246-290-320(2), respectively.

(b) The purveyor shall use the results of the coliform monitoring at entry to distribution along with inactivation ratio monitoring results to demonstrate the adequacy of source treatment.

(4) Source turbidity monitoring for systems without a limited alternative to filtration.

(a) The purveyor shall continuously monitor and record turbidity:

(i) On representative source water samples before the first point of primary disinfectant application; and

(ii) In accordance with the analytical techniques under WAC 246-290-638.

(b) If source water turbidity is not the same as the turbidity of water delivered to consumers, the purveyor shall continuously monitor and record turbidity of water delivered.

(5) Source turbidity monitoring for systems with a limited alternative to filtration. The purveyor shall:

(a) Continuously monitor turbidity on representative source samples before the first point of primary disinfection application;

(b) Record continuous turbidity measurements at equal intervals, of at least four hours, in accordance with a department-approved sampling schedule; and

(c) Conduct monitoring in accordance with the analytical techniques under WAC 246-290-638.

(6) Monitoring the level of inactivation.

(a) Each day the system is in operation, the purveyor shall determine the total level of inactivation of *Giardia lamblia* cysts, viruses, and, if providing a limited alternative to filtration, any other pathogenic organisms of health concern including *Cryptosporidium* oocysts, achieved through disinfection.

(b) At least once per day, the purveyor shall monitor the following parameters to determine the total inactivation ratio achieved through disinfection:

(i) Temperature of the disinfected water at each residual disinfectant concentration sampling point used for CT calculations; and

(ii) If using chlorine, pH of the disinfected water at each chlorine residual disinfectant concentration sampling point used for CT calculations.

(c) Each day during peak hourly flow, the purveyor shall:

(i) Determine disinfectant contact time, T, to the point at which C is measured; and

(ii) Measure the residual disinfectant concentration, C, of the water at the point for which T is calculated. The C measurement point must be before or at the first consumer.

(7) Monitoring the residual disinfectant concentration entering the distribution system for either unfiltered systems, or systems using a limited alternative to filtration.

(a) Systems serving more than thirty-three hundred people.

(i) The purveyor shall continuously monitor and record the residual disinfectant concentration of water entering the distribution system and report the lowest value each day.

(ii) If the continuous monitoring equipment fails, the purveyor shall measure the residual disinfectant concentration on grab samples collected at least every four hours at the entry to the distribution system while the equipment is being repaired or replaced. The purveyor shall have continuous monitoring equipment back on-line within five working days following failure.

(b) Systems serving thirty-three hundred or less people.

(i) The purveyor shall collect grab samples or use continuous monitoring and recording to measure the residual disinfectant concentration entering the distribution system.

(ii) A purveyor choosing to take grab samples shall collect:

(A) Samples at the following minimum frequencies:

Population Served	Number/day
25 - 500	1
501 - 1,000	2
1,001 - 2,500	3
2,501 - 3,300	4

(B) At least one of the grab samples at peak hourly flow based on historical flows for the system; and

(C) The remaining sample or samples at intervals evenly spaced over the time the system is disinfecting water that will be delivered to the public.

(iii) When grab samples are collected and the residual disinfectant concentration at the entry to distribution falls below 0.2 mg/L, the purveyor shall collect a grab sample every four hours until the residual disinfectant concentration is 0.2 mg/L or more.

(8) Monitoring residual disinfectant concentration within the distribution system for either unfiltration systems, or systems using a limited alternative to filtration.

(a) The purveyor shall measure the residual disinfectant concentration within the distribution system at the same time and location that a routine or repeat coliform sample is collected in accordance with WAC 246-290-300(3) or 246-290-320(2) or once per day, whichever is greater.

(b) The purveyor of a system that purchases completely treated surface or GWI water as determined by the department shall comply with the requirements of (a) of this

subsection or as otherwise directed by the department under WAC 246-290-300 (2)(c). At a minimum, the purveyor shall measure the residual disinfectant concentration within the distribution system at the same time and location that a routine or repeat coliform sample is collected in accordance with WAC 246-290-300(3) or 246-290-320(2).

(c) The purveyor may measure HPC within the distribution system in lieu of measuring the residual disinfectant concentration in accordance with this subsection.

[Statutory Authority: RCW 43.20.050 (2) and (3) and 70.119A.080. 03-08-037, § 246-290-694, filed 3/27/03, effective 4/27/03. Statutory Authority: RCW 43.02.050 [43.20.050]. 99-07-021, § 246-290-694, filed 3/9/99, effective 4/9/99. Statutory Authority: RCW 43.20.050. 94-14-001, § 246-290-694, filed 6/22/94, effective 7/23/94; 93-08-011 (Order 352B), § 246-290-694, filed 3/25/93, effective 4/25/93.]

WAC 246-290-696 Reporting for unfiltered systems.

(1) The purveyor shall report to the department as soon as possible, but no later than twenty-four hours after the purveyor learns of any of the following events:

(a) A waterborne disease outbreak potentially attributable to the water system occurs;

(b) The turbidity of water delivered to the public exceeds 5.0 NTU;

(c) The minimum level of inactivation required by the department is not met;

(d) The residual disinfectant concentration falls below 0.2 mg/L at the entry point to the distribution system. The purveyor shall also report whether the residual was restored to 0.2 mg/L or more within four hours; or

(e) The surface or GWI source is taken off-line due to an emergency.

(2) The purveyor shall report results of monitoring conducted in accordance with WAC 246-290-694 to the department. Monthly report forms shall be submitted within ten days after the end of each month the system served water to the public.

(3) The purveyor shall report, at a minimum, all the information requested by the department using a department-approved form or format including:

(a) Water quality information, including the results of both:

(i) Source coliform monitoring; and

(ii) Source turbidity monitoring.

(b) Disinfection monitoring information, including:

(i) Level of inactivation achieved;

(ii) Residual disinfectant concentrations entering the distribution system; and

(iii) Residual disinfectant concentrations within the distribution system.

(c) A summary of water quality complaints received from consumers served by the water system.

(4) The purveyor of a system that purchases completely treated water shall:

(a) Report results of distribution system residual disinfectant concentration monitoring to the department using department-approved forms or format; and

(b) Submit forms to the department in accordance with subsection (2) of this section or as otherwise directed by the department.

(5) A person certified under chapter 246-292 WAC shall complete and sign the monthly report forms required in this section.

(6) Beginning in 1992, by October 10th of each year, the purveyor shall submit to the department an annual comprehensive report that summarizes the:

(a) Effectiveness of the watershed control program and identifies, at a minimum, the following:

(i) Activities in the watershed that are adversely affecting source water quality;

(ii) Changes in the watershed that have occurred within the previous year that could adversely affect source water quality;

(iii) Activities expected to occur in the watershed in the future and how the activities will be monitored and controlled;

(iv) The monitoring program the purveyor uses to assess the adequacy of watershed protection including an evaluation of sampling results; and

(v) Special concerns about the watershed and how the concerns are being addressed;

(b) System's compliance with the criteria to remain unfiltered under WAC 246-290-690, or, when applicable, the criteria required if the system provides a limited alternative to filtration under WAC 246-290-691; and

(c) Significant changes in system design and/or operation that have occurred within the previous year that impact the ability of the system to comply with the criteria to remain unfiltered, or, if applicable, the ability of the system to provide a limited alternative to filtration in accordance with WAC 246-290-692.

(7) The purveyor of a system attempting to remain unfiltered or to remain with a limited alternative to filtration shall submit a *Filtration Decision Report* at the request of the department. The report shall:

(a) Provide the information by which the department may determine whether a system continues to meet the criteria to remain unfiltered or, if applicable, the criteria allowing the provision of a limited alternative to filtration; and

(b) Be submitted on a schedule as specified by the department.

[Statutory Authority: RCW 43.20.050 (2) and (3) and 70.119A.080. 03-08-037, § 246-290-696, filed 3/27/03, effective 4/27/03. Statutory Authority: RCW 43.02.050 [43.20.050]. 99-07-021, § 246-290-696, filed 3/9/99, effective 4/9/99. Statutory Authority: RCW 43.20.050. 94-14-001, § 246-290-696, filed 6/22/94, effective 7/23/94; 93-08-011 (Order 352B), § 246-290-696, filed 3/25/93, effective 4/25/93.]

Part 7. Reporting

Subpart A - Public Notification and Consumer Information

WAC 246-290-71001 Public notification.

(1) The purveyor shall notify the water system users and the owner or operator of any consecutive water system served in accordance with 40 CFR 141.201 through 208. Notice is to be provided when the system violates a National Primary Drinking Water Regulation and when any of the situations listed in Table 1 of 40 CFR 141.201 occur, except for (3)(b). Public notifications for violations and other situations are categorized into Tiers in accordance with the following:

(a) Tier 1 as described in Table 1 of 40 CFR 141.202(a);

(b) Tier 2 as described in Table 1 of 40 CFR 141.203(a); or

(c) Tier 3 as described in Table 1 of 40 CFR 141.204(a).

(2) The purveyor shall initiate consultation with the department as soon as possible, but no later than twenty-four hours after they learn their system has a Tier 1 violation or situation in order to determine if additional public notice is required. The purveyor shall comply with any additional public notification requirements established as a result of the consultation.

(3) The purveyor shall notify the water system users when the system:

(a) Is issued a departmental order;

(b) Fails to comply with a departmental order; or

(c) Is issued a category red operating permit.

[Statutory Authority: RCW 43.20.050 (2) and (3) and 70.119A.080. 03-08-037, § 246-290-71001, filed 3/27/03, effective 4/27/03.]

WAC 246-290-71002 Public notice content.

(1) Public notices required under WAC 246-290-71001(1) shall contain the elements and standard language required under 40 CFR 141.205 (a), (b), and (d) and be presented in accordance with 40 CFR 141.205 (c), except that notification of the availability of unregulated contaminant results and notification of an exceedance of the secondary MCL for fluoride shall be in accordance with WAC 246-290-71005.

(2) Public notices required under WAC 246-290-71001 (3)(a) and (c) for the issuance of a departmental order or category red operating permit shall include:

(a) A clear, concise, and simple explanation of the violation;

(b) Discussion of potential adverse health effects and any segments of the population that may be at higher risk;

(c) Mandatory health effects information in accordance with WAC 246-290-71004(2);

(d) A list of steps the purveyor has taken or is planning to take to remedy the situation;

(e) A list of steps the consumer should take, including advice on seeking an alternative water supply if necessary;

(f) The purveyor's name and telephone number; and

(g) When appropriate, notices shall be bilingual or multilingual.

Note: The purveyor may provide additional information to further explain the situation

[Statutory Authority: RCW 43.20.050 (2) and (3) and 70.119A.080. 03-08-037, § 246-290-71002, filed 3/27/03, effective 4/27/03.]

WAC 246-290-71003 Public notification distribution.

(1) Purveyors must provide public notice as required under WAC 246-290-71001(1) according to Tier designation generally described in 40 CFR 141.201. The form, manner, timing and frequency for each Tier of public notice, as defined in Table 2 of 40 CFR 141.201 shall be in accordance with:

(a) 40 CFR 141.202 for Tier 1 public notice.

(b) 40 CFR 141.203 for Tier 2 public notice.

(c) 40 CFR 141.204 for Tier 3 public notice.

(2) In addition, notice to new billing units and consumers must be given in accordance with 40 CFR 141.206.

(3) Purveyors of community, NTNC and TNC systems shall provide notice as described in this subsection, or as described in a departmental order within three months of receipt of a departmental order, or a category red operating permit. The purveyor shall provide the department with a copy of the notice at the time the purveyor notifies the public.

(a) Purveyors of community and NTNC systems shall provide newspaper notice to water system users.

(i) "Newspaper notice," as used above, means publication in a daily newspaper of general circulation or in a weekly newspaper of general circulation if a daily newspaper does not serve the area. The purveyor may substitute a community or

homeowner's association newsletter or similar periodical publication if the newspaper reaches all affected consumers within the specified time.

(ii) The purveyor shall substitute a posted notice in the absence of a newspaper of general circulation or homeowner's association newsletter or similar periodical publication. The purveyor shall post the notice within the time frame specified in this subsection.

(b) Purveyors of TNC systems shall post a notice or notify consumers by other methods authorized by the department for receipt of a red operating permit.

(c) The purveyor shall place posted notices in conspicuous locations and present the notices in a manner making them easy to read. Notices shall remain posted until the violation is corrected.

(d) The purveyor of a community or NTNC water system shall give a copy of the most recent public notice for all outstanding violations to all new billing units or new hookups before or at the time water service begins.

[Statutory Authority: RCW 43.20.050 (2) and (3) and 70.119A.080. 03-08-037, § 246-290-71003, filed 3/27/03, effective 4/27/03.]

WAC 246-290-71004 Public notification mandatory language.

(1) Public notice required under WAC 246-290-71001(1) shall contain any specific health effects language set forth in WAC 246-290-72012 in accordance with 40 CFR 141.205 (d)(1) and other standard language in accordance with 40 CFR 141.205 (d)(2) and (3), except that notification of the availability of unregulated contaminant results and notification of the exceedance of the secondary MCL for fluoride shall be in accordance with WAC 246-290-71005.

(2) The purveyor shall provide specific mandatory language, contained in department guidance, in its notification when the purveyor is issued a category red operating permit.

[Statutory Authority: RCW 43.20.050 (2) and (3) and 70.119A.080. 03-08-037, § 246-290-71004, filed 3/27/03, effective 4/27/03.]

WAC 246-290-71005 Special public notification requirements.

(1) The purveyor of community or NTNC water systems required to monitor under WAC 246-290-300(8) shall notify the water system users of the availability of the results of monitoring for unregulated contaminants no later than twelve months after the monitoring results are known. The form and manner of the public notice to the water system users shall be in accordance with 40 CFR 141.204 (c), (d)(1), and (d)(3). The notice must also identify a person and provide the telephone number to contact for information on the monitoring results.

(2) The purveyor of a community water system that experiences a secondary MCL violation for fluoride shall provide notice, in accordance with the form, manner, timing and content requirements of 40 CFR 141.208.

[Statutory Authority: RCW 43.20.050 (2) and (3) and 70.119A.080. 03-08-037, § 246-290-71005, filed 3/27/03, effective 4/27/03.]

WAC 246-290-71006 Consumer information.

The purveyor shall provide consumer information to the water system users within twenty-one days of receipt of confirmation sample results when the department determines that a substance not included in this chapter is confirmed at a level greater than a SAL.

(1) Consumer information shall include:

(a) Name and level of chemical detected;

(b) Location where the chemical was detected;

(c) Any health effects that the chemical could cause at its present concentration;

(d) Plans for follow-up activities; and

(e) The purveyor's name and telephone number.

(2) Consumer information shall be distributed by any of the following methods:

(a) Notice placed in a daily newspaper of general circulation or in a weekly newspaper of general circulation if a daily newspaper does not serve the affected area;

(b) Direct mail to consumers;

(c) Posting for at least one week if a NTNC system; or

(d) Any other method approved by the department.

[Statutory Authority: RCW 43.20.050 (2) and (3) and 70.119A.080. 03-08-037, § 246-290-71006, filed 3/27/03, effective 4/27/03.]

WAC 246-290-71007 Public notification special provisions.

(1) When circumstances dictate, the purveyor shall give a broader or more immediate notice to protect public health. The department may require the purveyor's notification by whatever means necessary.

(2) When the state board of health grants a public water system a waiver, the purveyor shall notify consumers and new billing units or new customers before water service begins. The purveyor shall provide a notice annually and send a copy to the department.

(3) The department may give notice to the water system users and the owner or operator of any consecutive water system served as required by this section on behalf of the water purveyor. However, the purveyor remains responsible for ensuring Part 7, Subpart A requirements are met.

[Statutory Authority: RCW 43.20.050 (2) and (3) and 70.119A.080. 03-08-037, § 246-290-71007, filed 3/27/03, effective 4/27/03.]

Subpart B - Consumer Confidence Reports

WAC 246-290-72001 Purpose and applicability of the consumer confidence report requirements.

WAC 246-290-72001 through 246-290-72012 establishes minimum requirements for the content of annual reports that community water systems must deliver to their customers. These reports must contain information on the quality of the water delivered by the systems and characterize the risks (if any) from exposure to contaminants detected in the drinking water in an accurate and understandable manner.

(1) Notwithstanding the provisions of WAC 246-290-020, this section applies only to community water systems.

(2) For the purpose of WAC 246-290-72001 through 246-290-72012 :

(a) "Customers" means billing units or service connections to which water is delivered by a community water system.

(b) "Detected" means at or above the levels prescribed by WAC 246-290-300(4) for inorganic contaminants, at or above the levels prescribed by WAC 246-290-300(8) for organic contaminants, and at or above the levels prescribed by 40 CFR 141.25(c) for radioactive contaminants.

[Statutory Authority: RCW 43.20.050 (2) and (3) and 70.119A.080. 03-08-037, § 246-290-72001, filed 3/27/03, effective 4/27/03. Statutory Authority: RCW 43.20.050. 00-15-080, § 246-290-72001, filed 7/19/00, effective 8/19/00.]

WAC 246-290-72002 Reporting dates.

(1) Each existing community water system must deliver its report by July 1 annually. Each annual report must contain data collected during, or prior to, the previous calendar year as required by WAC 246-290-72005(3).

(2) A new community water system must deliver its first report by July 1 of the year after its first full calendar year in operation and annually thereafter.

(3) A community water system that sells water to another community water system must deliver the applicable information required in WAC 246-290-72003 through 246-290-72009 to the buyer system:

(a) No later than April 1 annually; or

(b) On a date mutually agreed upon by the seller and the purchaser, and specifically included in a contract between the parties.

[Statutory Authority: RCW 43.20.050. 00-15-080, § 246-290-72002, filed 7/19/00, effective 8/19/00.]

WAC 246-290-72003 Report contents – Source water.

Information on the source of the water delivered:

(1) Each report must identify the source(s) of the water delivered by the community water system by providing information on:

(a) The type of the water, for example, surface water, ground water, spring water, or purchased water; and

(b) The commonly used name (if any) and location of the body (or bodies) of water.

(2) If a source water assessment has been completed, the report must notify consumers of the availability of this information and the means to obtain it. In addition, systems are encouraged to highlight in the report significant sources of contamination in the source water area if they have readily available information.

(3) Where a system has received a source water assessment from the department, the report must include a brief summary of the system's susceptibility to potential sources of contamination, using language provided by the department or written by the purveyor.

[Statutory Authority: RCW 43.20.050. 00-15-080, § 246-290-72003, filed 7/19/00, effective 8/19/00.]

WAC 246-290-72004 Report contents – Definitions.

(1) Each report must include the following definitions:

(a) Maximum contaminant level goal or MCLG: The level of a contaminant in drinking water below which there is no known or expected risk to health. MCLGs allow for a margin of safety.

(b) Maximum contaminant level or MCL: The highest level of a contaminant that is allowed in drinking water. MCLs are set as close to the MCLGs as feasible using the best available treatment technology.

(2) A report for a community water system operating under a variance or an exemption issued under WAC 246-290-060 must include the following definition: Variances and exemptions: State or EPA permission not to meet an MCL or a treatment technique under certain conditions.

(3) A report that contains data on contaminants that the Environmental Protection Agency regulates using any of the following terms must include the applicable definitions:

(a) Treatment technique: A required process intended to reduce the level of a contaminant in drinking water.

(b) Action level: The concentration of a contaminant which, if exceeded, triggers treatment or other requirements which a water system must follow.

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

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

[Statutory Authority: RCW 43.20.050. 00-15-080, § 246-290-72004, filed 7/19/00, effective 8/19/00.]

WAC 246-290-72005 Report contents – Information on detected contaminants.

(1) This section specifies the requirements for information to be included in each report for contaminants subject to mandatory monitoring. It applies to:

(a) Contaminants subject to an MCL, action level, maximum residual disinfectant level or treatment technique (regulated contaminants);

(b) Contaminants for which monitoring is required by WAC 246-290-300(9); and

(c) Disinfection by-products for which monitoring is required by WAC 246-290-300(7) and 40 CFR 141.142 or microbial contaminants for which monitoring is required by WAC 246-290-300(3) and 40 CFR 141.143, except as provided under WAC 246-290-72006(1), and which are detected in the finished water.

(2) The data relating to these contaminants must be displayed in one table or in several adjacent tables. Any additional monitoring results which a community water system chooses to include in its report must be displayed separately.

(3) The data must be derived from data collected to comply with the Environmental Protection Agency and state monitoring and analytical requirements during the previous calendar year except that:

(a) Where a system is allowed to monitor for regulated contaminants less than once a year, the table(s) must include the date and results of the most recent sampling and the report must include a brief statement indicating that the data presented in the report are from the most recent testing done in accordance with the regulations. No data older than five years need be included.

(b) Results of monitoring in compliance with 40 CFR 141.142 and 40 CFR 141.143 need only be included for five years from the date of last sample or until any of the detected contaminants becomes regulated and subject to routine monitoring requirements, whichever comes first.

(4) For detected regulated contaminants listed in WAC 246-290-72012, the table(s) must contain:

(a) The MCL for that contaminant expressed as a number equal to or greater than 1.0 (as provided in WAC 246-290-72012);

(b) The MCLG for that contaminant expressed in the same units as the MCL;

(c) If there is no MCL for a detected contaminant, the table must indicate that there is a treatment technique, or specify the action level, applicable to that contaminant, and the report must include the definitions for treatment technique and/or action level, as appropriate, specified in WAC 246-290-72004;

(d) For contaminants subject to an MCL, except turbidity and total coliforms, the highest contaminant level used to determine compliance with a National Primary Drinking Water Regulation and the range of detected levels, as follows:

(i) When compliance with the MCL is determined annually or less frequently: The highest detected level at any sampling point and the range of detected levels expressed in the same units as the MCL.

(ii) When compliance with the MCL is determined by calculating a running annual average of all samples taken at a sampling point: The highest average of any of the sampling points and the range of all sampling points expressed in the same units as the MCL.

(iii) When compliance with the MCL is determined on a system-wide basis by calculating a running annual average of all samples at all sampling points: The average and range of detection expressed in the same units as the MCL.

(iv) Note to WAC 246-290-72005 (4)(d): When rounding of results to determine compliance with the MCL is allowed by the regulations, rounding should be done prior to multiplying the results by the factor listed in WAC 246-290-72012;

(e) For turbidity.

(i) When it is reported under chapter 246-290 WAC Part 6, Subpart C: The highest average monthly value.

(ii) When it is reported under the requirements of chapter 246-290 WAC Part 6, Subpart D: The highest monthly value. The report should include an explanation of the reasons for measuring turbidity.

(iii) When it is reported under chapter 246-290 WAC Part 6, Subpart B: The highest single measurement and the lowest monthly percentage of samples meeting the turbidity limits specified in chapter 246-290 WAC Part 6, Subpart B for the

filtration technology being used. The report should include an explanation of the reasons for measuring turbidity;

(f) For lead and copper: The 90th percentile value of the most recent round of sampling and the number of sampling sites exceeding the action level;

(g) For total coliform:

(i) The highest monthly number of positive samples for systems collecting fewer than 40 samples per month; or

(ii) The highest monthly percentage of positive samples for systems collecting at least 40 samples per month;

(h) For fecal coliform: The total number of positive samples; and

(i) The likely source(s) of detected contaminants to the best of the purveyor's knowledge. Specific information regarding contaminants may be available in sanitary surveys and source water assessments, and should be used when available to the purveyor. If the purveyor lacks specific information on the likely source, the report must include one or more of the typical sources for that contaminant listed in WAC 246-290-72012 which are most applicable to the system.

(5) If a community water system distributes water to its customers from multiple hydraulically independent distribution systems that are fed by different raw water sources, the table should contain a separate column for each service area and the report should identify each separate distribution system. Alternatively, systems could produce separate reports tailored to include data for each service area.

(6) The table(s) must clearly identify any data indicating violations of MCLs, MRDLs, or treatment techniques and the report must contain a clear and readily understandable explanation of the violation including: The length of the violation, the potential adverse health effects, and actions taken by the system to address the violation. To describe the potential health effects, the system must use the relevant language of WAC 246-290-72012.

(7) For detected unregulated contaminants for which monitoring is required, the table(s) must contain the average and range at which the contaminant was detected. The report may include a brief explanation of the reasons for monitoring for unregulated contaminants.

[Statutory Authority: RCW 43.20.050 (2) and (3) and 70.119A.080. 03-08-037, § 246-290-72005, filed 3/27/03, effective 4/27/03. Statutory Authority: RCW 43.20.050. 00-15-080, § 246-290-72005, filed 7/19/00, effective 8/19/00.]

WAC 246-290-72006 Report contents – Information on Cryptosporidium, radon, and other contaminants.

(1) If the system has performed any monitoring for Cryptosporidium, including monitoring performed to satisfy the requirements of 40 CFR 141.143 which indicates that Cryptosporidium may be present in the source water or the finished water, the report must include:

(a) A summary of the results of the monitoring; and

(b) An explanation of the significance of the results.

(2) If the system has performed any monitoring for radon which indicates that radon may be present in the finished water, the report must include:

(a) The results of the monitoring; and

(b) An explanation of the significance of the results.

(3) If the system has performed additional monitoring which indicates the presence of other contaminants in the finished water, the department strongly encourages systems to report any results which may indicate a health concern. To determine if results may indicate a health concern, the department recommends that systems find out if the Environmental Protection Agency has proposed a National Primary Drinking Water Regulation or issued a health advisory for that contaminant by calling the Safe Drinking Water Hotline (800-426-4791). The Environmental Protection Agency considers detects above a proposed MCL or health advisory level to indicate possible health concerns. For such contaminants, the department recommends that the report include:

(a) The results of the monitoring; and

(b) An explanation of the significance of the results noting the existence of a health advisory or a proposed regulation.

[Statutory Authority: RCW 43.20.050. 00-15-080, § 246-290-72006, filed 7/19/00, effective 8/19/00.]

WAC 246-290-72007 Report contents – Compliance with National Primary Drinking Water Regulations.

In addition to the requirements of WAC 246-290-72005(6), the report must note any violation that occurred during the year covered by the report of a requirement listed below, and include a clear and readily understandable explanation of the violation, any potential adverse health effects, and the steps the system has taken to correct the violation.

(1) Monitoring and reporting of compliance data;

(2) Filtration and disinfection prescribed by chapter 246-290 WAC, Part 6. For systems which have failed to install adequate filtration or disinfection equipment or processes, or have had a failure of the equipment or processes which constitutes a violation, the report must include the following language as part of the explanation of potential adverse health effects: Inadequately treated water may contain disease-causing organisms. These organisms include bacteria, viruses, and parasites which can cause symptoms such as nausea, cramps, diarrhea, and associated headaches.

(3) Lead and copper control requirements prescribed by WAC 246-290-025, specifically CFR 141.80 through 141.91: For systems which fail to take one or more actions prescribed by WAC 246-290-025, specifically CFR 141.80 through 141.84, the report must include the applicable language of WAC 246-290-72012 for lead, copper, or both.

(4) Treatment techniques for Acrylamide and Epichlorohydrin prescribed by 40 CFR, Subpart K. For systems which violate the requirements of 40 CFR, Subpart K, the report must include the relevant language from WAC 246-290-72012.

(5) Recordkeeping of compliance data.

(6) Special monitoring requirements prescribed by WAC 246-290-300(9) (unregulated contaminants) and 246-290–310(3) (sodium); and

(7) Violation of the terms of a variance, an exemption, or an administrative or judicial order.

[Statutory Authority: RCW 43.20.050 (2) and (3) and 70.119A.080. 03-08-037, § 246-290-72007, filed 3/27/03, effective 4/27/03. Statutory Authority: RCW 43.20.050. 00-15-080, § 246-290-72007, filed 7/19/00, effective 8/19/00.]

WAC 246-290-72008 Report contents – Variances and exemptions.

If a system is operating under the terms of a variance or an exemption issued under WAC 246-290-060, the report must contain:

(1) An explanation of the reasons for the variance or exemption;

(2) The date on which the variance or exemption was issued;

(3) A brief status report on the steps the system is taking to install treatment, find alternative sources of water, or otherwise comply with the terms and schedules of the variance or exemption; and

(4) A notice of any opportunity for public input in the review, or renewal, of the variance or exemption.

[Statutory Authority: RCW 43.20.050. 00-15-080, § 246-290-72008, filed 7/19/00, effective 8/19/00.]

WAC 246-290-72009 Report contents – Additional information.

(1) The report must contain a brief explanation regarding contaminants which may reasonably be expected to be found in drinking water including bottled water. This explanation may include the language of (a) through (c) of this subsection or systems may use their own comparable language. The report also must include the language of (d) of this subsection.

(a) The sources of drinking water (both tap water and bottled water) include rivers, lakes, streams, ponds, reservoirs, springs, and wells. As water travels over the surface of the land or through the ground, it dissolves naturally occurring minerals and, in some cases, radioactive material, and can pick up substances resulting from the presence of animals or from human activity.

(b) Contaminants that may be present in source water include:

(i) Microbial contaminants, such as viruses and bacteria, which may come from sewage treatment plants, septic systems, agricultural livestock operations, and wildlife.

(ii) Inorganic contaminants, such as salts and metals, which can be naturally occurring or result from urban storm water runoff, industrial or domestic wastewater discharges, oil and gas production, mining, or farming.

(iii) Pesticides and herbicides, which may come from a variety of sources such as agriculture, urban storm water runoff, and residential uses.

(iv) Organic chemical contaminants, including synthetic and volatile organic chemicals, which are by-products of industrial processes and petroleum production, and can also come from gas stations, urban storm water runoff, and septic systems.

(v) Radioactive contaminants, which can be naturally occurring or be the result of oil and gas production and mining activities.

(c) In order to ensure that tap water is safe to drink, the Environmental Protection Agency and/or the Washington state board of health prescribes regulations that limit the amount of certain contaminants in water provided by public water systems. Food and Drug Administration and/or the Washington state department of agriculture regulations establish limits for contaminants in bottled water that must provide the same protection for public health.

(d) Drinking water, including bottled water, may reasonably be expected to contain at least small amounts of some contaminants. The presence of contaminants does not necessarily indicate that water poses a health risk. More information about contaminants and potential health effects can be obtained by calling the Environmental Protection Agency's Safe Drinking Water Hotline (800-426-4791).

(2) The report must include the telephone number of the owner, operator, or designee of the community water system as a source of additional information concerning the report.

(3) In communities with a large proportion of non-English speaking residents, the report must contain information in the appropriate language(s) regarding the importance of the report or contain a telephone number or address where such residents may contact the system to obtain a translated copy of the report or assistance in the appropriate language.

(4) The report must include information about opportunities for public participation in decisions that may affect the quality of the water, such as the time and place of meetings.

(5) The systems may include such additional information as they deem necessary for public education consistent with, and not detracting from, the purpose of the report.

[Statutory Authority: RCW 43.20.050. 00-15-080, § 246-290-72009, filed 7/19/00, effective 8/19/00.]

WAC 246-290-72010 Report contents – Required additional health information.

All reports must prominently display the following language: Some people may be more vulnerable to contaminants in drinking water than the general population. Immuno-compromised persons such as persons with cancer undergoing chemotherapy, persons who have undergone organ transplants, people with HIV/AIDS or other immune system disorders, some elderly, and infants can be particularly at risk from infections. These people should seek advice about drinking water from their health care providers. Environmental Protection Agency/Centers for Disease Control guidelines on appropriate means to lessen the risk of infection by Cryptosporidium and other microbial contaminants are available from the Safe Drinking Water Hotline (800-426-4791).

(1) Beginning in the report due by July 1, 2002, a system which detects arsenic levels above 0.005 mg/L and up to and including 0.010 mg/L:

(a) Must include in its report a short informational statement about arsenic, using language such as: While your drinking water meets EPA's standard for arsenic, it does contain low levels of arsenic. EPA's standard balances the current understanding of arsenic's possible health effects against the cost of removing arsenic from drinking water. EPA continues to research the health effects of low levels of arsenic, which is a mineral known to cause cancer in humans at high concentrations and is linked to other health effects such as skin damage and circulatory problems.

(b) May write its own educational statement, but only in consultation with the department.

(2) A system which detects nitrate at levels above 5 mg/l, but below the MCL:

(a) Must include a short informational statement about the impacts of nitrate on children using language such as: Nitrate in drinking water at levels above 10 ppm is a health risk for infants of less than six months of age. High nitrate levels in drinking water can cause blue-baby syndrome. Nitrate levels may rise quickly for short periods of time because of

rainfall or agricultural activity. If you are caring for an infant, you should ask for advice from your health care provider.

(b) May write its own educational statement, but only in consultation with the department.

(3) Systems which detect lead above the action level in more than five percent, and up to and including ten percent, of homes sampled:

(a) Must include a short informational statement about the special impact of lead on children using language such as: Infants and young children are typically more vulnerable to lead in drinking water than the general population. It is possible that lead levels at your home may be higher than at other homes in the community as a result of materials used in your home's plumbing. If you are concerned about elevated lead levels in your home's water, you may wish to have your water tested and flush your tap for thirty seconds to two minutes before using tap water. Additional information is available from the Safe Drinking Water Hotline (800-426-4791).

(b) May write its own educational statement, but only in consultation with the department.

(4) Community water systems that detect TTHM above 0.080 mg/l, but below the MCL in WAC 246-290-310(4), as an annual average, monitored and calculated under the provisions of WAC 246-290-300(6), must include health effects language prescribed by WAC 246-290-72012.

(5) Beginning in the report due by July 1, 2002, and ending January 22, 2006, a community water system that detects arsenic above 0.01 mg/L and up to and including 0.05 mg/L must include the arsenic health effects language prescribed in WAC 246-290-72012.

[Statutory Authority: RCW 43.20.050 and 70.119A.080. 04-04-056, § 246-290-72010, filed 1/30/04, effective 3/1/04. Statutory Authority: RCW 43.20.050 (2) and (3) and 70.119A.080. 03-08-037, § 246-290-72010, filed 3/27/03, effective 4/27/03. Statutory Authority: RCW 43.20.050. 00-15-080, § 246-290-72010, filed 7/19/00, effective 8/19/00.]

WAC 246-290-72011 Report delivery and recordkeeping.

Each community water system must mail or otherwise directly deliver one copy of the report to each customer.

(1) The system must make a good faith effort to reach consumers who do not get water bills. The department expects that an adequate good faith effort will be tailored to the consumers who are served by the system but are not bill-paying customers, such as renters or workers. A good faith effort to reach consumers would include a mix of methods appropriate to the particular system such as: Posting the reports on the internet; mailing to postal patrons in metropolitan areas; advertising the availability of the report in the news media; publication in a local newspaper; posting in public places such as cafeterias or lunch rooms of public buildings; delivery of multiple copies for distribution by single-biller customers such as apartment buildings or large private employers; delivery to community organizations.

(2) No later than the date the system is required to distribute the report to its customers, each community water system must mail a copy of the report to the department, followed within three months by a certification that the report has been distributed to customers, and that the information is correct and consistent with the compliance monitoring data previously submitted to the department.

(3) No later than the date the system is required to distribute the report to its customers, each community water system must deliver the report to any other agency or clearinghouse identified by the department.

(4) Each community water system must make its reports available to the public upon request.

(5) Each community water system serving one hundred thousand or more persons must post its current year's report to a publicly accessible site on the Internet.

(6) Any system subject to WAC 246-290-72001 through 246-290-72012 must retain copies of its consumer confidence report for no less than three years.

[Statutory Authority: RCW 43.20.050. 00-15-080, § 246-290-72011, filed 7/19/00, effective 8/19/00.]

WAC 246-290-72012 Regulated contaminants.

Contaminant (units)	Traditional MCL in mg/L	To convert for CCR, multiply by	MCL in CCR units	MCLG	Major Sources in Drinking Water	Health Effects Language
Microbiological Contaminants						
Total Coliform Bacteria	MCL: (systems that collect ≥ 40 samples/ month) 5% of monthly samples are positive; (systems that collect < 40 samples/ month) 1 positive monthly sample		MCL: (systems that collect ≥ 40 samples/ month) 5% of monthly samples are positive; (systems that collect < 40 samples/ month) 1 positive monthly sample	0	Naturally present in the environment	Coliforms are bacteria that are naturally present in the environment and are used as an indicator that other, potentially-harmful, bacteria may be present. Coliforms were found in more samples than allowed and this was a warning of potential problems.
Fecal coliform and *E. coli*	0		0	0	Human and animal fecal waste	Fecal coliforms and *E. coli* are bacteria whose presence indicates that the water may be contaminated with human or animal wastes. Microbes in these wastes can cause short-term effects, such as diarrhea, cramps, nausea, headaches, or other symptoms. They may pose a special health risk for infants, young children, some of the elderly, and people with severely-compromised immune systems.
Total organic carbon (ppm)	TT	-	TT	n/a	Naturally present in the environment	Total organic carbon (TOC) has no health effects. However, total organic carbon provides a medium for the formation of disinfection by-products. These by-products include trihalomethanes (THMs) and haloacetic acids (HAAs). Drinking water containing these by-products in excess of the MCL may lead to adverse health effects, liver or kidney problems, or nervous system effects, and may lead to an increased risk of getting cancer.
Turbidity (NTU)	TT.	-	TT	n/a	Soil runoff	Turbidity has no health effects. However, turbidity can interfere with disinfection and provide a medium for microbial growth. Turbidity may indicate the presence of disease-causing organisms. These organisms include bacteria, viruses, and parasites that can cause symptoms such as nausea, cramps, diarrhea and associated headaches.
Radioactive Contaminants						
Beta/photon emitters (mrem/yr)	4 mrem/yr	-	4	n/a 0	Decay of natural and man-made deposits	Certain minerals are radioactive and may emit forms of radiation known as photons and beta radiation. Some people who drink water containing beta and photon emitters in excess of the MCL over many years may have an increased risk of getting cancer.
Alpha emitters (pCi/l)	15 pCi/l	-	15	n/a 0	Erosion of natural deposits	Certain minerals are radioactive and may emit a form of radiation known as alpha radiation. Some people who drink water containing alpha emitters in excess of the MCL over many years may have an increased risk of getting cancer.
Combined radium (pCi/l)	5 pCi/l	-	5	n/a 0	Erosion of natural deposits	Some people who drink water containing radium 226 or 228 in excess of the MCL over many years may have an increased risk of getting cancer.
Uranium (pCi/l)	30 micro g/l	-	30	0	Erosion of natural deposits	Some people who drink water containing uranium in excess of the MCL over many years may have an increased risk of getting cancer and kidney toxicity.

Contaminant (units)	Traditional MCL in mg/L	To convert for CCR, multiply by	MCL in CCR units	MCLG	Major Sources in Drinking Water	Health Effects Language
Inorganic Contaminants						
Antimony (ppb)	.006	1000	6	6	Discharge from petroleum refineries; fire retardants; ceramics; electronics; solder	Some people who drink water containing antimony well in excess of the MCL over many years could experience increases in blood cholesterol and decreases in blood sugar.
Arsenic (ppb) *Effective 1/23/06	.05 0.010	1000 1000	50 10	n/a 0	Erosion of natural deposits; Runoff from orchards; Runoff from glass and electronics production wastes	Some people who drink water containing arsenic in excess of the MCL over many years could experience skin damage or problems with their circulatory system, and may have an increased risk of getting cancer.
Asbestos (MFL)	7 MFL	-	7	7	Decay of asbestos cement water mains; Erosion of natural deposits	Some people who drink water containing asbestos in excess of the MCL over many years may have an increased risk of developing benign intestinal polyps.
Barium (ppm)	2	-	2	2	Discharge of drilling wastes; Discharge from metal refineries; Erosion of natural deposits	Some people who drink water containing barium in excess of the MCL over many years could experience an increase in their blood pressure.
Beryllium (ppb)	.004	1000	4	4	Discharge from metal refineries and coal-burning factories; Discharge from electrical, aerospace, and defense industries	Some people who drink water containing beryllium well in excess of the MCL over many years could develop intestinal lesions.
Cadmium (ppb)	.005	1000	5	5	Corrosion of galvanized pipes; Erosion of natural deposits; Discharge from metal refineries; Runoff from waste batteries and paints	Some people who drink water containing cadmium in excess of the MCL over many years could experience kidney damage.
Chromium (ppb)	.1	1000	100	100	Discharge from steel and pulp mills; Erosion of natural deposits	Some people who use water containing chromium well in excess of the MCL over many years could experience allergic dermatitis.
Copper (ppm)	AL = 1.3	-	AL = 1.3	1.3	Corrosion of household plumbing systems; Erosion of natural deposits	Copper is an essential nutrient, but some people who drink water containing copper in excess of the action level over a relatively short amount of time could experience gastrointestinal distress. Some people who drink water containing copper in excess of the action level over many years could suffer liver or kidney damage. People with Wilson's Disease should consult their personal doctor.
Cyanide (ppb)	.2	1000	200	200	Discharge from steel/metal factories; Discharge from plastic and fertilizer factories	Some people who drink water containing cyanide well in excess of the MCL over many years could experience nerve damage or problems with their thyroid.

Contaminant (units)	Traditional MCL in mg/L	To convert for CCR, multiply by	MCL in CCR units	MCLG	Major Sources in Drinking Water	Health Effects Language
Fluoride (ppm)	4	-	4	4	Erosion of natural deposits; Water additive which promotes strong teeth; Discharge from fertilizer and aluminum factories	Some people who drink water containing fluoride in excess of the MCL over many years could get bone disease, including pain and tenderness of the bones. Fluoride in drinking water at half the MCL or more may cause mottling of children's teeth, usually in children less than nine years old. Mottling, also known as dental fluorosis, may include brown staining and/or pitting of the teeth, and occurs only in developing teeth before they erupt from the gums.
Lead (ppb)	AL = .015	1000	AL = 15	0	Corrosion of household plumbing systems; Erosion of natural deposits	Infants and children who drink water containing lead in excess of the action level could experience delays in their physical or mental development. Children could show slight deficits in attention span and learning abilities. Adults who drink this water over many years could develop kidney problems or high blood pressure.
Mercury [inorganic] (ppb)	.002	1000	2	2	Erosion of natural deposits; Discharge from refineries and factories; Runoff from landfills; Runoff from cropland	Some people who drink water containing inorganic mercury well in excess of the MCL over many years could experience kidney damage.
Nitrate (ppm)	10	-	10	10	Runoff from fertilizer use; Leaching from septic tanks, sewage; Erosion of natural deposits	Infants below the age of six months who drink water containing nitrate in excess of the MCL could become seriously ill and, if untreated, may die. Symptoms include shortness of breath and blue baby syndrome.
Nitrite (ppm)	1	-	1	1	Runoff from fertilizer use; Leaching from septic tanks, sewage; Erosion of natural deposits	Infants below the age of six months who drink water containing nitrite in excess of the MCL could become seriously ill and, if untreated, may die. Symptoms include shortness of breath and blue baby syndrome.
Selenium (ppb)	.05	1000	50	50	Discharge from petroleum and metal refineries; Erosion of natural deposits; Discharge from mines	Selenium is an essential nutrient. However, some people who drink water containing selenium in excess of the MCL over many years could experience hair or fingernail losses, numbness in fingers or toes, or problems with their circulation.
Thallium (ppb)	.002	1000	2	0.5	Leaching from ore-processing sites; Discharge from electronics, glass, and drug factories	Some people who drink water containing thallium in excess of the MCL over many years could experience hair loss, changes in their blood, or problems with their kidneys, intestines, or liver.
Synthetic Organic Contaminants including Pesticides and Herbicides						
2,4-D (ppb)	.07	1000	70	70	Runoff from herbicide used on row crops	Some people who drink water containing the weed killer 2,4-D well in excess of the MCL over many years could experience problems with their kidneys, liver, or adrenal glands.
2,4,5-TP [Silvex](ppb)	.05	1000	50	50	Residue of banned herbicide	Some people who drink water containing silvex in excess of the MCL over many years could experience liver problems.

Contaminant (units)	Traditional MCL in mg/L	To convert for CCR, multiply by	MCL in CCR units	MCLG	Major Sources in Drinking Water	Health Effects Language
Acrylamide	TT	-	TT	0	Added to water during sewage/ wastewater treatment	Some people who drink water containing high levels of acrylamide over a long period of time could have problems with their nervous system or blood, and may have an increased risk of getting cancer.
Alachlor (ppb)	.002	1000	2	0	Runoff from herbicide used on row crops	Some people who drink water containing alachlor in excess of the MCL over many years could have problems with their eyes, liver, kidneys, or spleen, or experience anemia, and may have an increased risk of getting cancer.
Atrazine (ppb)	.003	1000	3	3	Runoff from herbicide used on row crops	Some people who drink water containing atrazine well in excess of the MCL over many years could experience problems with their cardiovascular system or reproductive difficulties.
Benzo(a)pyrene [PAH] (nanograms/l)	.0002	1,000,000	200	0	Leaching from linings of water storage tanks and distribution lines	Some people who drink water containing benzo(a)pyrene in excess of the MCL over many years may experience reproductive difficulties and may have an increased risk of getting cancer.
Carbofuran (ppb)	.04	1000	40	40	Leaching of soil fumigant used on rice and alfalfa	Some people who drink water containing carbofuran in excess of the MCL over many years could experience problems with their blood, or nervous or reproductive systems.
Chlordane (ppb)	.002	1000	2	0	Residue of banned termiticide	Some people who drink water containing chlordane in excess of the MCL over many years could experience problems with their liver or nervous system, and may have an increased risk of getting cancer.
Dalapon (ppb)	.2	1000	200	200	Runoff from herbicide used on rights of way	Some people who drink water containing dalapon well in excess of the MCL over many years could experience minor kidney changes.
Di(2-ethylhexyl) adipate (ppb)	.4	1000	400	400	Discharge from chemical factories	Some people who drink water containing di (2-ethylhexyl) adipate well in excess of the MCL over many years could experience toxic effects or reproductive difficulties.
Di(2-ethylhexyl) phthalate (ppb)	.006	1000	6	0	Discharge from rubber and chemical factories	Some people who drink water containing di (2-ethylhexyl) phthalate well in excess of the MCL over many years may have problems with their liver, or experience reproductive difficulties, and may have an increased risk of getting cancer.
Dibromochloropropane (ppt)	.0002	1,000,000	200	0	Runoff/leaching from soil fumigant used on soybeans, cotton, pineapples, and orchards	Some people who drink water containing DBCP in excess of the MCL over many years could experience reproductive problems and may have an increased risk of getting cancer.
Dinoseb (ppb)	.007	1000	7	7	Runoff from herbicide used on soybeans and vegetables	Some people who drink water containing dinoseb well in excess of the MCL over many years could experience reproductive difficulties.
Diquat (ppb)	.02	1000	20	20	Runoff from herbicide use	Some people who drink water containing diquat in excess of the MCL over many years could get cataracts.
Dioxin [2,3,7,8-TCDD] (ppq)	.00000003	1,000,000,000	30	0	Emissions from waste incineration and other combustion; Discharge from chemical factories	Some people who drink water containing dioxin in excess of the MCL over many years could experience reproductive difficulties and may have an increased risk of getting cancer.

Contaminant (units)	Traditional MCL in mg/L	To convert for CCR, multiply by	MCL in CCR units	MCLG	Major Sources in Drinking Water	Health Effects Language
Endothall (ppb)	.1	1000	100	100	Runoff from herbicide use	Some people who drink water containing endothall in excess of the MCL over many years could experience problems with their stomach or intestines.
Endrin (ppb)	.002	1000	2	2	Residue of banned insecticide	Some people who drink water containing endrin in excess of the MCL over many years could experience liver problems.
Epichlorohydrin	TT	-	TT	0	Discharge from industrial chemical factories; An impurity of some water treatment chemicals	Some people who drink water containing high levels of epichlorohydrin over a long period of time could experience stomach problems, and may have an increased risk of getting cancer.
Ethylene dibromide (ppt)	.00005	1,000,000	50	0	Discharge from petroleum refineries	Some people who drink water containing ethylene dibromide in excess of the MCL over many years could experience problems with their liver, stomach, reproductive system, or kidneys, and may have an increased risk of getting cancer.
Glyphosate (ppb)	.7	1000	700	700	Runoff from herbicide use	Some people who drink water containing glyphosate in excess of the MCL over many years could experience problems with their kidneys or reproductive difficulties.
Heptachlor (ppt)	.0004	1,000,000	400	0	Residue of banned pesticide	Some people who drink water containing heptachlor in excess of the MCL over many years could experience liver damage and may have an increased risk of getting cancer.
Heptachlor epoxide (ppt)	.0002	1,000,000	200	0	Breakdown of heptachlor	Some people who drink water containing heptachlor epoxide in excess of the MCL over many years could experience liver damage, and may have an increased risk of getting cancer.
Hexachlorobenzene (ppb)	.001	1000	1	0	Discharge from metal refineries and agricultural chemical factories	Some people who drink water containing hexachlorobenzene in excess of the MCL over many years could experience problems with their liver or kidneys, or adverse reproductive effects, and may have an increased risk of getting cancer.
Hexachlorocyclo-pentadiene (ppb)	.05	1000	50	50	Discharge from chemical factories	Some people who drink water containing hexachlorocyclopentadiene well in excess of the MCL over many years could experience problems with their kidneys or stomach.
Lindane (ppt)	.0002	1,000,000	200	200	Runoff/leaching from insecticide used on cattle, lumber, gardens	Some people who drink water containing lindane in excess of the MCL over many years could experience problems with their kidneys or liver.
Methoxychlor (ppb)	.04	1000	40	40	Runoff/leaching from insecticide used on fruits, vegetables, alfalfa, livestock	Some people who drink water containing methoxychlor in excess of the MCL over many years could experience reproductive difficulties.
Oxamyl [Vydate] (ppb)	.2	1000	200	200	Runoff/leaching from insecticide used on apples, potatoes and tomatoes	Some people who drink water containing oxamyl in excess of the MCL over many years could experience slight nervous system effects.

Contaminant (units)	Traditional MCL in mg/L	To convert for CCR, multiply by	MCL in CCR units	MCLG	Major Sources in Drinking Water	Health Effects Language
PCBs [Polychlorinated biphenyls] (ppt)	.0005	1,000,000	500	0	Runoff from landfills; Discharge of waste chemicals	Some people who drink water containing PCBs in excess of the MCL over many years could experience changes in their skin, problems with their thymus gland, immune deficiencies, or reproductive or nervous system difficulties, and may have an increased risk of getting cancer.
Pentachlorophenol (ppb)	.001	1000	1	0	Discharge from wood preserving factories	Some people who drink water containing pentachlorophenol in excess of the MCL over many years could experience problems with their liver or kidneys, and may have an increased risk of getting cancer.
Picloram (ppb)	.5	1000	500	500	Herbicide runoff	Some people who drink water containing picloram in excess of the MCL over many years could experience problems with their liver.
Simazine (ppb)	.004	1000	4	4	Herbicide runoff	Some people who drink water containing simazine in excess of the MCL over many years could experience problems with their blood.
Toxaphene (ppb)	.003	1000	3	0	Runoff/leaching from insecticide used on cotton and cattle	Some people who drink water containing toxaphene in excess of the MCL over many years could have problems with their kidneys, liver, or thyroid, and may have an increased risk of getting cancer.
Volatile Organic Contaminants						
Benzene (ppb)	.005	1000	5	0	Discharge from factories; Leaching from gas storage tanks and landfills	Some people who drink water containing benzene in excess of the MCL over many years could experience anemia or a decrease in blood platelets, and may have an increased risk of getting cancer.
Bromate (ppb)	.010	1000	10	0	By-product of drinking water disinfection	Some people who drink water containing bromate in excess of the MCL over many years may have an increased risk of getting cancer.
Carbon tetrachloride (ppb)	.005	1000	5	0	Discharge from chemical plants and other industrial activities	Some people who drink water containing carbon tetrachloride in excess of the MCL over many years could experience problems with their liver and may have an increased risk of getting cancer.
Chloramines (ppm)	MRDL = 4	-	MRDL = 4	MRDLG = 4	Water additive used to control microbes	Some people who use drinking water containing chloramines well in excess of the MRDL could experience irritating effects to their eyes and nose. Some people who drink water containing chloramines well in excess of the MRDL could experience stomach discomfort or anemia.
Chlorine (ppm)	MRDL = 4	-	MRDL = 4	MRDLG = 4	Water additive used to control microbes	Some people who use drinking water containing chlorine well in excess of the MRDL could experience irritating effects to their eyes and nose. Some people who drink water containing chlorine well in excess of the MRDL could experience stomach discomfort.
Chlorite (ppm)	1	-	1	0.8	By-product of drinking water disinfection	Some infants and young children who drink water containing chlorite in excess of the MCL could experience nervous system effects. Similar effects may occur in fetuses of pregnant mothers who drink water containing chlorite in excess of the MCL. Some people may experience anemia.

Contaminant (units)	Traditional MCL in mg/L	To convert for CCR, multiply by	MCL in CCR units	MCLG	Major Sources in Drinking Water	Health Effects Language
Chlorine dioxide (ppb)	MRDL = .8	1000	MRDL = 800	MRDLG = 800	Water additive used to control microbes	Some infants and young children who drink water containing chlorine dioxide in excess of the MRDL could experience nervous system effects. Similar effects may occur in fetuses of pregnant mothers who drink water containing chlorine dioxide in excess of the MRDL. Some people may experience anemia.
Chlorobenzene (ppb)	.1	1000	100	100	Discharge from chemical and agricultural chemical factories	Some people who drink water containing chlorobenzene in excess of the MCL over many years could experience problems with their liver or kidneys.
o-Dichlorobenzene (ppb)	.6	1000	600	600	Discharge from industrial chemical factories	Some people who drink water containing o-dichlorobenzene well in excess of the MCL over many years could experience problems with their liver, kidneys, or circulatory systems.
p-Dichlorobenzene (ppb)	.075	1000	75	75	Discharge from industrial chemical factories	Some people who drink water containing p-dichlorobenzene in excess of the MCL over many years could experience anemia, damage to their liver, kidneys, or spleen, or changes in their blood.
1,2-Dichloroethane (ppb)	.005	1000	5	0	Discharge from industrial chemical factories	Some people who drink water containing 1,2-dichloroethane in excess of the MCL over many years may have an increased risk of getting cancer.
1,1-Dichloroethylene (ppb)	.007	1000	7	7	Discharge from industrial chemical factories	Some people who drink water containing 1,1-dichloroethylene in excess of the MCL over many years could experience problems with their liver.
cis-1,2-Dichloroethylene (ppb)	.07	1000	70	70	Discharge from industrial chemical factories	Some people who drink water containing cis-1,2-dichloroethylene in excess of the MCL over many years could experience problems with their liver.
trans-1,2-Dichloroethylene (ppb)	.1	1000	100	100	Discharge from industrial chemical factories	Some people who drink water containing trans-1,2-dichloroethylene well in excess of the MCL over many years could experience problems with their liver.
Dichloromethane (ppb)	.005	1000	5	0	Discharge from pharmaceutical and chemical factories	Some people who drink water containing dichloromethane in excess of the MCL over many years could have liver problems and may have an increased risk of getting cancer.
1,2-Dichloropropane (ppb)	.005	1000	5	0	Discharge from industrial chemical factories	Some people who drink water containing 1,2-dichloropropane in excess of the MCL over many years may have an increased risk of getting cancer.
Ethylbenzene (ppb)	.7	1000	700	700	Discharge from petroleum refineries	Some people who drink water containing ethylbenzene well in excess of the MCL over many years could experience problems with their liver or kidneys.
Haloacetic Acids (HAA) (ppb)	.060	1000	60	n/a	By-product of drinking water disinfection	Some people who drink water containing haloacetic acids in excess of the MCL over many years may have an increased risk of getting cancer.
Styrene (ppb)	.1	1000	100	100	Discharge from rubber and plastic factories; Leaching from landfills	Some people who drink water containing styrene well in excess of the MCL over many years could have problems with their liver, kidneys, or circulatory system.

Contaminant (units)	Traditional MCL in mg/L	To convert for CCR, multiply by	MCL in CCR units	MCLG	Major Sources in Drinking Water	Health Effects Language
Tetrachloroethylene (ppb)	.005	1000	5	0	Discharge from factories and dry cleaners	Some people who drink water containing tetrachloroethylene in excess of the MCL over many years could have problems with their liver, and may have an increased risk of getting cancer.
1,2,4-Trichlorobenzene (ppb)	.07	1000	70	70	Discharge from textile-finishing factories	Some people who drink water containing 1,2,4-trichlorobenzene well in excess of the MCL over many years could experience changes in their adrenal glands.
1,1,1-Trichloroethane (ppb)	.2	1000	200	200	Discharge from metal degreasing sites and other factories	Some people who drink water containing 1,1,1-trichloroethane in excess of the MCL over many years could experience problems with their liver, nervous system, or circulatory system.
1,1,2-Trichloroethane (ppb)	.005	1000	5	3	Discharge from industrial chemical factories	Some people who drink water containing 1,1,2-trichloroethane well in excess of the MCL over many years could have problems with their liver, kidneys, or immune systems.
Trichloroethylene (ppb)	.005	1000	5	0	Discharge from metal degreasing sites and other factories	Some people who drink water containing trichloroethylene in excess of the MCL over many years could experience problems with their liver and may have an increased risk of getting cancer.
TTHMs [Total trihalomethanes] (ppb)	0.10/.080	1000	100/80	n/a	By-product of drinking water disinfection	Some people who drink water containing trihalomethanes in excess of the MCL over many years may experience problems with their liver, kidneys, or central nervous systems, and may have an increased risk of getting cancer.
Toluene (ppm)	1	-	1	1	Discharge from petroleum factories	Some people who drink water containing toluene well in excess of the MCL over many years could have problems with their nervous system, kidneys, or liver.
Vinyl Chloride (ppb)	.002	1000	2	0	Leaching from PVC piping: Discharge from plastics factories	Some people who drink water containing vinyl chloride in excess of the MCL over many years may have an increased risk of getting cancer.
Xylenes (ppm)	10	-	10	10	Discharge from petroleum factories; Discharge from chemical factories	Some people who drink water containing xylenes in excess of the MCL over many years could experience damage to their nervous system.

Key	
AL = Action Level	
MCL = Maximum Contaminant Level	
MCLG = Maximum Contaminant Level Goal	
MFL = million fibers per liter	
MRDL = Maximum Residual Disinfectant Level	
MRDLG = Maximum Residual Disinfectant Level Goal	
mrem/year = millirems per year (a measure of radiation absorbed by the body)	
N/A = Not Applicable	
NTU = Nephelometric Turbidity Units (a measure of water clarity)	
pCi/1 = picocuries per liter (a measure of radioactivity)	
ppm = parts per million, or milligrams per liter (mg/1)	
ppb = parts per billion, or micrograms per liter (µg/l)	
ppt = parts per trillion, or nanograms per liter	
ppq = parts per quadrillion, or picograms per liter	
TT = Treatment Technique	

[Statutory Authority: RCW 43.20.050 and 70.119A.080. 04-04-056, § 246-290-72012, filed 1/30/04, effective 3/1/04. Statutory Authority: RCW 43.20.050 (2) and (3) and 70.119A.080. 03-08-037, § 246-290-72012, filed 3/27/03, effective 4/27/03. Statutory Authority: RCW 43.20.050. 00-15-080, § 246-290-72012, filed 7/19/00, effective 8/19/00.]

NOTES:

Reviser's note: The brackets and enclosed material in the text of the above section occurred in the copy filed by the agency.

Fees

WAC 246-290-990 Water system evaluation and project review and approval fees.

(1) The fees for the review and approval of water system plans, project reports, construction documents, existing systems, and related evaluations required under chapters 246-290, 246-291, 246-293, 246-294, and 246-295 WAC are:

(a) Water system plans required under WAC 246-290-100, 246-290-105, 246-291-140, 246-293-220, and 246-293-230.

		Group A				
Project Type	Group B	<100 Services	100 to 500 Services	501 to 999 Services	1,000 to 9,999 Services	10,000 or more Services
Water system plan (New and Updated)	$134	$475	$1,167	$2,206	$3,584	$5,305
Minor water system plan alteration	$30	$112	$284	$547	$889	$1,305

(b) Satellite management agency (SMA) plans for Group A and Group B water systems required under WAC 246-295-040.

	Total Active or Approved Services				
Project Type	<100 Services	100 to 500 Services	501 to 999 Services	1,000 to 9,999 Services	10,000 or more Services
SMA plan for ownership (New and Updated)	$475	$1,167	$2,206	$3,584	$5,305
SMA approval amendment	$99 per hour or appropriate fee from category above, whichever is less				
SMA plan for operation only (New and Updated)	$1,167	$1,167	$1,167	$1,167	$1,167

Note: SMAs owning water systems and submitting planning documents to the department for review shall be charged only the SMA fee.

(c) New plan elements required under WAC 246-290-100, 246-290-105, 246-290-125, 246-290-132, 246-290-135, 246-290-691, and 246-291-140 including:

(i) Conservation; and

(ii) Wellhead protection, shall be reviewed separately by the department and the fee assessed shall reflect the time spent for this review and shall be calculated based on ninety-nine dollars per hour. After the initial submittal, updated information shall be reviewed as part of the updated water system plan and the review fee shall be included in the applicable updated plan review fee listed under (a) or (b) of this subsection.

(d) Project reports required under WAC 246-290-110 and design reports required under WAC 246-291-120.

		Group A				
Project Type	Group B	<100 Services	100 to 500 Services	501 to 999 Services	1,000 to 9,999 Services	10,000 or more Services
All types of filtration or other complex treatment processes	$337	$687	$1,067	$1,546	$2,132	$2,827
Chemical addition only, such as ion exchange, hypochlorination, or fluoridation	$99	$199	$337	$508	$719	$962
Complete water system (an additional fee shall be assessed for review of treatment facility, if any)	$199	$475	$753	$1,100	$1,513	$1,994
System modifications requiring a detailed evaluation to determine whether the system, as modified, will comply with regulations (an additional fee shall be assessed for review of treatment facility, if any)	$134	$337	$547	$824	$1,167	$1,573

Note: In accordance with WAC 246-290-125, project reports are not required for minor projects that are described in sufficient detail in an approved water system plan, and have been reviewed as part of the process for approving the water system plan.

(e) Special reports or plans required under WAC 246-290-230, 246-290-235, 246-290-250, 246-290-470, 246-290-636, 246-290-640, 246-290-654, 246-290-676, 246-291-230 including:

(i) Corrosion control recommendation report;

(ii) Corrosion control study;

(iii) Plan to cover uncovered reservoirs;

(iv) Predesign study;

(v) Uncovered reservoir plan of operation;

(vi) Tracer study plan;

(vii) Surface water or GWI treatment facility operations plan;

(viii) Filtration pilot study; or

(ix) GWI determination reports, shall be reviewed by the department and the fee assessed shall reflect the time spent for this review and shall be calculated based on ninety-nine dollars per hour.

(f) Construction documents required under WAC 246-290-120 and design reports required under WAC 246-291-120.

		Group A				
Project Type	Group B	<100 Services	100 to 500 Services	501 to 999 Services	1,000 to 9,999 Services	10,000 or more Services
All types of filtration or other complex treatment processes	$337	$687	$1,067	$1,546	$2,132	$2,827
Chemical addition only, such as ion exchange, hypochlorination, or fluoridation	$99	$199	$337	$508	$719	$962
Complete new water system except treatment (an additional fee shall be assessed for review of treatment facility, if any)	$272	$613	$889	$1,238	$1,654	$2,132
New source only (an additional fee shall be assessed for review of treatment facility, if any)	$199	$370	$508	$687	$889	$1,134
One or more of the following submitted as a package and not requiring a detailed evaluation as determined by the department: Water line installation, booster pump station, modifications to source pumping, piping-valving, controls or storage reservoir (an additional fee shall be assessed for review of treatment facility, if any)	$134	$234	$370	$547	$753	$994
Documents submitted for projects such as water line installation, booster pump stations, modifications to source pumping, piping/valving, controls or storage reservoirs as determined by the department where such projects: Comply with design standards established by the department; Are prepared by a professional engineer in accordance with WAC 246-290-040; and Do not require a detailed evaluation by the department.	$62	$115	$192	$272	$377	$496

(g) Existing system approval required under WAC 246-290-140 and 246-291-130. For the purpose of this subsection the department shall determine whether a system is expanding or nonexpanding.

		Group A				
Project Type	Group B	<100 Services	100 to 500 Services	501 to 999 Services	1,000 to 9,999 Services	10,000 or more Services
NONEXPANDING system not requiring a detailed evaluation by the department	$260	$522	$785	$1,048	$1,311	$1,573
NONEXPANDING system requiring a detailed evaluation as determined by the department	$391	$785	$1,189	$1,573	$1,968	$2,362
EXPANDING system not requiring a detailed evaluation by the department	$522	$1,048	$1,573	$2,099	$2,626	$3,150
EXPANDING system requiring a detailed evaluation as determined by the department	$654	$1,311	$1,968	$2,626	$3,281	$3,939

(h) Monitoring waivers requested under WAC 246-290-300.

		Group A				
Project Type	Group B	<100 Services	100 to 500 Services	501 to 999 Services	1,000 to 9,999 Services	10,000 or more Services
Inorganic chemical monitoring waiver	Not applicable	$86 per source	$119 per source	$150 per source	$182 per source	$214 per source
Organic chemical monitoring waiver	Not applicable	$156 per source	$219 per source	$285 per source	$348 per source	$412 per source
Use waiver	Not applicable	$187 per source	$252 per source	$324 per source	$380 per source	$444 per source
Area wide waiver renewal	Not applicable	$187 per source	$233 per source	$278 per source	$324 per source	$357 per source
Inorganic chemical monitoring waiver renewal	Not applicable	$47 per source	$60 per source	$73 per source	$86 per source	$99 per source
Organic chemical monitoring waiver renewal	Not applicable	$92 per source	$131 per source	$171 per source	$208 per source	$246 per source
Use waiver renewal	Not applicable	$131 per source	$176 per source	$219 per source	$265 per source	$310 per source
Coliform monitoring waiver including departmental inspection requested by purveyor	Not applicable	$401	$496	$631	$803	Not applicable
Coliform monitoring waiver with third-party inspection report	Not applicable	$124	$124	$124	$124	Not applicable

(i) Other evaluations and approvals. As applicable, these fees will be charged in addition to the basic fees assessed under (a) through (h) of this subsection.

		Group A				
Project Type	Group B	<100 Services	100 to 500 Services	501 to 999 Services	1,000 to 9,999 Services	10,000 or more Services
Well-site evaluation and approval including the site inspection and hydrogeologic information review.	$199	$299	$352	$437	$547	$687
Regulatory monitoring plan[1]	No plan required	$192	$260	$326	$391	$456
Unfiltered system annual comprehensive report	Not applicable	$391	$654	$917	$1,179	$1,441
Water system compliance report	$112	$112	$112	$112	$112	$112

[1] A comprehensive document containing coliform, inorganic chemical and organic chemical monitoring plans in accordance with WAC 246-290-300.

(2) To determine the appropriate fee for a noncommunity system, calculate the service equivalent by taking the average population served each day of operation and dividing by twenty-five for a transient noncommunity (TNC) system and two and one-half for nontransient noncommunity (NTNC) system. Use the number of service equivalents to find out what Group A size category to look under and submit the appropriate fee. (All noncommunity systems are Group A systems as described in WAC 246-290-020.)

(3) Additional review and approval fees may be assessed as follows:

(a) The basic fee covers an evaluation, or the review of an initial submittal and one resubmittal if required. If additional resubmittals are required, an additional twenty-five percent of the original fee will be assessed for each additional resubmittal. For water system plan and SMA plan preparation the basic fee also covers a preplanning conference. When the department is asked to participate in other meetings involving the plan such as community meetings, public hearings, or meetings with elected officials, the department is authorized to charge additional fees at the rate of ninety-nine dollars per hour;

(b) Fees for department project approval based on local technical review will be determined on a case-by-case basis as outlined in the applicable memorandum of understanding between the department and the respective local agency;

(c) Fees for services which the department determines are not described under subsection (1) of this section, will be calculated based on a rate of ninety-nine dollars per hour.

Examples of these services include, but are not limited to:

(i) Review and inspection of water reuse projects;

(ii) Collection of water quality samples requested by purveyor;

(iii) Review of alternate technologies requested by purveyor, manufacturer or authorized representative;

(iv) Sanitary surveys, including the time spent as part of the annual on-site inspections for systems under WAC 246-290-690(3) that is in addition to the time necessary to assess watershed control and disinfection treatment;

(v) Well field designations; or

(vi) Transfers of ownership under WAC 246-290-035 or 246-294-060.

(d) Additional fees assessed by the department shall be billed to the purveyor using an itemized invoice.

(4) If the legislature revises the water system operating permit fee under RCW 70.119A.110 to incorporate into it one or more fees for service currently assessed separately under this section, and the purveyor has paid that consolidated fee, the department shall not assess or collect a separate fee under this section for any such service.

(5) All fees required under this section except as noted in subsection (3) of this section, shall be submitted prior to the department's approval. Payment of fees shall be in the form of a check or money order made payable to: The Department of Health, P.O. Box 1099, Olympia, Washington 98507-1099. Payment of a fee shall not guarantee approval of the submitted document or evaluation request.

(6) Purveyors unable to determine the appropriate fee payment to submit should contact the department.

[Statutory Authority: RCW 43.70.250 and 70.119.160. 04-12-123, § 246-290-990, filed 6/2/04, effective 7/3/04. Statutory Authority: RCW 43.70.250, 43.20B.020, and 70.119.160. 03-13-028, § 246-290-990, filed 6/10/03, effective 7/11/03. Statutory Authority: RCW 43.70.250 and 70.119.160. 02-01-065, § 246-290-990, filed 12/14/01, effective 1/14/02. Statutory Authority: RCW 43.70.250. 00-02-015, § 246-290-990, filed 12/27/99, effective 1/27/00; 99-12-022, § 246-290-990, filed 5/24/99, effective 6/24/99. Statutory Authority: RCW 43.20B.020. 98-11-068, § 246-290-990, filed 5/19/98, effective 6/19/98; 97-12-032, § 246-290-990, filed 5/30/97, effective 6/30/97; 95-20-079, § 246-290-990, filed 10/4/95, effective 11/4/95; 93-01-006 (Order 315), § 246-290-990, filed 12/3/92, effective 1/3/93. Statutory Authority: RCW 43.70.040. 91-02-049 (Order 121), recodified as § 246-290-990, filed 12/27/90, effective 1/31/91. Statutory Authority: RCW 43.20A.055. 87-14-066 (Order 2493), § 440-44-048, filed 7/1/87; 83-14-038 (Order 1980), § 440-44-048, filed 6/30/8.

Code of Federal Regulations (CFR)
Protection of Environment
Sections and Subsections
of Title 40 Parts 141 and 143

Adopted by Reference
246-290-025 WAC

Effective July 2003

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Subpart A – General

Sec. 141.2 Definitions.

As used in this part, the term:

Action level, is the concentration of lead or copper in water specified in Sec. 141.80(c) which determines, in some cases, the treatment requirements contained in subpart I of this part that a water system is required to complete.

Corrosion inhibitor means a substance capable of reducing the corrosivity of water toward metal plumbing materials, especially lead and copper, by forming a protective film on the interior surface of those materials.

Effective corrosion inhibitor residual, for the purpose of subpart I of this part only, means a concentration sufficient to form a passivating film on the interior walls of a pipe.

Enhanced coagulation means the addition of sufficient coagulant for improved removal of disinfection byproduct precursors by conventional filtration treatment.

Enhanced softening means the improved removal of disinfection byproduct precursors by precipitative softening.

First draw sample means a one-liter sample of tap water, collected in accordance with Sec. 141.86(b)(2), that has been standing in plumbing pipes at least 6 hours and is collected without flushing the tap.

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 frequency of every 180 days.

Haloacetic acids (five) (HAA5) mean the sum of the concentrations in milligrams per liter of the haloacetic acid compounds (monochloroacetic acid, dichloroacetic acid, trichloroacetic acid, monobromoacetic acid, and dibromoacetic acid), rounded to two significant figures after addition.

Large water system, for the purpose of subpart I of this part only, means a water system that serves more than 50,000 persons.

Lead service line means a service line made of lead which connects the water main to the building inlet and any lead pigtail, gooseneck or other fitting which is connected to such lead line.

Maximum residual disinfectant level (MRDL) means a level of a disinfectant added for water treatment that may not be exceeded at the consumer's tap without an unacceptable possibility of adverse health effects. For chlorine and chloramines, a PWS is in compliance with the MRDL when the running annual average of monthly averages of samples taken in the distribution system, computed quarterly, is less than or equal to the MRDL. For chlorine dioxide, a PWS is in

compliance with the MRDL when daily samples are taken at the entrance to the distribution system and no two consecutive daily samples exceed the MRDL. MRDLs are enforceable in the same manner as maximum contaminant levels under Section 1412 of the Safe Drinking Water Act. There is convincing evidence that addition of a disinfectant is necessary for control of waterborne microbial contaminants. Notwithstanding the MRDLs listed in Sec. 141.65, operators may increase residual disinfectant levels of chlorine or chloramines (but not chlorine dioxide) in the distribution system to a level and for a time necessary to protect public health to address specific microbiological contamination problems caused by circumstances such as distribution line breaks, storm runoff events, source water contamination, or cross-connections.

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

Medium-size water system, for the purpose of subpart I of this part only, means a water system that serves greater than 3,300 and less than or equal to 50,000 persons.

Optimal corrosion control treatment, for the purpose of subpart I of this part only, means the corrosion control treatment that minimizes the lead and copper concentrations at users' taps while insuring that the treatment does not cause the water system to violate any national primary drinking water regulations.

Service line sample means a one-liter sample of water collected in accordance with Sec. 141.86(b)(3), that has been standing for at least 6 hours in a service line.

Single family structure, for the purpose of subpart I of this part only, means a building constructed as a single-family residence that is currently used as either a residence or a place of business.

Small water system, for the purpose of subpart I of this part only, means a water system that serves 3,300 persons or fewer.

SUVA means Specific Ultraviolet Absorption at 254 nanometers (nm), an indicator of the humic content of water. It is a calculated parameter obtained by dividing a sample's ultraviolet absorption at a wavelength of 254 nm (UV_{254}) (in $m =^{1}$) by its concentration of dissolved organic carbon (DOC) (in mg/L).

Total Organic Carbon (TOC) means total organic carbon in mg/L measured using heat, oxygen, ultraviolet irradiation, chemical oxidants, or combinations of these oxidants that convert organic carbon to carbon dioxide, rounded to two significant figures.

[40 FR 59570, Dec. 24, 1975, as amended at 41 FR 28403, July 9, 1976; 44 FR 68641, Nov. 29, 1979; 51 FR 11410, Apr. 2, 1986; 52 FR 20674, June 2, 1987; 52 FR 25712, July 8, 1987; 53 FR 37410, Sept. 26, 1988; 54 FR 27526, 27562, June 29, 1989; 56 FR 3578, Jan. 30, 1991; 56 FR 26547, June 7, 1991; 57 FR 31838, July 17, 1992; 59 FR 34322, July 1, 1994; 61 FR 24368, May 14, 1996; 63 FR 23366, Apr. 28, 1998; 63 FR 69463, 69515, Dec. 16, 1998; 66 FR 7061, Jan. 22, 2001; 67 FR 1835, Jan. 14, 2002]

Subpart B – Maximum Contaminant Levels

Sec. 141.12 Maximum contaminant levels for total trihalomethanes.

The maximum contaminant level of 0.10 mg/L for total trihalomethanes (the sum of the concentrations of bromodichloromethane, dibromochloromethane, tribromomethane (bromoform), and trichloromethane (chloroform)) applies to subpart H community water systems which serve a population of 10,000 people or more until December 31, 2001. This level applies to community water systems that use only ground water not under the direct influence of surface water and serve a population of 10,000 people or more until December 31, 2003. Compliance with the maximum contaminant level for total trihalomethanes is calculated pursuant to Sec. 141.30. After December 31, 2003, this section is no longer applicable.

[63 FR 69463, Dec. 16, 1998, as amended at 66 FR 3776, Jan. 16, 2001]

Sec. 141.13 Maximum contaminant levels for turbidity.

The maximum contaminant levels for turbidity are applicable to both community water systems and non-community water systems using surface water sources in whole or in part. The maximum contaminant levels for turbidity in drinking water, measured at a representative entry point(s) to the distribution system, are:

Editorial Note: At 54 FR 27527, June 29, 1989, Sec. 141.13 was amended by adding introductory text, effective December 31, 1990, however, introductory text already exists. The recently added text follows.

The requirements in this section apply to unfiltered systems until December 30, 1991, unless the State has determined prior to that date, in writing pursuant to Sec. 1412(b)(7)(C)(iii), that filtration is required. The requirements in this section apply to filtered systems until June 29, 1993. The requirements in this section apply to unfiltered systems that the State has determined, in writing pursuant to Sec. 1412(b)(7)(C)(iii), must install filtration, until June 29, 1993, or until filtration is installed, whichever is later.

(a) One turbidity unit (TU), as determined by a monthly average pursuant to Sec. 141.22, except that five or fewer turbidity units may be allowed if the supplier of water can demonstrate to the State that the higher turbidity does not do any of the following:

    (1) Interfere with disinfection;

    (2) Prevent maintenance of an effective disinfectant agent throughout the distribution system; or

    (3) Interfere with microbiological determinations.

(b) Five turbidity units based on an average for two consecutive days pursuant to Sec. 141.22.

[40 FR 59570, Dec. 24, 1975]

Subpart C – Monitoring and Analytical Requirements

Sec. 141.21 Coliform sampling.

(a) Routine monitoring.

(1) Public water systems must collect total coliform samples at sites which are representative of water throughout the distribution system according to a written sample siting plan. These plans are subject to State review and revision.

(2) The monitoring frequency for total coliforms for community water systems is based on the population served by the system, as follows:

Total Coliform Monitoring Frequency for Community Water Systems

Population served	Minimum number of samples per month
25 to 1,000 [1]	1
1,001 to 2,500	2
2,501 to 3,300	3
3,301 to 4,100	4
4,101 to 4,900	5
4,901 to 5,800	6
5,801 to 6,700	7
6,701 to 7,600	8
7,601 to 8,500	9
8,501 to 12,900	10
12,901 to 17,200	15
17,201 to 21,500	20
21,501 to 25,000	25
25,001 to 33,000	30
33,001 to 41,000	40
41,001 to 50,000	50
50,001 to 59,000	60
59,001 to 70,000	70
70,001 to 83,000	80
83,001 to 96,000	90
96,001 to 130,000	100
130,001 to 220,000	120
220,001 to 320,000	150
320,001 to 450,000	180
450,001 to 600,000	210
600,001 to 780,000	240
780,001 to 970,000	270
970,001 to 1,230,000	300
1,230,001 to 1,520,000	330
1,520,001 to 1,850,000	360

Population served	Minimum number of samples per month
1,850,001 to 2,270,000	390
2,270,001 to 3,020,000	420
3,020,001 to 3,960,000	450
3,960,001 or more	480

[1] Includes public water systems which have at least 15 service connections, but serve fewer than 25 persons.

If a community water system serving 25 to 1,000 persons has no history of total coliform contamination in its current configuration and a sanitary survey conducted in the past five years shows that the system is supplied solely by a protected groundwater source and is free of sanitary defects, the State may reduce the monitoring frequency specified above, except that in no case may the State reduce the monitoring frequency to less than one sample per quarter. The State must approve the reduced monitoring frequency in writing.

(3) The monitoring frequency for total coliforms for non-community water systems is as follows:

(i) Non-community water system using only ground water (except ground water under the direct influence of surface water, as defined in Sec. 141.2) and serving 1,000 persons or fewer must monitor each calendar quarter that the system provides water to the public, except that the State may reduce this monitoring frequency, in writing, if a sanitary survey shows that the system is free of sanitary defects. Beginning June 29, 1994, the State cannot reduce the monitoring frequency for a non-community water system using only ground water (except ground water under the direct influence of surface water, as defined in Sec. 141.2) and serving 1,000 persons or fewer to less than once/year.

(ii) A non-community water system using only ground water (except ground water under the direct influence of surface water, as defined in Sec. 141.2) and serving more than 1,000 persons during any month must monitor at the same frequency as a like-sized community water system, as specified in paragraph (a)(2) of this section, except the State may reduce this monitoring frequency, in writing, for any month the system serves 1,000 persons or fewer. The State cannot reduce the monitoring frequency to less than once/year. For systems using ground water under the direct influence of surface water, paragraph (a)(3)(iv) of this section applies.

(iii) A non-community water system using surface water, in total or in part, must monitor at the same frequency as a like-sized community water system, as specified in paragraph (a)(2) of this section, regardless of the number of persons it serves.

(iv) A non-community water system using ground water under the direct influence of surface water, as defined in Sec. 141.2, must monitor at the same frequency as a like-sized community water system, as specified in paragraph (a)(2) of this section. The system must begin monitoring at this frequency beginning six months after the State determines that the ground water is under the direct influence of surface water.

(4) The public water system must collect samples at regular time intervals throughout the month, except that a system which uses only ground water (except ground water under the direct influence of surface water, as defined in Sec. 141.2), and serves 4,900 persons or fewer, may collect all required samples on a single day if they are taken from different sites.

(5) A public water system that uses surface water or ground water under the direct influence of surface water, as defined in Sec. 141.2, and does not practice filtration in compliance with Subpart H must collect at least one sample near the first service connection each day the turbidity level of the source water, measured as specified in Sec. 141.74(b)(2), exceeds 1 NTU. This sample must be analyzed for the presence of total coliforms. When one or more turbidity measurements in any day exceed 1 NTU, the system must collect this coliform sample within 24 hours of the first exceedance, unless the State determines that the system, for logistical reasons outside the system's control, cannot have the sample analyzed within 30 hours of collection. Sample results from this coliform monitoring must be included in determining compliance with the MCL for total coliforms in Sec. 141.63.

(6) Special purpose samples, such as those taken to determine whether disinfection practices are sufficient following pipe placement, replacement, or repair, shall not be used to determine compliance with the MCL for total coliforms in Sec. 141.63. Repeat samples taken pursuant to paragraph (b) of this section are not considered special purpose samples, and must be used to determine compliance with the MCL for total coliforms in Sec. 141.63.

(b) Repeat monitoring.

(1) If a routine sample is total coliform-positive, the public water system must collect a set of repeat samples within 24 hours of being notified of the positive result. A system which collects more than one routine sample/month must collect no fewer than three repeat samples for each total coliform-positive sample found. A system which collects one routine sample/month or fewer must collect no fewer than four repeat samples for each total coliform-positive sample found. The State may extend the 24-hour limit on a case-by-case basis if the system has a logistical problem in collecting the repeat samples within 24 hours that is beyond its control. In the case of an extension, the State must specify how much time the system has to collect the repeat samples.

(2) The system must collect at least one repeat sample from the sampling tap where the original total coliform-positive sample was taken, and at least one repeat sample at a tap within five service connections upstream and at least one repeat sample at a tap within

five service connections downstream of the original sampling site. If a total coliform-positive sample is at the end of the distribution system, or one away from the end of the distribution system, the State may waive the requirement to collect at least one repeat sample upstream or downstream of the original sampling site.

(3) The system must collect all repeat samples on the same day, except that the State may allow a system with a single service connection to collect the required set of repeat samples over a four-day period or to collect a larger volume repeat sample(s) in one or more sample containers of any size, as long as the total volume collected is at least 400 ml (300 ml for systems which collect more than one routine sample/month).

(4) If one or more repeat samples in the set is total coliform-positive, the public water system must collect an additional set of repeat samples in the manner specified in paragraphs (b) (1)-(3) of this section. The additional samples must be collected within 24 hours of being notified of the positive result, unless the State extends the limit as provided in paragraph (b)(1) of this section. The system must repeat this process until either total coliforms are not detected in one complete set of repeat samples or the system determines that the MCL for total coliforms in Sec. 141.63 has been exceeded and notifies the State.

(5) If a system collecting fewer than five routine samples/month has one or more total coliform-positive samples and the State does not invalidate the sample(s) under paragraph (c) of this section, it must collect at least five routine samples during the next month the system provides water to the public, except that the State may waive this requirement if the conditions of paragraph (b)(5) (i) or (ii) of this section are met. The State cannot waive the requirement for a system to collect repeat samples in paragraphs (b) (1)-(4) of this section.

(i) The State may waive the requirement to collect five routine samples the next month the system provides water to the public if the State, or an agent approved by the State, performs a site visit before the end of the next month the system provides water to the public. Although a sanitary survey need not be performed, the site visit must be sufficiently detailed to allow the State to determine whether additional monitoring and/or any corrective action is needed. The State cannot approve an employee of the system to perform this site visit, even if the employee is an agent approved by the State to perform sanitary surveys.

(ii) The State may waive the requirement to collect five routine samples the next month the system provides water to the public if the State has determined why the sample was total coliform-positive and establishes that the system has corrected the problem or will correct the problem before the end of the next month the system serves water to the public. In this case, the State must document this decision to waive the following month's additional monitoring requirement in writing, have it approved and signed by the supervisor of the State official who recommends such a decision, and make this document available to the EPA and public. The written documentation must describe the specific cause of the total coliform-positive sample and what action the system has taken and/or will take to

correct this problem. The State cannot waive the requirement to collect five routine samples the next month the system provides water to the public solely on the grounds that all repeat samples are total coliform-negative. Under this paragraph, a system must still take at least one routine sample before the end of the next month it serves water to the public and use it to determine compliance with the MCL for total coliforms in Sec. 141.63, unless the State has determined that the system has corrected the contamination problem before the system took the set of repeat samples required in paragraphs (b) (1)-(4) of this section, and all repeat samples were total coliform-negative.

(6) After a system collects a routine sample and before it learns the results of the analysis of that sample, if it collects another routine sample(s) from within five adjacent service connections of the initial sample, and the initial sample, after analysis, is found to contain total coliforms, then the system may count the subsequent sample(s) as a repeat sample instead of as a routine sample.

(7) Results of all routine and repeat samples not invalidated by the State must be included in determining compliance with the MCL for total coliforms in Sec. 141.63.

(c) Invalidation of total coliform samples. A total coliform-positive sample invalidated under this paragraph (c) does not count towards meeting the minimum monitoring requirements of this section.

(1) The State may invalidate a total coliform-positive sample only if the conditions of paragraph (c)(1) (i), (ii), or (iii) of this section are met.

(i) The laboratory establishes that improper sample analysis caused the total coliform-positive result.

(ii) The State, on the basis of the results of repeat samples collected as required by paragraphs (b) (1) through (4) of this section, determines that the total coliform-positive sample resulted from a domestic or other non-distribution system plumbing problem. The State cannot invalidate a sample on the basis of repeat sample results unless all repeat sample(s) collected at the same tap as the original total coliform-positive sample are also total coliform-positive, and all repeat samples collected within five service connections of the original tap are total coliform-negative (e.g., a State cannot invalidate a total coliform-positive sample on the basis of repeat samples if all the repeat samples are total coliform-negative, or if the public water system has only one service connection).

(iii) The State has substantial grounds to believe that a total coliform-positive result is due to a circumstance or condition which does not reflect water quality in the distribution system. In this case, the system must still collect all repeat samples required under paragraphs (b) (1)-(4) of this section, and use them to determine compliance with the MCL for total coliforms in Sec. 141.63. To invalidate a total coliform-positive sample under this paragraph, the decision with the rationale for the decision must be documented in writing, and approved and signed by the

supervisor of the State official who recommended the decision. The State must make this document available to EPA and the public. The written documentation must state the specific cause of the total coliform-positive sample, and what action the system has taken, or will take, to correct this problem. The State may not invalidate a total coliform-positive sample solely on the grounds that all repeat samples are total coliform-negative.

(2) A laboratory must invalidate a total coliform sample (unless total coliforms are detected) if the sample produces a turbid culture in the absence of gas production using an analytical method where gas formation is examined (e.g., the Multiple-Tube Fermentation Technique), produces a turbid culture in the absence of an acid reaction in the Presence-Absence (P-A) Coliform Test, or exhibits confluent growth or produces colonies too numerous to count with an analytical method using a membrane filter (e.g., Membrane Filter Technique). If a laboratory invalidates a sample because of such interference, the system must collect another sample from the same location as the original sample within 24 hours of being notified of the interference problem, and have it analyzed for the presence of total coliforms. The system must continue to re-sample within 24 hours and have the samples analyzed until it obtains a valid result. The State may waive the 24-hour time limit on a case-by-case basis.

(d) Sanitary surveys.

(1) * * *

(i) Public water systems which do not collect five or more routine samples/month must undergo an initial sanitary survey by June 29, 1994, for community public water systems and June 29, 1999, for non-community water systems. Thereafter, systems must undergo another sanitary survey every five years, except that non-community water systems using only protected and disinfected ground water, as defined by the State, must undergo subsequent sanitary surveys at least every ten years after the initial sanitary survey. The State must review the results of each sanitary survey to determine whether the existing monitoring frequency is adequate and what additional measures, if any, the system needs to undertake to improve drinking water quality.

(ii) In conducting a sanitary survey of a system using ground water in a State having an EPA-approved wellhead protection program under section 1428 of the Safe Drinking Water Act, information on sources of contamination within the delineated wellhead protection area that was collected in the course of developing and implementing the program should be considered instead of collecting new information, if the information was collected since the last time the system was subject to a sanitary survey.

(2) Sanitary surveys must be performed by the State or an agent approved by the State. The system is responsible for ensuring the survey takes place.

(e) Fecal coliforms/Escherichia coli (E. coli) testing.

(1) If any routine or repeat sample is total coliform-positive, the system must analyze that total coliform-positive culture medium to determine if fecal coliforms are present, except that the system may test for E. coli in lieu of fecal coliforms. If fecal coliforms or E. coli are present, the system must notify the State by the end of the day when the system is notified of the test result, unless the system is notified of the result after the State office is closed, in which case the system must notify the State before the end of the next business day.

(2) The State has the discretion to allow a public water system, on a case-by-case basis, to forgo fecal coliform or E. coli testing on a total coliform-positive sample if that system assumes that the total coliform-positive sample is fecal coliform-positive or E. coli-positive. Accordingly, the system must notify the State as specified in paragraph (e)(1) of this section and the provisions of Sec. 141.63(b) apply.

(f) Analytical methodology.

(1) The standard sample volume required for total coliform analysis, regardless of analytical method used, is 100 ml.

(2) Public water systems need only determine the presence or absence of total coliforms; a determination of total coliform density is not required.

(3) Public water systems must conduct total coliform analyses in accordance with one of the analytical methods in the following table.

Organism	Methodology [12]	Citation [1]
Total Coliforms [2]	Total Coliform Fermentation Technique [3,4,5]	9221A, B
	Total Coliform Membrane Filter Technique [6]	9222 A, B, C
	Presence-Absence (P-A) Coliform Test [5,7]	9221
	ONPG-MUG Test [8]	9223
	Colisure Test [9]	
	E*Colite® Test [10]	
	m-ColiBlue24® Test [11]	

The procedures shall be done in accordance with the documents listed below. The incorporation by reference of the following documents listed in footnotes 1, 6, 8, 9, 10 and 11 was approved by the Director of the Federal Register in accordance with 5 U.S.C. 552(a) and 1 CFR Part 51. Copies of the documents may be obtained from the sources listed below. Information regarding obtaining these documents can be obtained from the Safe Drinking Water Hotline at 800-426-4791. Documents may be inspected at EPA's Drinking Water Docket, 1200 Pennsylvania Ave., NW., Washington, DC 20460 (Telephone: 202-260-3027); or at the Office of Federal Register, 800 North Capitol Street, NW, Suite 700, Washington, D.C. 20408.

[1] Methods 9221 A, B; 9222 A, B, C; 9221 D and 9223 are contained in Standard Methods for the Examination of Water and Wastewater, 18th edition (1992) and 19th edition (1995) American Public Health Association, 1015 Fifteenth Street NW, Washington, D.C. 20005; either edition may be used.

[2] The time from sample collection to initiation of analysis may not exceed 30 hours. Systems are encouraged but not required to hold samples below 10° C during transit.

[3] 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 total coliform, using lactose broth, is less than 10 percent.

[4] 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.

[5] No requirement exists to run the completed phase on 10 percent of all total coliform-positive confirmed tubes.

[6] MI agar also may be used. Preparation and use of MI agar is set forth in the article, "New medium for the simultaneous detection of total coliform and Escherichia coli in water" by Brenner, K.P., et al., 1993, Appl. Environ. Microbiol. 59:3534-3544. Also available from the Office of Water Resource Center (RC-4100), 401 M. Street SW, Washington, DC 20460, EPA/600/J-99/225.

[7] Six-times formulation strength may be used if the medium is filter-sterilized rather than autoclaved.

[8] The ONPG-MUG Test is also known as the Autoanalysis Colilert System.

[9] A description of the Colisure Test, Feb 28, 1994, may be obtained from IDEXX Laboratories, Inc., One IDEXX Drive, Westbrook, Maine 04092. The Colisure Test may be read after an incubation time of 24 hours.

[10] A description of the E*Colite® Test, "Presence/Absence for Coliforms and E. Coli in Water," Dec 21, 1997, is available from Charm Sciences, Inc., 36 Franklin Street, Malden, MA 02148-4120.

[11] A description of the m-ColiBlue24® Test, Aug 17, 1999, is available from the Hach Company, 100 Dayton Avenue, Ames, IA 50010.

[12] EPA strongly recommends that laboratories evaluate the false-positive and negative rates for the method(s) they use for monitoring total coliforms.

EPA also encourages laboratories 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. The Agency suggests that laboratories perform these studies on a minimum of 5% of all total coliform-positive samples, except for those methods where verification/confirmation is already required, e.g., the M-Endo and LES Endo Membrane Filter Tests, Standard Total Coliform Fermentation Technique, and Presence-Absence Coliform Test. 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).

(4) [Reserved]

(5) Public water systems must conduct fecal coliform analysis in accordance with the following procedure. When the MTF Technique or Presence-Absence (PA) Coliform Test is used to test for total coliforms, shake the lactose-positive presumptive tube or P-A vigorously and transfer the growth with a sterile 3-mm loop or sterile applicator stick into brilliant green lactose bile broth and EC medium to determine the presence of total

and fecal coliforms, respectively. For EPA-approved analytical methods which use a membrane filter, transfer the total coliform-positive culture by one of the following methods: remove the membrane containing the total coliform colonies from the substrate with a sterile forceps and carefully curl and insert the membrane into a tube of EC medium (the laboratory may first remove a small portion of selected colonies for verification), swab the entire membrane filter surface with a sterile cotton swab and transfer the inoculum to EC medium (do not leave the cotton swab in the EC medium), or inoculate individual total coliform-positive colonies into EC Medium. Gently shake the inoculated tubes of EC medium to insure adequate mixing and incubate in a waterbath at 44.5 ± 0.2° C for 24 ± 2 hours. Gas production of any amount in the inner fermentation tube of the EC medium indicates a positive fecal coliform test. The preparation of EC medium is described in Method 9221E (paragraph 1a) in Standard Methods for the Examination of Water and Wastewater, 18th edition, 1992 and in the 19th edition, 1995; either edition may be used. Public water systems need only determine the presence or absence of fecal coliforms; a determination of fecal coliform density is not required.

(6) Public water systems must conduct analysis of Escherichia coli in accordance with one of the following analytical methods:

(i) EC medium supplemented with 50 µg/ml of 4-methylumbelliferyl-beta-D-glucuronide (MUG) (final concentration). EC medium is described in Method 9221 E as referenced in paragraph (f)(5) of this section. MUG may be added to EC medium before autoclaving. EC medium supplemented with 50 µg/ml of MUG is commercially available. At least 10 ml of EC medium supplemented with MUG must be used. The inner inverted fermentation tube may be omitted. The procedure for transferring a total coliform-positive culture to EC medium supplemented with MUG shall be as specified in paragraph (f)(5) of this section for transferring a total coliform-positive culture to EC medium. Observe fluorescence with an ultraviolet light (366 nm) in the dark after incubating tube at 44.5 ± 0.2° C for 24 ± 2 hours; or

(ii) Nutrient agar supplemented with 100 µg/ml 4-methylumbelliferyl-beta-D-glucuronide (MUG) (final concentration). Nutrient Agar is described in Method 9221 B (paragraph 3) in Standard Methods for the Examination of Water and Wastewater, 18th edition, 1992 and in the 19th edition, 1995; either edition may be used. This test is used to determine if a total coliform-positive sample, as determined by the Membrane Filter Technique or any other method in which a membrane filter is used, contains E. coli. Transfer the membrane filter containing a total coliform colony(ies) to nutrient agar supplemented with 100 µg/ml (final concentration) of MUG. After incubating the agar plate at 35° C for 4 hours, observe the colony(ies) under ultraviolet light (366 nm) in the dark for fluorescence. If fluorescence is visible, E. coli are present.

(iii) Minimal Medium ONPG-MUG (MMO-MUG) Test, as set forth in the article "National Field Evaluation of a Defined Substrate Method for the Simultaneous Detection of Total Coliforms and Escherichia coli from Drinking Water:

Comparison with Presence-Absence Techniques" (Edberg et al.), Applied and Environmental Microbiology, Volume 55, pp. 1003-1008, April 1989. (Note: The Autoanalysis Colilert System is an MMO-MUG test). If the MMO-MUG test is total coliform-positive after a 24-hour incubation, test the medium for fluorescence with a 366-nm ultraviolet light (preferably with a 6-watt lamp) in the dark. If fluorescence is observed, the sample is E. coli-positive. If fluorescence is questionable (cannot be definitively read) after 24 hours incubation, incubate the culture for an additional four hours (but not to exceed 28 hours total), and again test the medium for fluorescence. The MMO-MUG Test with hepes buffer in lieu of phosphate buffer is the only approved formulation for the detection of E. coli.

(iv) The Colisure Test. A description of the Colisure Test may be obtained from the Millipore Corporation, Technical Services Department, 80 Ashby Road, Bedford, MA 01730.

(v) The membrane filter method with MI agar, a description of which is cited in footnote 6 to the table in paragraph (f)(3) of this section.

(vi) E*Colite® Test, a description of which is cited in footnote 10 to the table at paragraph (f)(3) of this section.

(vii) m-ColiBlue24® Test, a description of which is cited in footnote 11 to the table in paragraph (f)(3) of this section.

(7) As an option to paragraph (f)(6)(iii) of this section, a system with a total coliform-positive, MUG-negative, MMO-MUG test may further analyze the culture for the presence of E. coli by transferring a 0.1 ml, 28-hour MMO-MUG culture to EC Medium + MUG with a pipet. The formulation and incubation conditions of EC Medium + MUG, and observation of the results are described in paragraph (f)(6)(i) of this section.

(8) The following materials are incorporated by reference in this section with the approval of the Director of the Federal Register in accordance with 5 U.S.C. 552(a) and 1 CFR part 51. Copies of the analytical methods cited in Standard Methods for the Examination of Water and Wastewater (18th and 19th editions) may be obtained from the American Public Health Association et al.; 1015 Fifteenth Street NW., Washington, DC 20005. Copies of the methods set forth in Microbiological Methods for Monitoring the Environment, Water and Wastes may be obtained from ORD Publications, U.S. EPA, 26 W. Martin Luther King Drive, Cincinnati, Ohio 45268. Copies of the MMO-MUG Test as set forth in the article "National Field Evaluation of a Defined Substrate Method for the Simultaneous Enumeration of Total Coliforms and Escherichia coli from Drinking Water: Comparison with the Standard Multiple Tube Fermentation Method" (Edberg et al.) may be obtained from the American Water Works Association Research Foundation, 6666 West Quincy Avenue, Denver, CO 80235. A description of the Colisure Test may be obtained from the Millipore Corp., Technical Services Department, 80 Ashby Road, Bedford, MA 01730. Copies may be inspected at EPA's

Drinking Water Docket; 401 M St., SW.; Washington, DC 20460, or at the Office of the Federal Register; 800 North Capitol Street, NW., suite 700, Washington, DC.

(g) Response to violation.

(1) A public water system which has exceeded the MCL for total coliforms in Sec. 141.63 must report the violation to the State no later than the end of the next business day after it learns of the violation, and notify the public in accordance with subpart Q.

(2) A public water system which has failed to comply with a coliform monitoring requirement, including the sanitary survey requirement, must report the monitoring violation to the State within ten days after the system discovers the violation, and notify the public in accordance with subpart Q.

[54 FR 27562, June 29, 1989, as amended at 54 FR 30001, July 17, 1989; 55 FR 25064, June 19, 1990; 56 FR 642, Jan. 8, 1991; 57 FR 1852, Jan. 15, 1992; 57 FR 24747, June 10, 1992; 59 FR 62466, Dec. 5, 1994; 60 FR 34085, June 29, 1995; 64 FR 67461, Dec. 1, 1999; 65 FR 26022, May 4, 2000]

Sec. 141.22 Turbidity sampling and analytical requirements.

The requirements in this section apply to unfiltered systems until December 30, 1991, unless the State has determined prior to that date, in writing pursuant to section 1412(b)(7)(iii), that filtration is required. The requirements in this section apply to filtered systems until June 29, 1993. The requirements in this section apply to unfiltered systems that the State has determined, in writing pursuant to section 1412(b)(7)(C)(iii), must install filtration, until June 29, 1993, or until filtration is installed, whichever is later.

(a) Samples shall be taken by suppliers of water for both community and non-community water systems at a representative entry point(s) to the water distribution system at least once per day, for the purposes of making turbidity measurements to determine compliance with Sec. 141.13. If the State determines that a reduced sampling frequency in a non-community will not pose a risk to public health, it can reduce the required sampling frequency. The option of reducing the turbidity frequency shall be permitted only in those public water systems that practice disinfection and which maintain an active residual disinfectant in the distribution system, and in those cases where the State has indicated in writing that no unreasonable risk to health existed under the circumstances of this option. Turbidity measurements shall be made as directed in Sec. 141.74(a)(1).

(b) If the result of a turbidity analysis indicates that the maximum allowable limit has been exceeded, the sampling and measurement shall be confirmed by resampling as soon as practicable and preferably within one hour. If the repeat sample confirms that the maximum allowable limit has been exceeded, the supplier of water shall report to the State within 48 hours. The repeat sample shall be the sample used for the purpose of calculating the monthly average. If the monthly average of the daily samples exceeds the maximum allowable limit, or if the average of two samples taken on consecutive days exceeds 5 TU, the supplier of water shall report to the State and notify the public as directed in Secs. 141.31 and subpart Q.

(c) Sampling for non-community water systems shall begin within two years after the effective date of this part.

(d) The requirements of this Sec. 141.22 shall apply only to public water systems which use water obtained in whole or in part from surface sources.

(e) The State has the authority to determine compliance or initiate enforcement action based upon analytical results or other information compiled by their sanctioned representatives and agencies.

[40 FR 59570, Dec. 24, 1975, as amended at 45 FR 57344, Aug. 27, 1980; 47 FR 8998, Mar. 3, 1982; 47 FR 10998, Mar. 12, 1982; 54 FR 27527, June 29, 1989; 59 FR 62466, Dec. 5, 1994; 65 FR 26022, May 4, 2000]

Sec. 141.23(a) – 141.23(j) excluding (i)(2) Inorganic chemical sampling and analytical requirements.

Community water systems shall conduct monitoring to determine compliance with the maximum contaminant levels specified in Sec. 141.62 in accordance with this section. Non-transient, non-community water systems shall conduct monitoring to determine compliance with the maximum contaminant levels specified in Sec. 141.62 in accordance with this section. Transient, non-community water systems shall conduct monitoring to determine compliance with the nitrate and nitrite maximum contaminant levels in Secs. 141.11 and 141.62 (as appropriate) in accordance with this section.

(a) Monitoring shall be conducted as follows:

(1) Groundwater systems shall take a minimum of one sample at every entry point to the distribution system which is representative of each well after treatment (hereafter called a sampling point) beginning in the initial compliance period. 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.

(2) Surface water systems shall take a minimum of one sample at every entry point to the distribution system after any application of treatment or in the distribution system at a point which is representative of each source after treatment (hereafter called a sampling point) beginning in the initial compliance period. 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.

Note: For purposes of this paragraph, surface water systems include systems with a combination of surface and ground sources.

(3) 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 (i.e., when water is representative of all sources being used).

(4) The State may reduce the total number of samples which must be analyzed 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 must be done in the laboratory.

(i) 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 must be taken within 14 days at each sampling point included in the composite. These samples must be analyzed for the contaminants which exceeded one-fifth of the MCL in the composite sample. Detection limits for each analytical method and MCLs for each inorganic contaminant are the following:

Detection Limits for Inorganic Contaminants

Contaminant	MCL	Methodology	Detection limit (mg/l)
Antimony	0.006	Atomic Absorption; Furnace	0.003
		Atomic Absorption; Platform	0.0008 [5]
		ICP-Mass Spectrometry	0.0004
		Hydride-Atomic Absorption	0.001
Arsenic	[6] 0.01	Atomic Absorption; Furnace	0.001
		Atomic Absorption; Platform - Stabilized Temperature	[7] 0.0005
		Atomic Absorption; Gaseous Hydride	0.001
		ICP-Mass Spectrometry	[8] 0.0014
Asbestos	7 MFL [1]	Transmission Electron Microscopy	0.01 MFL
Barium	2	Atomic Absorption; furnace technique	0.002
		Atomic Absorption; direct aspiration	0.1
		Inductively Coupled Plasma	0.002 (0.001)
Beryllium	0.004	Atomic Absorption; Furnace	0.0002
		Atomic Absorption; Platform	0.00002 [5]
		Inductively Coupled Plasma [2]	0.0003
		ICP-Mass Spectrometry	0.0003
Cadmium	0.005	Atomic Absorption; furnace technique	0.0001
		Inductively Coupled Plasma	0.001
Chromium	0.1	Atomic Absorption; furnace technique	0.001
		Inductively Coupled Plasma	0.007 (0.001)
Cyanide	0.2	Distillation, Spectrophotometric [3]	0.02
		Distillation, Automated, Spectrophotometric [3]	0.005
		Distillation, Selective Electrode [3]	0.05
		Distillation, Amenable, Spectrophotometric [4]	0.02
Mercury	0.002	Manual Cold Vapor Technique	0.0002
		Automated Cold Vapor Technique	0.0002
Nickel	xl	Atomic Absorption; Furnace	0.001
		Atomic Absorption; Platform	0.0006 [5]
		Inductively Coupled Plasma [2]	0.005
		ICP-Mass Spectrometry	0.0005

Contaminant	MCL	Methodology	Detection limit (mg/l)
Nitrate	10 (as N)	Manual Cadmium Reduction	0.01
		Automated Hydrazine Reduction	0.01
		Automated Cadmium Reduction	0.05
		Ion Selective Electrode	1
		Ion Chromatography	0.01
Nitrite	1 (as N)	Spectrophotometric	0.01
		Automated Cadmium Reduction	0.05
		Manual Cadmium Reduction	0.01
		Ion Chromatography	0.004
Selenium	0.05	Atomic Absorption; furnace	0.002
		Atomic Absorption; gaseous hydride	0.002
Thallium	0.002	Atomic Absorption; Furnace	0.001
		Atomic Absorption; Platform	0.0007 [5]
		ICP-Mass Spectrometry	0.0003

[1] MFL = million fibers per liter >10 µm.

[2] Using a 2X preconcentration step as noted in Method 200.7. Lower MDLs may be achieved when using a 4X preconcentration.

[3] Screening method for total cyanides.

[4] Measures "free" cyanides.

[5] Lower MDLs are reported using stabilized temperature graphite furnace atomic absorption.

[6] The value for arsenic is effective January 23, 2006. Unit then, the MCL is 0.05 mg/L.

[7] The MDL reported for EPA method 200.9 (Atomic Absorption; Platform--Stabilized Temperature) was determined using a 2x concentration step during sample digestion. The MDL determined for samples analyzed using direct analyses (i.e., no sample digestion) will be higher. Using multiple depositions, EPA 200.9 is capable of obtaining MDL of 0.0001 mg/L.

[8] Using selective ion monitoring, EPA Method 200.8 (ICP-MS) is capable of obtaining a MDL of 0.0001 mg/L.

If the population served by the system is >3,300 persons, then compositing may only be permitted by the State at sampling points within a single system. In systems serving ≤3,300 persons, the State may permit compositing among different systems provided the 5-sample limit is maintained.

(ii) If duplicates of the original sample taken from each sampling point used in the composite sample are available, the system may use these instead of resampling. The duplicates must be analyzed and the results reported to the State within 14 days after completing analysis of the composite sample, provided the holding time of the sample is not exceeded.

(5) The frequency of monitoring for asbestos shall be in accordance with paragraph (b) of this section: the frequency of monitoring for antimony, arsenic, barium, beryllium,

cadmium, chromium, cyanide, fluoride, mercury, nickel, selenium and thallium shall be in accordance with paragraph (c) of this section; the frequency of monitoring for nitrate shall be in accordance with paragraph (d) of this section; and the frequency of monitoring for nitrite shall be in accordance with paragraph (e) of this section.

(b) The frequency of monitoring conducted to determine compliance with the maximum contaminant level for asbestos specified in Sec. 141.62(b) shall be conducted as follows:

(1) Each community and non-transient, non-community water system is required to monitor for asbestos during the first three-year compliance period of each nine-year compliance cycle beginning in the compliance period starting January 1, 1993.

(2) If the system believes it is not vulnerable to either asbestos contamination in its source water or due to corrosion of asbestos-cement pipe, or both, it may apply to the State for a waiver of the monitoring requirement in paragraph (b)(1) of this section. If the State grants the waiver, the system is not required to monitor.

(3) The State may grant a waiver based on a consideration of the following factors:

(i) Potential asbestos contamination of the water source, and

(ii) The use of asbestos-cement pipe for finished water distribution and the corrosive nature of the water.

(4) A waiver remains in effect until the completion of the three-year compliance period. Systems not receiving a waiver must monitor in accordance with the provisions of paragraph (b)(1) of this section.

(5) A system vulnerable to asbestos contamination due solely to corrosion of asbestos-cement pipe shall take one sample at a tap served by asbestos-cement pipe and under conditions where asbestos contamination is most likely to occur.

(6) A system vulnerable to asbestos contamination due solely to source water shall monitor in accordance with the provision of paragraph (a) of this section.

(7) A system vulnerable to asbestos contamination due both to its source water supply and corrosion of asbestos-cement pipe shall take one sample at a tap served by asbestos-cement pipe and under conditions where asbestos contamination is most likely to occur.

(8) A system which exceeds the maximum contaminant levels as determined in Sec. 141.23(i) of this section shall monitor quarterly beginning in the next quarter after the violation occurred.

(9) The State may decrease the quarterly monitoring requirement to the frequency specified in paragraph (b)(1) of this section provided the State has determined that the system is reliably and consistently below the maximum contaminant level. In no case can a State make this determination unless a groundwater system takes a minimum of two

quarterly samples and a surface (or combined surface/ground) water system takes a minimum of four quarterly samples.

(10) If monitoring data collected after January 1, 1990 are generally consistent with the requirements of Sec. 141.23(b), then the State may allow systems to use that data to satisfy the monitoring requirement for the initial compliance period beginning January 1, 1993.

(c) The frequency of monitoring conducted to determine compliance with the maximum contaminant levels in Sec. 141.62 for antimony, arsenic, barium, beryllium, cadmium, chromium, cyanide, fluoride, mercury, nickel, selenium and thallium shall be as follows:

(1) Groundwater systems shall take one sample at each sampling point during each compliance period. Surface water systems (or combined surface/ground) shall take one sample annually at each sampling point.

(2) The system may apply to the State for a waiver from the monitoring frequencies specified in paragraph (c)(1) of this section. States may grant a public water system a waiver for monitoring of cyanide, provided that the State determines that the system is not vulnerable due to lack of any industrial source of cyanide.

(3) A condition of the waiver shall require that a system shall take a minimum of one sample while the waiver is effective. The term during which the waiver is effective shall not exceed one compliance cycle (i.e., nine years).

(4) The State may grant a waiver provided surface water systems have monitored annually for at least three years and groundwater systems have conducted a minimum of three rounds of monitoring. (At least one sample shall have been taken since January 1, 1990). Both surface and groundwater systems shall demonstrate that all previous analytical results were less than the maximum contaminant level. Systems that use a new water source are not eligible for a waiver until three rounds of monitoring from the new source have been completed.

(5) In determining the appropriate reduced monitoring frequency, the State shall consider:

(i) Reported concentrations from all previous monitoring;

(ii) The degree of variation in reported concentrations; and

(iii) Other factors which may affect contaminant concentrations such as changes in groundwater pumping rates, changes in the system's configuration, changes in the system's operating procedures, or changes in stream flows or characteristics.

(6) A decision by the State to grant a waiver shall be made in writing and shall set forth the basis for the determination. The determination may be initiated by the State or upon an application by the public water system. The public water system shall specify the basis for its request. The State shall review and, where appropriate, revise its determination

of the appropriate monitoring frequency when the system submits new monitoring data or when other data relevant to the system's appropriate monitoring frequency become available.

(7) Systems which exceed the maximum contaminant levels as calculated in Sec. 141.23(i) of this section shall monitor quarterly beginning in the next quarter after the violation occurred.

(8) The State may decrease the quarterly monitoring requirement to the frequencies specified in paragraphs (c)(1) and (c)(2) of this section provided it has determined that the system is reliably and consistently below the maximum contaminant level. In no case can a State make this determination unless a groundwater system takes a minimum of two quarterly samples and a surface water system takes a minimum of four quarterly samples.

(d) All public water systems (community; non-transient, non-community; and transient, non-community systems) shall monitor to determine compliance with the maximum contaminant level for nitrate in Sec. 141.62.

(1) Community and non-transient, non-community water systems served by groundwater systems shall monitor annually beginning January 1, 1993; systems served by surface water shall monitor quarterly beginning January 1, 1993.

(2) For community and non-transient, non-community water systems, the repeat monitoring frequency for groundwater systems shall be quarterly for at least one year following any one sample in which the concentration is <50 percent of the MCL. The State may allow a groundwater system to reduce the sampling frequency to annually after four consecutive quarterly samples are reliably and consistently less than the MCL.

(3) For community and non-transient, non-community water systems, the State may allow a surface water system to reduce the sampling frequency to annually if all analytical results from four consecutive quarters are <50 percent of the MCL. A surface water system shall return to quarterly monitoring if any one sample is $\geqq$ 50 percent of the MCL.

(4) Each transient non-community water system shall monitor annually beginning January 1, 1993.

(5) After the initial round of quarterly sampling is completed, each community and non-transient non-community system which is monitoring annually shall take subsequent samples during the quarter(s) which previously resulted in the highest analytical result.

(e) All public water systems (community; non-transient, non-community; and transient, non-community systems) shall monitor to determine compliance with the maximum contaminant level for nitrite in Sec. 141.62(b).

(1) All public water systems shall take one sample at each sampling point in the compliance period beginning January 1, 1993 and ending December 31, 1995.

(2) After the initial sample, systems where an analytical result for nitrite is <50 percent of the MCL shall monitor at the frequency specified by the State.

(3) For community, non-transient, non-community, and transient non-community water systems, the repeat monitoring frequency for any water system shall be quarterly for at least one year following any one sample in which the concentration is $\geqq$ 50 percent of the MCL. The State may allow a system to reduce the sampling frequency to annually after determining the system is reliably and consistently less than the MCL.

(4) Systems which are monitoring annually shall take each subsequent sample during the quarter(s) which previously resulted in the highest analytical result.

(f) Confirmation samples:

(1) Where the results of sampling for antimony, arsenic, asbestos, barium, beryllium, cadmium, chromium, cyanide, fluoride, mercury, nickel, selenium or thallium indicate an exceedance of the maximum contaminant level, the State may require that one additional sample be collected as soon as possible after the initial sample was taken (but not to exceed two weeks) at the same sampling point.

(2) Where nitrate or nitrite sampling results indicate an exceedance of the maximum contaminant level, the system shall take a confirmation sample within 24 hours of the system's receipt of notification of the analytical results of the first sample. Systems unable to comply with the 24-hour sampling requirement must immediately notify persons served by the public water system in accordance with Sec. 141.202 and meet other Tier 1 public notification requirements under Subpart Q of this part. Systems exercising this option must take and analyze a confirmation sample within two weeks of notification of the analytical results of the first sample.

(3) If a State-required confirmation sample is taken for any contaminant, then the results of the initial and confirmation sample shall be averaged. The resulting average shall be used to determine the system's compliance in accordance with paragraph (i) of this section. States have the discretion to delete results of obvious sampling errors.

(g) The State may require more frequent monitoring than specified in paragraphs (b), (c), (d) and (e) of this section or may require confirmation samples for positive and negative results at its discretion.

(h) Systems may apply to the State to conduct more frequent monitoring than the minimum monitoring frequencies specified in this section.

(i) Compliance with Secs. 141.11 or 141.62(b) (as appropriate) shall be determined based on the analytical result(s) obtained at each sampling point.

(1) For systems which are conducting monitoring at a frequency greater than annual, compliance with the maximum contaminant levels for antimony, asbestos, barium, beryllium, cadmium, chromium, cyanide, fluoride, mercury, nickel, selenium or thallium is determined by a running annual average at any sampling point. If the average at any sampling point is greater than the MCL, then the system is out of compliance. If any one sample would cause the annual average to be exceeded, then the system is out of compliance immediately. Any sample below the method detection limit shall be calculated at zero for the purpose of determining the annual average.

(3) Compliance with the maximum contaminant levels for nitrate and nitrate is determined based on one sample if the levels of these contaminants are below the MCLs. If the levels of nitrate and/or nitrite exceed the MCLs in the initial sample, a confirmation sample is required in accordance with paragraph (f)(2) of this section, and compliance shall be determined based on the average of the initial and confirmation samples.

(4) Arsenic sampling results will be reported to the nearest 0.001 mg/L.

(j) Each public water system shall monitor at the time designated by the State during each compliance period.

Effective Date Note: At 66 FR 7061, Jan. 22, 2001, Sec. 141.23 was amended by adding paragraph (c)(9) effective Mar. 23, 2001. At 66 FR 16134, Mar. 23, 2001, the effective date was delayed until May 22, 2001. At 66 FR 28350, May 22, 2001, the effective date for paragraph (c)(9) was delayed until Jan. 22, 2004. For the convenience of the user, the revised and added text is set forth as follows:

(c) * ensp;* *

(9) All new systems or systems that use a new source of water that begin operation after January 22, 2004 must demonstrate compliance with the MCL within a period of time specified by the State. The system must also comply with the initial sampling frequencies specified by the State to ensure a system can demonstrate compliance with the MCL. Routine and increased monitoring frequencies shall be conducted in accordance with the requirements in this section.

Sec. 141.23(m) – 141.23(o) Inorganic chemical sampling and analytical requirements.

(m) If the result of an analysis made under paragraph (l) of this section indicates that the level of any contaminant listed in Sec. 141.11 exceeds the maximum contaminant level, the supplier of the water shall report to the State within 7 days and initiate three additional analyses at the same sampling point within one month.

(n) When the average of four analyses made pursuant to paragraph (m) of this section, rounded to the same number of significant figures as the maximum contaminant level for the substance in question, exceeds the maximum contaminant level, the supplier of water shall notify the State pursuant to Sec. 141.31 and give notice to the public pursuant to subpart Q.

Monitoring after public notification shall be at a frequency designated by the State and shall continue until the maximum contaminant level has not been exceeded in two successive samples or until a monitoring schedule as a condition to a variance, exemption or enforcement action shall become effective.

(o) The provisions of paragraphs (m) and (n) of this section notwithstanding, compliance with the maximum contaminant level for nitrate shall be determined on the basis of the mean of two analyses. When a level exceeding the maximum contaminant level for nitrate is found, a second analysis shall be initiated within 24 hours, and if the mean of the two analyses exceeds the maximum contaminant level, the supplier of water shall report his findings to the State pursuant to Sec. 141.31 and shall notify the public pursuant to subpart Q.

[56 FR 3579, Jan. 30, 1991, as amended at 56 FR 30274, July 1, 1991; 57 FR 31838, July 17, 1992; 59 FR 34322, July 1, 1994; 59 FR 62466, Dec. 5, 1994; 60 FR 33932, 34085, June 29, 1995; 64 FR 67461, Dec. 1, 1999; 65 FR 26022, May 4, 2000; 66 FR 7061, Jan. 22, 2001]

Sec. 141.24(a) – 141.24(d) Organic chemicals, sampling and analytical requirements.

(a)-(d) [Reserved]

Sec. 141.24(f)(1) – 141.24(f)(15) Organic chemicals, sampling and analytical requirements.

(f) Beginning with the initial compliance period, analysis of the contaminants listed in Sec. 141.61(a) (1) through (21) for the purpose of determining compliance with the maximum contaminant level shall be conducted as follows:

(1) Groundwater systems shall take a minimum of one sample at every entry point to the distribution system which is representative of each well after treatment (hereafter called a sampling point). Each sample must be taken at the same sampling point unless conditions make another sampling point more representative of each source, treatment plant, or within the distribution system.

(2) Surface water systems (or combined surface/ground) shall take a minimum of one sample at points in the distribution system that are representative of each source or at each entry point to the distribution system after treatment (hereafter called a sampling point). Each sample must be taken at the same sampling point unless conditions make another sampling point more representative of each source, treatment plant, or within the distribution system.

(3) If the 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 (i.e., when water representative of all sources is being used).

(4) Each community and non-transient non-community water system shall take four consecutive quarterly samples for each contaminant listed in Sec. 141.61(a) (2) through (21) during each compliance period, beginning in the initial compliance period.

(5) If the initial monitoring for contaminants listed in Sec. 141.61(a) (1) through (8) and the monitoring for the contaminants listed in Sec. 141.61(a) (9) through (21) as allowed in paragraph (f)(18) has been completed by December 31, 1992, and the system did not detect any contaminant listed in Sec. 141.61(a) (1) through (21), then each ground and surface water system shall take one sample annually beginning with the initial compliance period.

(6) After a minimum of three years of annual sampling, the State may allow groundwater systems with no previous detection of any contaminant listed in Sec. 141.61(a) to take one sample during each compliance period.

(7) Each community and non-transient non-community ground water system which does not detect a contaminant listed in Sec. 141.61(a) (1) through (21) may apply to the State for a waiver from the requirements of paragraphs (f)(5) and (f)(6) of this section after completing the initial monitoring. (For purposes of this section, detection is defined as $\geqq$ 0.0005 mg/l.) A waiver shall be effective for no more than six years (two compliance periods). States may also issue waivers to small systems for the initial round of monitoring for 1,2,4-trichlorobenzene.

(8) A State may grant a waiver after evaluating the following factor(s):

(i) 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 may be granted.

(ii) 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 non-point 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.

(C) The environmental persistence and transport of the contaminants.

(D) The number of persons served by the public water system and the proximity of a smaller system to a larger system.

(E) How well the water source is protected against contamination, such as whether it is a surface or groundwater system. Groundwater systems must consider factors such as depth of the well, the type of soil, and wellhead protection. Surface water systems must consider watershed protection.

(9) As a condition of the waiver a groundwater system must take one sample at each sampling point during the time the waiver is effective (i.e., one sample during two compliance periods or six years) and update its vulnerability assessment considering the factors listed in paragraph (f)(8) of this section. Based on this vulnerability assessment the State must reconfirm that the system is non-vulnerable. If the State does not make this reconfirmation within three years of the initial determination, then the waiver is invalidated and the system is required to sample annually as specified in paragraph (5) of this section.

(10) Each community and non-transient non-community surface water system which does not detect a contaminant listed in Sec. 141.61(a) (1) through (21) may apply to the State for a waiver from the requirements of (f)(5) of this section after completing the initial monitoring. Composite samples from a maximum of five sampling points are allowed, provided that the detection limit of the method used for analysis is less than one-fifth of the MCL. Systems meeting this criterion must be determined by the State to be non-vulnerable based on a vulnerability assessment during each compliance period. Each system receiving a waiver shall sample at the frequency specified by the State (if any).

(11) If a contaminant listed in Sec. 141.61(a) (2) through (21) is detected at a level exceeding 0.0005 mg/l in any sample, then:

(i) The system must monitor quarterly at each sampling point which resulted in a detection.

(ii) The State may decrease the quarterly monitoring requirement specified in paragraph (f)(11)(i) of this section provided it has determined that the system is reliably and consistently below the maximum contaminant level. In no case shall the State make this determination unless a groundwater system takes a minimum of two quarterly samples and a surface water system takes a minimum of four quarterly samples.

(iii) If the State determines that the system is reliably and consistently below the MCL, the State may allow the system to monitor annually. Systems which monitor annually must monitor during the quarter(s) which previously yielded the highest analytical result.

(iv) Systems which have three consecutive annual samples with no detection of a contaminant may apply to the State for a waiver as specified in paragraph (f)(7) of this section.

(v) Groundwater systems which have detected one or more of the following two-carbon organic compounds: trichloroethylene, tetrachloroethylene, 1,2-

dichloroethane, 1,1,1-trichloroethane, cis-1,2-dichloroethylene, trans-1,2-dichloroethylene, or 1,1-dichloroethylene shall monitor quarterly for vinyl chloride. A vinyl chloride sample shall be taken at each sampling point at which one or more of the two-carbon organic compounds was detected. If the results of the first analysis do not detect vinyl chloride, the State may reduce the quarterly monitoring frequency of vinyl chloride monitoring to one sample during each compliance period. Surface water systems are required to monitor for vinyl chloride as specified by the State.

(12) Systems which violate the requirements of Sec. 141.61(a) (1) through (21), as determined by paragraph (f)(15) of this section, must monitor quarterly. After a minimum of four consecutive quarterly samples which show the system is in compliance as specified in paragraph (f)(15) of this section the system and the State determines that the system is reliably and consistently below the maximum contaminant level, the system may monitor at the frequency and times specified in paragraph (f)(11)(iii) of this section.

(13) The State may require a confirmation sample for positive or negative results. If a confirmation sample is required by the State, the result must be averaged with the first sampling result and the average is used for the compliance determination as specified by paragraph (f)(15). States have discretion to delete results of obvious sampling errors from this calculation.

(14) The State may reduce the total number of samples a system must analyze by allowing the use of compositing. Composite samples from a maximum of five sampling points are allowed, provided that the detection limit of the method used for analysis is less than one-fifth of the MCL. Compositing of samples must be done in the laboratory and analyzed within 14 days of sample collection.

(i) If the concentration in the composite sample is greater than or equal to 0.0005 mg/l for any contaminant listed in Sec. 141.61(a), then a follow-up sample must be taken within 14 days at each sampling point included in the composite, and be analyzed for that contaminant.

(ii) If duplicates of the original sample taken from each sampling point used in the composite sample are available, the system may use these instead of resampling. The duplicates must be analyzed and the results reported to the State within 14 days after completing analysis of the composite sample, provided the holding time of the sample is not exceeded.

(iii) If the population served by the system is >3,300 persons, then compositing may only be permitted by the State at sampling points within a single system. In systems serving ≤3,300 persons, the State may permit compositing among different systems provided the 5-sample limit is maintained.

(iv) Compositing samples prior to GC analysis.

(A) Add 5 ml or equal larger amounts of each sample (up to 5 samples are allowed) to a 25 ml glass syringe. Special precautions must be made to maintain zero headspace in the syringe.

(B) The samples must be cooled at 4° C during this step to minimize volatilization losses.

(C) Mix well and draw out a 5-ml aliquot for analysis.

(D) Follow sample introduction, purging, and desorption steps described in the method.

(E) If less than five samples are used for compositing, a proportionately small syringe may be used.

(v) Compositing samples prior to GC/MS analysis.

(A) Inject 5-ml or equal larger amounts of each aqueous sample (up to 5 samples are allowed) into a 25-ml purging device using the sample introduction technique described in the method.

(B) The total volume of the sample in the purging device must be 25 ml.

(C) Purge and desorb as described in the method.

(15) Compliance with Sec. 141.61(a) (1) through (21) shall be determined based on the analytical results obtained at each sampling point.

(i) For systems which are conducting monitoring at a frequency greater than annual, compliance is determined by a running annual average of all samples taken at each sampling point. If the annual average of any sampling point is greater than the MCL, then the system is out of compliance. If the initial sample or a subsequent sample would cause the annual average to be exceeded, then the system is out of compliance immediately.

(ii) If monitoring is conducted annually, or less frequently, the system is out of compliance if the level of a contaminant at any sampling point is greater than the MCL. If a confirmation sample is required by the State, the determination of compliance will be based on the average of two samples.

Sec. 141.24(f)(18) – 141.24(f)(19) Organic chemicals, sampling and analytical requirements.

(18) States may allow the use of monitoring data collected after January 1, 1988, required under section 1445 of the Act for purposes of initial monitoring compliance. If the data are generally consistent with the other requirements of this section, the State may use these data (i.e., a single sample rather than four quarterly samples) to satisfy the initial

monitoring requirement of paragraph (f)(4) of this section. Systems which use grandfathered samples and did not detect any contaminant listed Sec. 141.61(a)(2) through (21) shall begin monitoring annually in accordance with paragraph (f)(5) of this section beginning with the initial compliance period.

(19) States may increase required monitoring where necessary to detect variations within the system.

Sec. 141.24(f)(21) Organic chemicals, sampling and analytical requirements.

(21) Each public water system shall monitor at the time designated by the State within each compliance period.

Sec. 141.24(f)(22) Organic chemicals other than total trihalomethanes, sampling and analytical methods.

(22) All new systems or systems that use a new source of water that begin operation after January 22, 2004 must demonstrate compliance with the MCL within a period of time specified by the State. The system must also comply with the initial sampling frequencies specified by the State to ensure a system can demonstrate compliance with the MCL. Routine and increased monitoring frequencies shall be conducted in accordance with the requirements in this section.

Sec. 141.24(g)(1) – 141.24(g)(9) Organic chemicals, sampling and analytical requirements.

(g) [Reserved]

Sec. 141.24(g)(12) – 141.24(g)(14) Organic chemicals, sampling and analytical requirements.

(g) [Reserved]

Sec. 141.24(h)(1) – 141.24(h)(11) Organic chemicals, sampling and analytical requirements.

(h) Analysis of the contaminants listed in Sec. 141.61(c) for the purposes of determining compliance with the maximum contaminant level shall be conducted as follows:[7]

(1) Groundwater systems shall take a minimum of one sample at every entry point to the distribution system which is representative of each well after treatment (hereafter called a sampling point). Each sample must be taken at the same sampling point unless

[7] Monitoring for the contaminants aldicarb, aldicarb sulfoxide, and aldicarb sulfone shall be conducted in accordance with Sec. 141.40.

conditions make another sampling point more representative of each source or treatment plant.

(2) Surface water systems shall take a minimum of one sample at points in the distribution system that are representative of each source or at each entry point to the distribution system after treatment (hereafter called a sampling point). Each sample must be taken at the same sampling point unless conditions make another sampling point more representative of each source or treatment plant.

Note: For purposes of this paragraph, surface water systems include systems with a combination of surface and ground sources.

(3) If the 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 (i.e., when water representative of all sources is being used).

(4) Monitoring frequency:

(i) Each community and non-transient non-community water system shall take four consecutive quarterly samples for each contaminant listed in Sec. 141.61(c) during each compliance period beginning with the initial compliance period.

(ii) Systems serving more than 3,300 persons which do not detect a contaminant in the initial compliance period may reduce the sampling frequency to a minimum of two quarterly samples in one year during each repeat compliance period.

(iii) Systems serving less than or equal to 3,300 persons which do not detect a contaminant in the initial compliance period may reduce the sampling frequency to a minimum of one sample during each repeat compliance period.

(5) Each community and non-transient water system may apply to the State for a waiver from the requirement of paragraph (h)(4) of this section. A system must reapply for a waiver for each compliance period.

(6) A State may grant a waiver after evaluating the following factor(s): 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 may be granted. 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.

(i) Previous analytical results.

(ii) The proximity of the system to a potential point or non-point 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. Non-point 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.

(iii) The environmental persistence and transport of the pesticide or PCBs.

(iv) 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.

(v) Elevated nitrate levels at the water supply source.

(vi) Use of PCBs in equipment used in the production, storage, or distribution of water (i.e., PCBs used in pumps, transformers, etc.).

(7) If an organic contaminant listed in Sec. 141.61(c) is detected (as defined by paragraph (h)(18) of this section) in any sample, then:

(i) Each system must monitor quarterly at each sampling point which resulted in a detection.

(ii) The State may decrease the quarterly monitoring requirement specified in paragraph (h)(7)(i) of this section provided it has determined that the system is reliably and consistently below the maximum contaminant level. In no case shall the State make this determination unless a groundwater system takes a minimum of two quarterly samples and a surface water system takes a minimum of four quarterly samples.

(iii) After the State determines the system is reliably and consistently below the maximum contaminant level the State may allow the system to monitor annually. Systems which monitor annually must monitor during the quarter that previously yielded the highest analytical result.

(iv) Systems which have 3 consecutive annual samples with no detection of a contaminant may apply to the State for a waiver as specified in paragraph (h)(6) of this section.

(v) If monitoring results in detection of one or more of certain related contaminants (aldicarb, aldicarb sulfone, aldicarb sulfoxide and heptachlor, heptachlor epoxide), then subsequent monitoring shall analyze for all related contaminants.

(8) Systems which violate the requirements of Sec. 141.61(c) as determined by paragraph (h)(11) of this section must monitor quarterly. After a minimum of four quarterly samples show the system is in compliance and the State determines the system is reliably and consistently below the MCL, as specified in paragraph (h)(11) of this

section, the system shall monitor at the frequency specified in paragraph (h)(7)(iii) of this section.

(9) The State may require a confirmation sample for positive or negative results. If a confirmation sample is required by the State, the result must be averaged with the first sampling result and the average used for the compliance determination as specified by paragraph (h)(11) of this section. States have discretion to delete results of obvious sampling errors from this calculation.

(10) The State may reduce the total number of samples a system must analyze by allowing the use of compositing. Composite samples from a maximum of five sampling points are allowed, provided that the detection limit of the method used for analysis is less than one-fifth of the MCL. Compositing of samples must be done in the laboratory and analyzed within 14 days of sample collection.

(i) If the concentration in the composite sample detects one or more contaminants listed in Sec. 141.61(c), then a follow-up sample must be taken within 14 days at each sampling point included in the composite, and be analyzed for that contaminant.

(ii) If duplicates of the original sample taken from each sampling point used in the composite sample are available, the system may use these instead of resampling. The duplicates must be analyzed and the results reported to the State within 14 days after completion of the composite analysis or before the holding time for the initial sample is exceeded whichever is sooner.

(iii) If the population served by the system is >3,300 persons, then compositing may only be permitted by the State at sampling points within a single system. In systems serving ≤3,300 persons, the State may permit compositing among different systems provided the 5-sample limit is maintained.

(11) Compliance with Sec. 141.61(c) shall be determined based on the analytical results obtained at each sampling point.

(i) For systems which are conducting monitoring at a frequency greater than annual, compliance is determined by a running annual average of all samples taken at each sampling point. If the annual average of any sampling point is greater than the MCL, then the system is out of compliance. If the initial sample or a subsequent sample would cause the annual average to be exceeded, then the system is out of compliance immediately. Any samples below the detection limit shall be calculated as zero for purposes of determining the annual average.

(ii) If monitoring is conducted annually, or less frequently, the system is out of compliance if the level of a contaminant at any sampling point is greater than the MCL. If a confirmation sample is required by the State, the determination of compliance will be based on the average of two samples.

Sec. 141.24(h)(14) – 141.24(h)(17) Organic chemicals, sampling and analytical requirements.

(14) If monitoring data collected after January 1, 1990, are generally consistent with the requirements of Sec. 141.24(h), then the State may allow systems to use that data to satisfy the monitoring requirement for the initial compliance period beginning January 1, 1993.

(15) The State may increase the required monitoring frequency, where necessary, to detect variations within the system (e.g., fluctuations in concentration due to seasonal use, changes in water source).

(16) The State has the authority to determine compliance or initiate enforcement action based upon analytical results and other information compiled by their sanctioned representatives and agencies.

(17) Each public water system shall monitor at the time designated by the State within each compliance period.

[40 FR 59570, Dec. 24, 1975, as amended at 44 FR 68641, Nov. 29, 1979; 45 FR 57345, Aug. 27, 1980; 47 FR 10998, Mar. 12, 1982; 52 FR 25712, July 8, 1987; 53 FR 5147, Feb. 19, 1988; 53 FR 25110, July 1, 1988; 56 FR 3583, Jan. 30, 1991; 56 FR 30277, July 1, 1991; 57 FR 22178, May 27, 1992; 57 FR 31841, July 17, 1992; 59 FR 34323, July 1, 1994; 59 FR 62468, Dec. 5, 1994; 60 FR 34085, June 29, 1995; 64 FR 67464, Dec. 1, 1999; 65 FR 26022, May 4, 2000]

Effective Date Note: At 66 FR 7063, Jan. 22, 2001, Sec. 141.24 was amended by adding a new sentence to the end of paragraph (f)(15) introductory text; revising paragraphs (f)(15)(i) and (f)(15)(ii) and adding new paragraphs (f)(15)(iii) through (f)(15)(v); adding a new sentence to the end of paragraph (h)(11) introductory text; revising paragraphs (h)(11)(i) and (h)(11)(ii) and adding new paragraphs (h)(11)(iii) through (h)(11)(v); effective Jan. 22, 2004. At 66 FR 16134, Mar. 23, 2001, the effective date was delayed until May 22, 2001. For the convenience of the user, the revised and added text is set forth as follows:

(f) * * *

(15) * * * If one sampling point is in violation of an MCL, the system is in violation of the MCL.

(i) For systems monitoring more than once per year, compliance with the MCL is determined by a running annual average at each sampling point.

(ii) Systems monitoring annually or less frequently whose sample result exceeds the MCL must begin quarterly sampling. The system will not be considered in violation of the MCL until it has completed one year of quarterly sampling.

(iii) If any sample result will cause the running annual average to exceed the MCL at any sampling point, the system is out of compliance with the MCL immediately.

(iv) If a system fails to collect the required number of samples, compliance will be based on the total number of samples collected.

(v) If a sample result is less than the detection limit, zero will be used to calculate the annual average.

(22) All new systems or systems that use a new source of water that begin operation after January 22, 2001 must demonstrate compliance with the MCL within a period of time specified by the State. The system must also comply with the initial sampling frequencies specified by the State to ensure a system can demonstrate compliance with the MCL. Routine and increased monitoring frequencies shall be conducted in accordance with the requirements in this section.

(h) * * *

(11) If one sampling point is in violation of an MCL, the system is in violation of the MCL.

(i) For systems monitoring more than once per year, compliance with the MCL is determined by a running annual average at each sampling point.

(ii) Systems monitoring annually or less frequently whose sample result exceeds the regulatory detection level as defined by paragraph (h)(18) of this section must begin quarterly sampling. The system will not be considered in violation of the MCL until it has completed one year of quarterly sampling.

(iii) If any sample result will cause the running annual average to exceed the MCL at any sampling point, the system is out of compliance with the MCL immediately.

(iv) If a system fails to collect the required number of samples, compliance will be based on the total number of samples collected.

(v) If a sample result is less than the detection limit, zero will be used to calculate the annual average.

(20) All new systems or systems that use a new source of water that begin operation after January 22, 2004 must demonstrate compliance with the MCL within a period of time specified by the State. They system must also comply with the initial sampling frequencies specified by the State to ensure a system can demonstrate compliance with the MCL. Routine and increased monitoring frequencies shall be conducted in accordance with the requirements in this section.

Sec. 141.25(a) Analytical methods for radioactivity.

(a) Analysis for the following contaminants shall be conducted to determine compliance with Secs. 141.15 and 141.16 (radioactivity) in accordance with the methods in the following table, or their equivalent determined by EPA in accordance with Sec. 141.27

Contaminant	Methodology	Reference (method or page number)								
		EPA[1]	EPA[2]	EPA[3]	EPA[4]	SM[5]	ASTM[6]	USGS[7]	DOE[8]	Other
Naturally occurring:										
Gross alpha [11] & beta	Evaporation	900.0	p. 1	00-01	p. 1	302, 7110 B		R-1120-76		
Gross alpha [11]	Co-precipitation			00-02		7110 C				
Radium 226	Radon emanation,	903.1	p. 16	Ra-04	p. 19	7500-Ra C	D 3454-91	R-1141-76	Ra-05	N.Y.[9]
	Radio chemical	903.0	p. 13	Ra-03		304, 305, 7500-Ra B	D 2460-90	R-1140-76		
Radium 228	Radio chemical	904.0	p. 24	Ra-05	p. 19	304, 7500-Ra D		R-1142-76		N.Y.[9] N.J.[10]
Uranium [12]	Radio chemical	908.0				7500-U B				
	Fluorometric	908.1				7500-U C (17th Ed.)	D2907-91	R-1180-76 R-1181-76	U-04	
	Alpha spectro metry			00-07	p. 33	7500-U C (18th or 19th Ed.)	D 3972-90	R-1182-76	U-02	
	Laser Phospho rimetry						D 5174-91			
Man-made:										
Radioactive cesium	Radio chemical	901.0	p. 4			7500-Cs B	D 2459-72	R-1111-76		
	Gamma ray spectrometry	901.1			p. 92	7120 (19th Ed.)	D 3649-91	R-1110-76	4.5.2.3	
Radioactive iodine	Radio chemical	902.0	p. 6			7500-I B	D3649-91			
			p. 9			7500-I C				
						7500-I D				
	Gamma ray spectrometry	901.1			p. 92	7120 (19th Ed.)	D 4785-88		4.5.2.3	
Radioactive Strontium 89, 90	Radio chemical	905.0	p. 29	Sr-04	p. 65	303, 7500-Sr B		R-1160-76	Sr-01 Sr-02	
Tritium	Liquid scintillation	906.0	p. 34	H-02	p. 87	306, 7500-3H B	D 4107-91	R-1171-76		
Gamma emitters	Gamma ray Spectrometry	901.1 902.0 901.0			p. 92	7120 (19th Ed.) 7500-Cs B 7500-I B	D 3649-91 D 4785-88	R-1110-76	4.5.2.3	

The procedures shall be done in accordance with the documents listed below. The incorporation by reference of documents 1 through 10 was approved by the Director of the Federal Register in accordance with 5 U.S.C. 552(a) and 1 CFR part 51. Copies of the documents may be obtained from the sources listed below. Information regarding obtaining these documents can be obtained from the Safe Drinking Water Hotline at 800-426-4791. Documents may be inspected at EPA's Drinking Water Docket, 401 M St., SW., Washington, DC 20460 (Telephone: 202-260-3027); or at the Office of Federal Register, 800 North Capitol Street, NW., Suite 700, Washington, DC.

[1] "Prescribed Procedures for Measurement of Radioactivity in Drinking Water," EPA 600/4-80-032, August 1980. Available at U.S. Department of Commerce, National Technical Information Service (NTIS), 5285 Port Royal Road, Springfield, VA 22161 (Telephone 800-553-6847), PB 80-224744.

[2] "Interim Radiochemical Methodology for Drinking Water," EPA 600/4-75-008(revised), March 1976. Available at NTIS, ibid. PB 253258.

[3] "Radiochemistry Procedures Manual," EPA 520/5-84-006, December 1987. Available at NTIS, ibid. PB 84-215581.

[4] "Radiochemical Analytical Procedures for Analysis of Environmental Samples," March 1979. Available at NTIS, ibid. EMSL LV 053917.

[5] "Standard Methods for the Examination of Water and Wastewater," 13th, 17th, 18th, 19th Editions, 1971, 1989, 1992, 1995. Available at American Public Health Association, 1015 Fifteenth Street N.W., Washington, D.C. 20005. All methods are in the 17th, 18th and 19th editions except 7500-U C Fluorometric Uranium was discontinued after the 17th Edition, 7120 Gamma Emitters is only in the 19th Edition, and 302, 303, 304, 305 and 306 are only in the 13th Edition.

[6] Annual Book of ASTM Standards, Vol. 11.02, 1994. Available at American Society for Testing and Materials, 100 Barr Harbor Drive, West Conshohocken, PA 19428.

[7] "Methods for Determination of Radioactive Substances in Water and Fluvial Sediments," Chapter A5 in Book 5 of Techniques of Water-Resources Investigations of the United States Geological Survey, 1977. Available at U.S. Geological Survey (USGS) Information Services, Box 25286, Federal Center, Denver, CO 80225-0425.

[8] "EML Procedures Manual," 27th Edition, Volume 1, 1990. Available at the Environmental Measurements Laboratory, U.S. Department of Energy (DOE), 376 Hudson Street, New York, NY 10014-3621.

[9] "Determination of Ra-226 and Ra-228 (Ra-02)," January 1980, Revised June 1982. Available at Radiological Sciences Institute Center for Laboratories and Research, New York State Department of Health, Empire State Plaza, Albany, NY 12201.

[10] "Determination of Radium 228 in Drinking Water," August 1980. Available at State of New Jersey, Department of Environmental Protection, Division of Environmental Quality, Bureau of Radiation and Inorganic Analytical Services, 9 Ewing Street, Trenton, NJ 08625.

[11] Natural uranium and thorium-230 are approved as gross alpha calibration standards for gross alpha with co-precipitation and evaporation methods; americium-241 is approved with co-precipitation methods.

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

Sec. 141.25(c) – 141.25(d) Analytical methods for radioactivity.

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

(1) To determine compliance with Sec. 141.15(a) the detection limit shall not exceed 1 pCi/1. To determine compliance with Sec. 141.15(b) the detection limit shall not exceed 3 pCi/1.

(2) To determine compliance with Sec. 141.16 the detection limits shall not exceed the concentrations listed in Table B.

Table B
Detection Limits for Man-Made Beta Particle and
Photon Emitters

Radionuclide	Detection limit
Tritium	1,000 pCi/1
Strontium-89	10 pCi/1
Strontium-90	2 pCi/1
Iodine-131	1 pCi/1
Cesium-134	10 pCi/1
Gross beta	4 pCi/1
Other radionuclides	1/10 of the applicable limit

(d) To judge compliance with the maximum contaminant levels listed in Secs. 141.15 and 141.16, 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.

[41 FR 28404, July 9, 1976, as amended at 45 FR 57345, Aug. 27, 1980; 62 FR 10173, Mar. 5, 1997]

Effective Date Note: At 65 FR 76745, Dec. 7, 2000, Sec. 141.25 was amended by revising paragraphs (a) introductory text, (c)(1), (c)(2) introductory text, and (d), and by redesignating Table B in paragraph (c)(2) as Table C, effective Dec. 8, 2003. For the convenience of the user, the revised text is set forth as follows:

(a) Analysis for the following contaminants shall be conducted to determine compliance with Sec. 141.66 (radioactivity) in accordance with the methods in the following table, or their equivalent determined by EPA in accordance with Sec. 141.27.

(c) * * *

(1) To determine compliance with Sec. 141.66(b), (c), and (e) the detection limit shall not exceed the concentrations in Table B to this paragraph.

Table B
Detection Limits for Gross Alpha Particle Activity,
Radium 226, Radium 228, and Uranium

Contaminant	Detection limit
Gross alpha particle activity	3 pCi/L
Radium 226	1 pCi/L
Radium 228	1 pCi/L
Uranium	Reserved

(2) To determine compliance with Sec. 141.66(d) the detection limits shall not exceed the concentrations listed in Table C to this paragraph.

(d) To judge compliance with the maximum contaminant levels listed in Sec. 141.66, 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.

Sec. 141.26 Monitoring frequency for radioactivity in community water systems.

Effective Date Note: Effective until Dec. 8, 2003.

(a) Monitoring requirements for gross alpha particle activity, radium-226 and radium-228.

(1) Initial sampling to determine compliance with Sec. 141.15 shall begin within two years of the effective date of these regulations and the analysis shall be completed within three years of the effective date of these regulations. Compliance shall be based on the analysis of an annual composite of four consecutive quarterly samples or the average of the analyses of four samples obtained at quarterly intervals.

(i) A gross alpha particle activity measurement may be substituted for the required radium-226 and radium-228 analysis *Provided*, that the measured gross alpha particle activity does not exceed 5 pCi/1 at a confidence level of 95 percent (1.65σ where σ is the standard deviation of the net counting rate of the sample). In localities where radium-228 may be present in drinking water, it is recommended that the State require radium-226 and/or radium-228 analyses when the gross alpha particle activity exceeds 2 pCi/1.

(ii) When the gross alpha particle activity exceeds 5 pCi/1, the same or an equivalent sample shall be analyzed for radium-226. If the concentration of radium-226 exceeds 3 pCi/1 the same or an equivalent sample shall be analyzed for radium-228.

(2) For the initial analysis required by paragraph (a)(1) of this section, data acquired within one year prior to the effective date of this part may be substituted at the discretion of the State.

(3) Suppliers of water shall monitor at least once every four years following the procedure required by paragraph (a)(1) of this section. At the discretion of the State, when an annual record taken in conformance with paragraph (a)(1) of this section has established that the average annual concentration is less than half the maximum contaminant levels established by Sec. 141.15, analysis of a single sample may be substituted for the quarterly sampling procedure required by paragraph (a)(1) of this section.

(i) More frequent monitoring shall be conducted when ordered by the State in the vicinity of mining or other operations which may contribute alpha particle radioactivity to either surface or ground water sources of drinking water.

(ii) A supplier of water shall monitor in conformance with paragraph (a)(1) of this section within one year of the introduction of a new water source for a community water system. More frequent monitoring shall be conducted when ordered by the State in the event of possible contamination or when changes in the distribution system or treatment processing occur which may increase the concentration of radioactivity in finished water.

(iii) A community water system using two or more sources having different concentrations of radioactivity shall monitor source water, in addition to water from a free-flowing tap, when ordered by the State.

(iv) Monitoring for compliance with Sec. 141.15 after the initial period need not include radium-228 except when required by the State, *Provided*, That the average annual concentration of radium-228 has been assayed at least once using the quarterly sampling procedure required by paragraph (a)(1) of this section.

(v) Suppliers of water shall conduct annual monitoring of any community water system in which the radium-226 concentration exceeds 3 pCi/1, when ordered by the State.

(4) If the average annual maximum contaminant level for gross alpha particle activity or total radium as set forth in Sec. 141.15 is exceeded, the supplier of a community water system shall give notice to the State pursuant to Sec. 141.31 and notify the public as required by subpart Q. Monitoring at quarterly intervals shall be continued until the annual average concentration no longer exceeds the maximum contaminant level or until a monitoring schedule as a condition to a variance, exemption or enforcement action shall become effective.

(b) Monitoring requirements for manmade radioactivity in community water systems.

(1) Within two years of the effective date of this part, systems using surface water sources and serving more than 100,000 persons and such other community water systems as are designated by the State shall be monitored for compliance with Sec. 141.16 by analysis of a composite of four consecutive quarterly samples or analysis of four quarterly samples. Compliance with Sec. 141.16 may be assumed without further analysis if the average annual concentration of gross beta particle activity is less than 50 pCi/1 and if the average annual concentrations of tritium and strontium-90 are less than those listed in table A, *Provided*, That if both radionuclides are present the sum of their annual dose equivalents to bone marrow shall not exceed 4 millirem/year.

(i) If the gross beta particle activity exceeds 50 pCi/1, an analysis of the sample must be performed to identify the major radioactive constituents present and the appropriate organ and total body doses shall be calculated to determine compliance with Sec. 141.16.

(ii) Suppliers of water shall conduct additional monitoring, as ordered by the State, to determine the concentration of man-made radioactivity in principal watersheds designated by the State.

(iii) At the discretion of the State, suppliers of water utilizing only ground waters may be required to monitor for man-made radioactivity.

(2) For the initial analysis required by paragraph (b)(1) of this section data acquired within one year prior to the effective date of this part may be substituted at the discretion of the State.

(3) After the initial analysis required by paragraph (b)(1) of this section suppliers of water shall monitor at least every four years following the procedure given in paragraph (b)(1) of this section.

(4) Within two years of the effective date of these regulations the supplier of any community water system designated by the State as utilizing waters contaminated by effluents from nuclear facilities shall initiate quarterly monitoring for gross beta particle and iodine-131 radioactivity and annual monitoring for strontium-90 and tritium.

(i) Quarterly monitoring for gross beta particle activity shall be based on the analysis of monthly samples or the analysis of a composite of three monthly samples. The former is recommended. If the gross beta particle activity in a sample exceeds 15 pCi/1, the same or an equivalent sample shall be analyzed for strontium-89 and cesium-134. If the gross beta particle activity exceeds 50 pCi/1, an analysis of the sample must be performed to identify the major radioactive constituents present and the appropriate organ and total body doses shall be calculated to determine compliance with Sec. 141.16.

(ii) For iodine-131, a composite of five consecutive daily samples shall be analyzed once each quarter. As ordered by the State, more frequent monitoring shall be conducted when iodine-131 is identified in the finished water.

(iii) Annual monitoring for strontium-90 and tritium shall be conducted by means of the analysis of a composite of four consecutive quarterly samples or analysis of four quarterly samples. The latter procedure is recommended.

(iv) The State may allow the substitution of environmental surveillance data taken in conjunction with a nuclear facility for direct monitoring of manmade radioactivity by the supplier of water where the State determines such data is applicable to a particular community water system.

(5) If the average annual maximum contaminant level for man-made radioactivity set forth in Sec. 141.16 is exceeded, the operator of a community water system shall give notice to the State pursuant to Sec. 141.31 and to the public as required by subpart Q. Monitoring at monthly intervals shall be continued until the concentration no longer exceeds the maximum contaminant level or until a monitoring schedule as a condition to a variance, exemption or enforcement action shall become effective.

[41 FR 28404, July 9, 1976, as amended at 65 FR 26022, May 4, 2000]

Sec. 141.26 Monitoring frequency and compliance requirements for radionuclides in community water systems

Effective Date Note: At 65 FR 76745, Dec. 7, 2000, Sec. 141.26 was revised, effective Dec. 8, 2003. For the convenience of the user, the revised text is set forth as follows:

(a) Monitoring and compliance requirements for gross alpha particle activity, radium-226, radium-228, and uranium.

(1) Community water systems (CWSs) must conduct initial monitoring to determine compliance with Sec. 141.66(b), (c), and (e) by December 31, 2007. For the purposes of monitoring for gross alpha particle activity, radium-226, radium-228, uranium, and beta particle and photon radioactivity in drinking water, “detection limit” is defined as in Sec. 141.25(c).

(i) Applicability and sampling location for existing community water systems or sources. All existing CWSs using ground water, surface water or systems using both ground and surface water (for the purpose of this section hereafter referred to as systems) must sample at every entry point to the distribution system that is representative of all sources being used (hereafter called a sampling point) under normal operating conditions. The system must take each sample at the same sampling point unless conditions make another sampling point more representative of each source or the State has designated a distribution system location, in accordance with paragraph (a)(2)(ii)(C) of this section.

(ii) Applicability and sampling location for new community water systems or sources. All new CWSs or CWSs that use a new source of water must begin to conduct initial monitoring for the new source within the first quarter after initiating use of the source. CWSs must conduct more frequent monitoring when ordered by the State in the event of possible contamination or when changes in the distribution system or treatment processes occur which may increase the concentration of radioactivity in finished water.

(2) Initial monitoring: Systems must conduct initial monitoring for gross alpha particle activity, radium-226, radium-228, and uranium as follows:

(i) Systems without acceptable historical data, as defined below, must collect four consecutive quarterly samples at all sampling points before December 31, 2007.

(ii) Grandfathering of data: States may allow historical monitoring data collected at a sampling point to satisfy the initial monitoring requirements for that sampling point, for the following situations.

(A) To satisfy initial monitoring requirements, a community water system having only one entry point to the distribution system may use the monitoring data from the last compliance monitoring period that began between June 2000 and December 8, 2003.

(B) To satisfy initial monitoring requirements, a community water system with multiple entry points and having appropriate historical monitoring data for each entry point to the distribution system may use the monitoring data from the last compliance monitoring period that began between June 2000 and December 8, 2003.

(C) To satisfy initial monitoring requirements, a community water system with appropriate historical data for a representative point in the distribution system may use the monitoring data from the last compliance monitoring period that began between June 2000 and December 8, 2003, provided that the State finds that the historical data satisfactorily demonstrate that each entry point to the distribution system is expected to be in compliance based upon the historical data and reasonable assumptions about the variability of contaminant levels between entry points. The State must make a written finding indicating how the data conforms to the these requirements.

(iii) For gross alpha particle activity, uranium, radium-226, and radium-228 monitoring, the State may waive the final two quarters of initial monitoring for a sampling point if the results of the samples from the previous two quarters are below the detection limit.

(iv) If the average of the initial monitoring results for a sampling point is above the MCL, the system must collect and analyze quarterly samples at that sampling

point until the system has results from four consecutive quarters that are at or below the MCL, unless the system enters into another schedule as part of a formal compliance agreement with the State.

(3) Reduced monitoring: States may allow community water systems to reduce the future frequency of monitoring from once every three years to once every six or nine years at each sampling point, based on the following criteria.

(i) If the average of the initial monitoring results for each contaminant (i.e., gross alpha particle activity, uranium, radium-226, or radium-228) is below the detection limit specified in Table B, in Sec. 141.25(c)(1), the system must collect and analyze for that contaminant using at least one sample at that sampling point every nine years.

(ii) For gross alpha particle activity and uranium, if the average of the initial monitoring results for each contaminant is at or above the detection limit but at or below ½ the MCL, the system must collect and analyze for that contaminant using at least one sample at that sampling point every six years. For combined radium-226 and radium-228, the analytical results must be combined. If the average of the combined initial monitoring results for radium-226 and radium-228 is at or above the detection limit but at or below ½ the MCL, the system must collect and analyze for that contaminant using at least one sample at that sampling point every six years.

(iii) For gross alpha particle activity and uranium, if the average of the initial monitoring results for each contaminant is above ½ the MCL but at or below the MCL, the system must collect and analyze at least one sample at that sampling point every three years. For combined radium-226 and radium-228, the analytical results must be combined. If the average of the combined initial monitoring results for radium-226 and radium-228 is above ½ the MCL but at or below the MCL, the system must collect and analyze at least one sample at that sampling point every three years.

(iv) Systems must use the samples collected during the reduced monitoring period to determine the monitoring frequency for subsequent monitoring periods (e.g., if a system's sampling point is on a nine year monitoring period, and the sample result is above ½ MCL, then the next monitoring period for that sampling point is three years).

(v) If a system has a monitoring result that exceeds the MCL while on reduced monitoring, the system must collect and analyze quarterly samples at that sampling point until the system has results from four consecutive quarters that are below the MCL, unless the system enters into another schedule as part of a formal compliance agreement with the State.

(4) Compositing: To fulfill quarterly monitoring requirements for gross alpha particle activity, radium-226, radium-228, or uranium, a system may composite up to four consecutive quarterly samples from a single entry point if analysis is done within a year of the first sample. States will treat analytical results from the composited as the average analytical result to determine compliance with the MCLs and the future monitoring frequency. If the analytical result from the composited sample is greater than ½ MCL, the State may direct the system to take additional quarterly samples before allowing the system to sample under a reduced monitoring schedule.

(5) A gross alpha particle activity measurement may be substituted for the required radium-226 measurement provided that the measured gross alpha particle activity does not exceed 5 pCi/l. A gross alpha particle activity measurement may be substituted for the required uranium measurement provided that the measured gross alpha particle activity does not exceed 15 pCi/l. The gross alpha measurement shall have a confidence interval of 95% (1.65σ, where σ is the standard deviation of the net counting rate of the sample) for radium-226 and uranium. When a system uses a gross alpha particle activity measurement in lieu of a radium-226 and/or uranium measurement, the gross alpha particle activity analytical result will be used to determine the future monitoring frequency for radium-226 and/or uranium. If the gross alpha particle activity result is less than detection, ½ the detection limit will be used to determine compliance and the future monitoring frequency.

(b) Monitoring and compliance requirements for beta particle and photon radioactivity. To determine compliance with the maximum contaminant levels in Sec. 141.66(d) for beta particle and photon radioactivity, a system must monitor at a frequency as follows:

(1) Community water systems (both surface and ground water) designated by the State as vulnerable must sample for beta particle and photon radioactivity. Systems must collect quarterly samples for beta emitters and annual samples for tritium and strontium-90 at each entry point to the distribution system (hereafter called a sampling point), beginning within one quarter after being notified by the State. Systems already designated by the State must continue to sample until the State reviews and either reaffirms or removes the designation.

(i) If the gross beta particle activity minus the naturally occurring potassium-40 beta particle activity at a sampling point has a running annual average (computed quarterly) less than or equal to 50 pCi/L (screening level), the State may reduce the frequency of monitoring at that sampling point to once every 3 years. Systems must collect all samples required in paragraph (b)(1) of this section during the reduced monitoring period.

(ii) For systems in the vicinity of a nuclear facility, the State may allow the CWS to utilize environmental surveillance data collected by the nuclear facility in lieu of monitoring at the system's entry point(s), where the State determines if such data is applicable to a particular water system. In the event that there is a release from a nuclear facility, systems which are using surveillance data must begin

monitoring at the community water system's entry point(s) in accordance with paragraph (b)(1) of this section.

(2) Community water systems (both surface and ground water) designated by the State as utilizing waters contaminated by effluents from nuclear facilities must sample for beta particle and photon radioactivity. Systems must collect quarterly samples for beta emitters and iodine-131 and annual samples for tritium and strontium-90 at each entry point to the distribution system (hereafter called a sampling point), beginning within one quarter after being notified by the State. Systems already designated by the State as systems using waters contaminated by effluents from nuclear facilities must continue to sample until the State reviews and either reaffirms or removes the designation.

(i) Quarterly monitoring for gross beta particle activity shall be based on the analysis of monthly samples or the analysis of a composite of three monthly samples. The former is recommended.

(ii) For iodine-131, a composite of five consecutive daily samples shall be analyzed once each quarter. As ordered by the State, more frequent monitoring shall be conducted when iodine-131 is identified in the finished water.

(iii) Annual monitoring for strontium-90 and tritium shall be conducted by means of the analysis of a composite of four consecutive quarterly samples or analysis of four quarterly samples. The latter procedure is recommended.

(iv) If the gross beta particle activity beta minus the naturally occurring potassium-40 beta particle activity at a sampling point has a running annual average (computed quarterly) less than or equal to 15 pCi/L, the State may reduce the frequency of monitoring at that sampling point to every 3 years. Systems must collect all samples required in paragraph (b)(2) of this section during the reduced monitoring period.

(v) For systems in the vicinity of a nuclear facility, the State may allow the CWS to utilize environmental surveillance data collected by the nuclear facility in lieu of monitoring at the system's entry point(s), where the State determines if such data is applicable to a particular water system. In the event that there is a release from a nuclear facility, systems which are using surveillance data must begin monitoring at the community water system's entry point(s) in accordance with paragraph (b)(2) of this section.

(3) Community water systems designated by the State to monitor for beta particle and photon radioactivity can not apply to the State for a waiver from the monitoring frequencies specified in paragraph (b)(1) or (b)(2) of this section.

(4) Community water systems may analyze for naturally occurring potassium-40 beta particle activity from the same or equivalent sample used for the gross beta particle activity analysis. Systems are allowed to subtract the potassium-40 beta particle activity

value from the total gross beta particle activity value to determine if the screening level is exceeded. The potassium-40 beta particle activity must be calculated by multiplying elemental potassium concentrations (in mg/L) by a factor of 0.82.

(5) If the gross beta particle activity minus the naturally occurring potassium-40 beta particle activity exceeds the screening level, an analysis of the sample must be performed to identify the major radioactive constituents present in the sample and the appropriate doses must be calculated and summed to determine compliance with Sec. 141.66(d)(1), using the formula in Sec. 141.66(d)(2). Doses must also be calculated and combined for measured levels of tritium and strontium to determine compliance.

(6) Systems must monitor monthly at the sampling point(s) which exceed the maximum contaminant level in Sec. 141.66(d) beginning the month after the exceedance occurs. Systems must continue monthly monitoring until the system has established, by a rolling average of 3 monthly samples, that the MCL is being met. Systems who establish that the MCL is being met must return to quarterly monitoring until they meet the requirements set forth in paragraph (b)(1)(ii) or (b)(2)(i) of this section.

(c) General monitoring and compliance requirements for radionuclides.

(1) The State may require more frequent monitoring than specified in paragraphs (a) and (b) of this section, or may require confirmation samples at its discretion. The results of the initial and confirmation samples will be averaged for use in compliance determinations.

(2) Each public water systems shall monitor at the time designated by the State during each compliance period.

(3) Compliance: Compliance with Sec. 141.66 (b) through (e) will be determined based on the analytical result(s) obtained at each sampling point. If one sampling point is in violation of an MCL, the system is in violation of the MCL.

(i) For 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.

(ii) For systems monitoring more than once per year, if any sample result will cause the running average to exceed the MCL at any sample point, the system is out of compliance with the MCL immediately.

(iii) Systems must include all samples taken and analyzed under the provisions of this section in determining compliance, even if that number is greater than the minimum required.

(iv) If 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.

(v) If 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, ½ the detection limit will be used to calculate the annual average.

(4) States have the discretion to delete results of obvious sampling or analytic errors.

(5) If the MCL for radioactivity set forth in Sec. 141.66 (b) through (e) is exceeded, the operator of a community water system must give notice to the State pursuant to Sec. 141.31 and to the public as required by subpart Q of this part.

Subpart D – Reporting and Recordkeeping

Sec. 141.31(d) Reporting requirements.

(d) The public water system, within 10 days of completing the public notification requirements under Subpart Q of this part for the initial public notice and any repeat notices, must submit to the primacy agency a certification that it has fully complied with the public notification regulations. The public water system must include with this certification a representative copy of each type of notice distributed, published, posted, and made available to the persons served by the system and to the media.

[40 FR 59570, Dec. 24, 1975, as amended at 45 FR 57345, Aug. 27, 1980; 65 FR 26022, May 4, 2000]

Sec. 141.33(e) Record maintenance.

(e) Copies of public notices issued pursuant to Subpart Q of this part and certifications made to the primacy agency pursuant to Sec. 141.31 must be kept for three years after issuance.

[40 FR 59570, Dec. 24, 1975, as amended at 65 FR 26022, May 4, 2000]

Subpart E – Special Regulations, Including Monitoring Regulations and Prohibition on Lead Use

Sec. 141.40 Monitoring requirements for unregulated contaminants.

(a) Requirements for owners and operators of public water systems.

(1) Do I have to monitor for unregulated contaminants?

(i) Transient systems. If you own or operate a transient non-community water system, you do not have to monitor for unregulated contaminants.

(ii) Large systems not purchasing their entire water supply from another system. If you own or operate a wholesale or retail public water system (other than a transient system) that serves more than 10,000 persons, as determined by the State, and do not purchase your entire water supply from another public water system, you must monitor as follows:

(A) You must monitor for the unregulated contaminants on List 1 of Table 1, Unregulated Contaminant Monitoring Regulation (1999) List, in paragraph (a)(3) of this section.

(B) You must monitor for the unregulated contaminants on List 2 of Table 1, Unregulated Contaminant Monitoring Regulation (1999) List, in paragraph (a)(3) of this section, if notified by your State or EPA that you are part of the Screening Surveys.

(C) You must monitor for the unregulated contaminants on List 3 of Table 1, Unregulated Contaminant Monitoring Regulation (1999) List, in paragraph (a)(3) of this section, if notified by your State or EPA that you are part of the Pre-Screen Testing.

(iii) Large systems purchasing their entire water supply from another system. If you own or operate a public water system (other than a transient system) that serves more than 10,000 persons and purchase your entire water supply from a wholesale or retail public water system, you must monitor as follows:

(A) You must monitor for the unregulated contaminants on List 1 of Table 1, Unregulated Contaminant Monitoring Regulation (1999) List, in paragraph (a)(3) of this section, that have a “sampling location” indicated as “distribution system”.

(B) You must monitor for the unregulated contaminants on List 2 of Table 1, Unregulated Contaminant Monitoring Regulation (1999) List, in paragraph (a)(3) of this section, that have a “sampling location” indicated as

"distribution system" if notified by your State or EPA that you are part of the Screening Surveys.

(C) You must monitor for the unregulated contaminants on List 3 of Table 1, Unregulated Contaminant Monitoring Regulation (1999) List, in paragraph (a)(3) of this section, that have a "sampling location" indicated as "distribution system" if notified by your State or EPA that you are part of the Pre-Screen Testing.

(iv) Small systems not purchasing their entire water supply from another system. If you own or operate a public water system (other than a transient system) that serves 10,000 or fewer persons and do not purchase your entire water supply from another public water system, you must monitor as follows:

(A) You must monitor for the unregulated contaminants on List 1 of Table 1, Unregulated Contaminant Monitoring Regulation (1999) List, in paragraph (a)(3) of this section, if you are notified by your State or EPA that you are part of the State Monitoring Plan for small systems.

(B) You must monitor for the unregulated contaminants on List 2 of Table 1, Unregulated Contaminant Monitoring Regulation (1999) List, in paragraph (a)(3) of this section, if you are notified by your State or EPA that you are part of the Screening Surveys.

(C) You must monitor for the unregulated contaminants on List 3 of Table 1, Unregulated Contaminant Monitoring Regulation (1999) List, in paragraph (a)(3) of this section, if you are notified by your State or EPA that you are part of the Pre-Screen Testing.

(v) Small systems purchasing their entire water supply from another system. If you own or operate a public water system (other than a transient system) that serves 10,000 or fewer persons and purchase your entire water supply from another public water system, you must monitor as follows:

(A) You must monitor for the unregulated contaminants on List 1 of Table 1, Unregulated Contaminant Monitoring Regulation (1999) List, in paragraph (a)(3) of this section, that have a "sampling location" indicated as "distribution system" if you are notified by your State or EPA that you are part of the State Monitoring Plan for small systems.

(B) You must monitor for the unregulated contaminants on List 2 of Table 1, Unregulated Contaminant Monitoring Regulation (1999) List, in paragraph (a)(3) of this section, that have a "sampling location" indicated as "distribution system" if you are notified by your State or EPA that you are part of the Screening Surveys.

(C) You must monitor for the unregulated contaminants on List 3 of Table 1, Unregulated Contaminant Monitoring Regulation (1999) List, in paragraph (a)(3) of this section, that have a "sampling location" indicated as "distribution system" if you are notified by your State or EPA that you are part of the Pre-Screen Testing.

(2) How would I be selected for the monitoring under the State Monitoring Plan, the Screening Surveys, or the Pre-Screen Testing?

(i) State Monitoring Plan. Only a representative sample of small systems must monitor for unregulated contaminants. EPA will select a national representative sample of small public water systems in each State through the use of a random number generator. Selection will be weighted by population served within each system water source type (surface or ground water) and system size category (systems serving 25-500, 501-3,300, and 3,301-10,000 persons). EPA may allocate additional systems to water source types or system size categories to increase the statistical inferential ability for those categories. EPA will also select a small group of systems to be "Index systems." Systems selected as Index systems are required to provide information about their site and operation that will serve to allow extrapolation of their results to other systems of similar size, rather than collecting detailed information at every small system. Each State will have the opportunity to make some modifications to the list of small systems that EPA selects. You will be notified by the State or EPA if your system is part of the final State Monitoring Plan.

(ii) Screening Surveys. The purpose of the Screening Surveys is to determine the occurrence of contaminants in drinking water or sources of drinking water for which analytical methods have recently been developed for unregulated contaminant monitoring. EPA will select up to 300 systems to participate in each survey by using a random number generator. You will be notified by the State or EPA if your system is selected for monitoring under the Screening Surveys.

(iii) Pre-screen Testing. The purpose of Pre-Screen Testing is to determine the occurrence of contaminants for which EPA needs to evaluate new analytical methods in locations where the contaminants are most likely to be found. EPA will select up to 200 systems to participate in this testing after considering the characteristics of the contaminants, precipitation, system operation, and environmental conditions. You will be notified by the State or EPA that your system has been selected for monitoring under the Pre-Screen Testing program.

(3) For which contaminants must I monitor? Lists 1, 2 and 3 of unregulated contaminants are listed in the following table:

Table 1
Unregulated Contaminant Monitoring Regulation (1999) List
List 1 – Assessment Monitoring Chemical Contaminants

1-Contaminant	2-CAS registry number	3-Analytical methods	4-Minimum reporting level	5-Sampling location	6-Period during which monitoring to be completed
2, 4-dinitrotoluene	121-14-2	EPA Method 525.2[a]	2 µg/L [e]	EPTDS [f]	2001-2003
2, 6 dinitrotoluene	606-20-2	EPA Method 525.2[a]	2 µg/L [e]	EPTDS [f]	2001-2003
Acetochlor	34256-82-1	EPA Method 525.2[a]	2 µg/L [o]	EPTDS [f]	2001-2003
DCPA mono-acid degradate [h]	887-54-7	EPA Method 515.1 [a], EPA Method 515.2 [a], EPA Method 515.3 [i,j], EPA Method 515.4 [k], D5317-93 [b], AOAC 992.32 [c]	1 µg/L [e]	EPTDS [f]	2001-2003
DCPA di-acid degradate [h]	2136-79-0	EPA Method 515.1 [a], EPA Method 515.2 [a], EPA Method 515.3 [i,j], EPA Method 515.4 [k], D5317-93 [b], AOAC992.32 [c]	1 µg/L [e]	EPTDS [f]	2001-2003
4,4'-DDE	72-55-9	EPA Method 508[a], EPA Method 508.1 [a], EPA Method 525.2 [a], D5812-96 [b], AOAC 990.06 [c]	0.8 µg/L [e]	EPTDS [f]	2001-2003
EPTC	759-94-4	EPA Method 507[a], EPA Method 525.2 [a], D5475-93 [b], AOAC 991.07 [c]	1 µg/L [e]	EPTDS [f]	2001-2003
Molinate	2212-67-1	EPA Method 507 [a], EPA Method 525.2 [a], D5475-93 [b], AOAC 991.07 [c]	0.9 µg/L [e]	EPTDS [f]	2001-2003

1-Contaminant	2-CAS registry number	3-Analytical methods	4-Minimum reporting level	5-Sampling location	6-Period during which monitoring to be completed
MTBE	1634-04-4	EPA Method 502.2 [a,n], SM 6200C [d,n], EPA Method 524.2 [a], D5790-95 [b], SM 6210D [d], SM 6200B [d]	5 µg/L [g]	EPTDS [f]	2001-2003
Nitrobenzene	98-95-3	EPA Method 524.2 [a], D5790-95 [b], SM6210D[d], SM6200B [d]	10 µg/L [g]	EPTDS [f]	2001-2003
Perchlorate	14797-73-0	EPA Method 314.0[l]	4 µg/L [m]	EPTDS [f]	2001-2003
Terbacil	5902-51-2	EPA Method 507 [a], EPA Method 525.2 [a], D5475-93 [b], AOAC 991.07 [c]	2 µg/L [e]	EPTDS [f]	2001-2003

Column headings are:

[1] Chemical or microbiological contaminant: the name of the contaminants to be analyzed.

[2] CAS (Chemical Abstract Service Number) Registry No. or Identification Number: a unique number identifying the chemical contaminants.

[3] Analytical Methods: method numbers identifying the methods that must be used to test the contaminants.

[4] Minimum Reporting Level: the value and unit of measure at or above which the concentration or density of the contaminant must be measured using the Approved Analytical Methods.

[5] Sampling Location: the locations within a PWS at which samples must be collected.

[6] Years During Which Monitoring to be Completed: The years during which the sampling and testing are to occur for the indicated contaminant.

The procedures shall be done in accordance with the documents listed next in these footnotes. The incorporation by reference of the following documents listed in footnotes b-d, i, k and l was approved by the Director of the Federal Register in accordance with 5 U.S.C. 552(a) and 1 CFR part 51. Copies of the documents may be obtained from the following sources. Information regarding obtaining these documents can be obtained from the Safe Drinking Water Hotline at 800-426-4791. Documents may be inspected at EPA's Drinking Water Docket, 401 M Street, SW., Washington, DC 20460 (Telephone: 202-260-3027); or at the Office of Federal Register, 800 North Capitol Street, NW., Suite 700, Washington, DC.

[a] The version of the EPA methods which you must follow for this Rule are listed at Sec. 141.24 (e).

[b] Annual Book of ASTM Standards, 1996, 1998 and 1999, Vol. 11.02, American Society for Testing and Materials. Method D5812-96, "Standard Test Method for Determination of Organochlorine Pesticides in Water by Capillary Column Gas Chromatography", is located in the Annual Book of ASTM Standards, 1998 and 1999, Vol. 11.02. Methods D5790-95, "Standard Test Method for Measurement of Purgeable Organic Compounds in Water by Capillary Column Gas Chromatography/Mass Spectrometry"; D5475-93, "Standard Test Method for Nitrogen- and Phosphorus- Containing Pesticides in Water by Gas Chromatography with a Nitrogen-Phosphorus Detector"; and D5317-93, "Standard Test Method for Determination of Chlorinated Organic Acid Compounds in Water by Gas Chromatography with an Electron Capture Detector" are located in the Annual Book of ASTM Standards, 1996 and 1998, Vol 11.02. Copies may be obtained from the American Society for Testing and Materials, 100 Barr Harbor Drive, West Conshohocken, PA 19428.

[c] Official Methods of Analysis of AOAC (Association of Official Analytical Chemist) International, Sixteenth Edition, 4th Revision, 1998, Volume I, AOAC International, First Union National Bank Lockbox, PO Box 75198, Baltimore, MD 21275-5198. 800-379-2622.

[d] SM 6210 D is only found in the 18th and 19th editions of Standard Methods for the Examination of Water and Wastewater, 1992 and 1995, American Public Health Association; either edition may be used. SM 6200 B and 6200 C are only found in the 20th edition of Standard Methods for the Examination of Water and Wastewater, 1998. Copies may be obtained from the American Public Health Association, 1015 Fifteenth Street NW, Washington, DC 20005.

[e] Minimum Reporting Level determined by multiplying by 10 the least sensitive method's detection limit (detection limit =standard deviation times the Student's t value for 99% confidence level with n-1 degrees of freedom), or when available, multiplying by 5 the least sensitive method's estimated detection limit (where the estimated detection limit equals the concentration of compound yielding approximately a 5 to 1 signal to noise ratio or the calculated detection limit, whichever is greater).

[f] Entry Points to the Distribution System (EPTDS), after treatment, representing each non-emergency water source in use over the twelve-month period of monitoring: this only includes entry points for sources in operation during the months in which sampling is to occur. Sampling must occur at the EPTDS, unless the State has specified other sampling points that are used for compliance monitoring under 40 CFR 141.24 (f)(1), (2), and (3). See 40 CFR 141.40(a)(5)(ii)(C) for a complete explanation of requirements, including the use of source (raw) water sampling points.

[g] Minimum Reporting Levels (MRL) for Volatile Organic Compounds (VOC) determined by multiplying either the published detection limit or 0.5 µg/L times 10, whichever is greater. The detection limit of 0.5 µg/L (0.0005 mg/L) was selected to conform to VOC detection limit requirements of 40 CFR 141.24(f)(17)(E).

[h] The approved methods do not allow for the identification and quantitation of the individual acids. The single analytical result obtained should be reported as total DCPA mono- and di-acid degradates.

[i] EPA Method 515.3, "Determination of Chlorinated Acids in Drinking Water by Liquid-Liquid Extraction, Derivatization and Gas Chromatography with Electron Capture Detection," Revision 1.0 July 1996. EPA 815-R-00-014, "Methods for the Determination of Organic and Inorganic compounds in Drinking Water, Volume 1," August 2000. Available from the National Technical Information Service, NTIS PB2000-106981, U.S. Department of Commerce, 5285 Port Royal Road, Springfield, Virginia 22161. The toll free number is 800-553-6847. Alternatively, the method can be assessed and downloaded directly on-line at www.epa.gov/safewater/methods/sourcalt.html.

[J] Since EPA Method 515.3 does not include a solvent wash step following hydrolysis, the parent DCPA is not removed prior to analysis, therefore, only non-detect data may be reported using EPA Method 515.3. All samples with results above the MRL must be analyzed by one of the other approved methods.

[k] EPA Method 515.4, "Determination of Chlorinated Acids in Drinking Water by Liquid-Liquid Microextraction, Derivatization and Fast Gas Chromatography with Electron Capture Detection," Revision 1.0, April 2000, EPA #815/B-00/001. Available by requesting a copy from the EPA Safe Drinking Water Hotline within the United States at 800-426-4791 (Hours are Monday through Friday, excluding federal holidays, from 9 a.m. to 5:30 p.m. Eastern Time). Alternatively, the method can be assessed and downloaded directly on-line at www.epa.gov/safewater/methods/sourcalt.html.

[l] EPA Method 314.0, "Determination of Perchlorate in Drinking Water Using Ion Chromatography," Revision 1.0, EPA 815-B-99-003, November 1999. EPA 815-R-00-014, "Methods for the Determination of Organic and Inorganic Compounds in Drinking Water, Volume 1," August 2000. Available from the National Technical Information Service, NTIS PB2000-106981, U.S. Department of Commerce, 5285 Port Royal Road, Springfield, Virginia 22161. The toll free number is 800-553-6847. Alternatively, the method can be assessed and downloaded directly on-line at www.epa.gov/safewater/methods/sourcalt.html.

[m] MRL was established at a concentration, which is at least ¼ the lowest known adverse health concentration, at which acceptable precision and accuracy has been demonstrated in spiked matrix samples.

[n] Sample preservation techniques and holding times specified in EPA Method 524.2 must be used by laboratories using either EPA Method 502.2 or Standard Methods 6200C.

List 2 – Screening Survey Chemical Contaminants

1-Contaminant	2-CAS registry number	3-Analytical methods	4-Minimum reporting level	5-Sampling location	6-Period during which monitoring to be completed
1,2-diphenylhydrazine	122-66-7	EPA Method 526 [a]	0.5 µg/L	EPTDS [e]	2001—Selected Systems serving ≤10,000 persons; 2002—Selected systems serving >10,000 persons.
2-methyl-phenol	95-48-7	EPA Method 528 [b]	1 µg/L [f]	EPTDS [e]	Same as above.
2,4-dichlorophenol	120-83-2	EPA Method 528 [b]	1 µg/L [f]	EPTDS [e]	Same as above.
2,4-dinitrophenol	51-28-5	EPA Method 528 [b]	5 µg/L [f]	EPTDS [e]	Same as above.
2,4,6-trichlorophenol	88-06-2	EPA Method 528 [b]	1 µg/L [f]	EPTDS [e]	Same as above.
Alachlor ESA	Reserved [d]	Reserved [d]	Reserved [d]	Reserved [d]	Reserved [d]
Diazinon	333-41-5	EPA Method 526 [a]	0.5 µg/L [f]	EPTDS [e]	2001—Selected Systems serving ≤10,000 persons; 2002—Selected systems serving >10,000 persons.
Disulfoton	298-04-4	EPA Method 526 [a]	0.5 µg/L [f]	EPTDS [e]	Same as above.
Diuron	330-54-1	EPA Method 532 [c]	1 µg/L [f]	EPTDS [e]	Same as above.
Fonofos	944-22-9	EPA Method 526 [a]	0.5 µg/L [f]	EPTDS [e]	Same as above.

1-Contaminant	2-CAS registry number	3-Analytical methods	4-Minimum reporting level	5-Sampling location	6-Period during which monitoring to be completed
Linuron	330-55-2	EPA Method 532 [c]	1 µg/L [f]	EPTDS [e]	Same as above.
Nitrobenzene	98-95-3	EPA Method 526 [a]	0.5 µg/L [f]	EPTDS [e]	Same as above.
Prometon	1610-18-0	EPA Method 526 [a]	0.5 µg/L [f]	EPTDS [e]	Same as above.
RDX	121-82-4	Reserved [d]	Reserved [d]	Reserved [d]	Reserved [d].
Terbufos	13071-79-9	EPA Method 526 [a]	0.5 µg/L [f]	EPTDS [e]	2001—Selected Systems serving ≤10,000 persons; 2002-Selected systems serving >10,000 persons.

List 2 – Screening Survey Microbiological Contaminants To Be Sampled After Notice Of Analytical Methods Availability

1-Contaminant	2-Identification number	3-Analytical methods	4-Minimum reporting level	5-Sampling location	6-Period during which monitoring to be completed
Aeromonas	NA	Reserved [d]	Reserved [d]	Distribution System [g]	2003 [h]

Column headings are:

[1] Chemical or microbiological contaminant: the name of the contaminants to be analyzed.

[2] CAS (Chemical Abstract Service Number) Registry No. or Identification Number: a unique number identifying the chemical contaminants.

[3] Analytical Methods: method numbers identifying the methods that must be used to test the contaminants.

[4] Minimum Reporting Level: the value and unit of measure at or above which the concentration or density of the contaminant must be measured using the Approved Analytical Methods.

[5] Sampling Location: the locations within a PWS at which samples must be collected.

[6] Years During Which Monitoring to be Completed: the years during which the sampling and testing are to occur for the indicated contaminant.

The procedures shall be done in accordance with the documents listed next in these footnotes. The incorporation by reference of the following documents listed in footnotes a-c, was approved by the Director of the Federal Register in accordance with 5 U.S.C. 552(a) and 1 CFR part 51. Copies of the documents may be obtained from the following sources. Information regarding obtaining these documents can be obtained from the Safe Drinking Water Hotline at 800-426-4791. Copies of the documents may be obtained from the sources listed in these footnotes. Information regarding obtaining these documents can be obtained from the Safe Drinking Water Hotline at 800-426-4791. Documents may be inspected at EPA's Drinking Water Docket, 401 M Street, SW., Washington, DC 20460 (Telephone: 202-260-3027); or at the Office of Federal Register, 800 North Capitol Street, NW., Suite 700, Washington, DC.

[a] EPA Method 526, "Determination of Selected Semivolatile Organic Compounds in Drinking Water by Solid Phase Extraction and Capillary Column Gas Chromatography/Mass Spectrometry (GC/MS)," Revision 1.0, June 2000. EPA 815-R-00-014, "Methods for the Determination of Organic and Inorganic Compounds in Drinking Water, Volume 1," August 2000. Available from the National Technical Information Service, NTIS PB2000-106981, U.S. Department of Commerce, 5285 Port Royal Road, Springfield, Virginia 22161. The toll free number is 800-553-6847. Alternatively, the method can be assessed and downloaded directly on-line at www.epa.gov/safewater/methods/sourcalt.html.

[b] EPA Method 528, "Determination of Phenols in Drinking Water by Solid Phase Extraction and Capillary Column Gas Chromatography/Mass Spectrometry (GC/MS)," Revision 1.0, April 2000. EPA 815-R-00-014, "Methods for the Determination of Organic and Inorganic Compounds in Drinking Water, Volume 1," August 2000. Available from the National Technical Information Service, NTIS PB2000-106981, U.S. Department of Commerce, 5285 Port Royal Road, Springfield, Virginia 22161. The toll free number is 800-553-6847. Alternatively, the method can be assessed and downloaded directly on-line at www.epa.gov/nerlcwww/ordmeth.htm.

[c] EPA Method 532, "Determination of Phenylurea Compounds in Drinking Water by Solid Phase Extraction and High Performance Liquid Chromatography with UV Detection," Revision 1.0, June 2000. EPA 815-R-00-014, "Methods for the Determination of Organic and Inorganic Compounds in Drinking Water, Volume 1," August 2000. Available from the National Technical Information Service, NTIS PB2000-106981, U.S. Department of Commerce, 5285 Port Royal Road, Springfield, Virginia 22161. The toll free number is 800-553-6847. Alternatively, the method can be assessed and downloaded directly on-line at www.epa.gov/safewater/methods/sourcalt.html.

[d] To be specified at a later time.

[e] Entry Points to the Distribution System (EPTDS), after treatment, representing each non-emergency water source in use over the twelve-month period of monitoring: this only includes entry points for sources in operation during the months in which sampling is to occur. Sampling must occur at the EPTDS, source water sampling points are not permitted for List 2 contaminant monitoring.

[f] Minimum Reporting Level represents the value of the lowest concentration precision and accuracy determination made during methods development and documented in the method. If method options are permitted, the concentration used was for the least sensitive option.

[g] Three samples must be taken from the distribution system, which is owned or controlled by the selected PWS. The sample locations must include one sample from a point (MD from Sec. 141.35(d)(3), Table 1) where the disinfectant residual is representative of the distribution system. This sample location may be selected from sample locations which have been previously identified for samples to be analyzed for coliform indicator bacteria. Coliform sample locations encompass a variety of sites including midpoint samples which may contain a disinfectant residual that is typical of the system. Coliform sample locations are described in 40 CFR 141.21. This same approach must be used for the Aeromonas midpoint sample where the disinfectant residual would not have declined and would be typical for the distribution system. Additionally, two samples must be taken from two different locations: the distal or dead-end location in the distribution system (MR from Sec. 141.35(d)(3), Table 1), avoiding disinfectant booster stations, and from a location where previous determinations have indicated the lowest disinfectant residual in the distribution system (LD from Sec. 141.35(d)(3), Table 1). If these two locations of distal and low disinfectant residual sites coincide, then the second sample must be taken at a location between the MD and MR sites. Locations in the distribution system

where the disinfectant residual is expected to be low are similar to TTHM sampling points. Sampling locations for TTHMs are described in 63 FR 69468.

[h] This monitoring period is contingent upon promulgation of the analytical method and minimum reporting level.

List 3 – Pre-screen Testing Radionuclides To Be Sampled After Notice of Analytical Methods Availability

1-Contaminant	2- CAS registry number	3-Analytical methods	4-Minimum reporting level	5-Sampling location	6-Period during which monitoring to be completed
Lead-210	14255-04-0	Reserved [a]	Reserved [a]	Reserved [a]	Reserved
Polonium-210	13981-52-7	Reserved [a]	Reserved [a]	Reserved [a]	Reserved [a]

List 3 – Pre-screen Testing Microorganisms To Be Sampled After Notice of Analytical Methods Availability

1-Contaminant	2-Identification number	3-Analytical methods	4-Minimum reporting level	5-Sampling location	6-Period during which monitoring to be completed
Cyanobacteria (blue-green algae, other freshwater algae and their toxins)	Reserved [a]	Reserved [a]	Reserved [a]	Reserved [a]	Reserved
Echoviruses	Reserved [a]	Reserved [a]	Reserved [a]	Reserved [a]	Reserved
Coxsackieviruses	Reserved [a]	Reserved [a]	Reserved [a]	Reserved [a]	Reserved
Helicobacter pylori	Reserved [a]	Reserved [a]	Reserved [a]	Reserved [a]	Reserved
Microsporidia	Reserved [a]	Reserved [a]	Reserved [a]	Reserved [a]	Reserved
Calciviruses	Reserved [a]	Reserved [a]	Reserved [a]	Reserved [a]	Reserved
Adenoviruses	Reserved [a]	Reserved [a]	Reserved [a]	Reserved [a]	Reserved

Column headings are:

[1] Chemical or microbiological contaminant: the name of the contaminants to be analyzed.

[2] CAS (Chemical Abstract Service Number) Registry No. or Identification Number: a unique number identifying the chemical contaminants.

[3] Analytical Methods: method numbers identifying the methods that must be used to test the contaminants.

[4] Minimum Reporting Level: the value and unit of measure at or above which the concentration or density of the contaminant must be measured using the Approved Analytical Methods.

[5] Sampling Location: the locations within a PWS at which samples must be collected.

[6] Years During Which Monitoring to be Completed: the years during which the sampling and testing are to occur for the indicated contaminant.

[a] To be determined at a later time.

(4) What general requirements must I follow for monitoring List 1 contaminants?

(i) All systems. You must:

(A) Collect samples of the listed contaminants in accordance with paragraph (a)(5) of this section and Appendix A of this section and any other specific instructions provided to you by the State or EPA,

(B) Analyze the additional parameters specified below in Table 2. "Water Quality Parameters to be Monitored with UCMR Contaminants" for each relevant contaminant type. You must analyze the parameters for each sampling event of each sampling point, using the method indicated, and report using the data elements 1 through 10 in Table 1, Sec. 141.35(d), Unregulated Contaminant Monitoring Reporting Requirements;

(C) Review the laboratory testing results to ensure reliability; and

(D) Report the results as specified in Sec. 141.35.

Table 2 – Water Quality Parameters To Be Monitored with UCMR Contaminants

Parameter	Contaminant Type	Analytical Methods		
		EPA Method	Standard Methods [1]	Other
pH	Microbiological	EPA Method 150.1 [2], EPA Method 150.2 [2].	4500-H^+ B	ASTM D1293-84 [3], ASTM D1293-95 [3].
Turbidity	Microbiological	EPA Method 180.1[4,5]	2130 B [4]	GLI Method 2 [4,6]
Temperature	Microbiological		2550	
Free Disinfectant Residual	Microbiological		4500-Cl D, 4500-Cl F, 4500-Cl G, 4500-Cl H, 4500-ClO_2 D, 4500-ClO_2 E, 4500-O_3 B.	ASTM 1253-86 [3]
Total Disinfectant Residual	Microbiological		4500-Cl D, 4500-Cl E,[4] 4500-Cl F, 4500-Cl G [4], 4500-Cl I.	ASTM D 1253-86 [3]

The procedures shall be done in accordance with the documents listed in these footnotes. The incorporation by reference of the following documents was approved by the Director of the Federal Register in accordance with 5 U.S.C. 552(a) and 1 CFR part 51. Copies of the documents may be obtained from the sources listed in these footnotes. Information regarding obtaining these documents can be obtained from the Safe Drinking Water Hotline at 800-426-4791. Documents may be inspected at EPA's Drinking Water Docket, 401 M Street, SW., Washington, DC 20460 (Telephone: 202-260-3027); or at the Office of Federal Register, 800 North Capitol Street, NW., Suite 700, Washington, DC.

[1] The 18th and 19th Editions of Standard Methods for the Examination of Water and Wastewater, 1992 and 1995. Methods 2130 B; 2550; 4500-Cl D, E, F, G, H, I; 4500-ClO_2 D, E; 4500-H^+ B; and 4500-O_3 B in the 20th edition Standard Methods for the Examination of Water and Wastewater, 1998, American Public Health Association, 1015 Fifteenth St. NW, Washington D.C., 20005.

[2] EPA Methods 150.1 and 150.2 are available from US EPA, NERL, 26 W. Martin Luther King Dr., Cincinnati, Ohio 45268. The identical methods are also in "Methods for Chemical Analysis of Water and Wastes," EPA-600/4-79- 020, March 1983, available from the National Technical Information Service (NTIS), U.S. Department of Commerce, 5285 Port Royal Rd., Springfield, Virginia 22161, PB84-128677. (Note: NTIS toll-free number is 800-553-6847.)

[3] Annual Book of ASTM Standards, Editions 1994, 1996, 1998 and 1999, Volumes 11.01, American Society for Testing and Materials, 100 Barr Harbor Drive, West Conshohocken, PA 19428. Version D1293-84, "Standard Test Methods for pH of Water" is located in the Annual Book of ASTM Standards, 1994, Volumes 11.01. Version D1293-95, "Standard Test Methods for pH of Water" is located in the Annual Book of ASTM Standards, 1996, 1998 and 1999, Volumes 11.01.

[4] "Technical Notes on Drinking Water," EPA-600/R-94-173, October 1994, Available at NTIS, PB95-104766.

[5] "Methods for the Determination of Inorganic Substances in Environmental Samples," EPA-600/R-93-100, August 1993. Available at NTIS, PB94-121811

[6] GLI Method 2, "Turbidity," November 2, 1992, Great Lakes Instruments Inc., 8855 North 55th St., Milwaukee, Wisconsin 53223.

(ii) Large systems. In addition to paragraph (a)(4)(i) of this section, you must arrange for testing of the samples according to the methods specified for each contaminant in Table 1, Unregulated Contaminant Monitoring Regulation (1999) List, in paragraph (a)(3) of this section, and in Appendix A of this section.

(iii) Small systems. Unless directed otherwise by the State or EPA, in addition to paragraph (a)(4)(i) of this section, you must:

(A) Properly receive, store, maintain and use the sampling equipment sent to you from the laboratory designated by EPA;

(B) Sample at the times specified by the State or the EPA;

(C) Collect and pack samples in accordance with the instructions sent to you by the laboratory designated by EPA; and

(D) Send the samples to the laboratory designated by EPA.

(5) What specific sampling and quality control requirements must I follow for monitoring of List 1 contaminants?

(i) All systems. Unless the State or EPA informs you of other sampling arrangements, you must comply with the following requirements:

(A) Sample collection and shipping time. If you must ship the samples for testing, you must collect the samples early enough in the day to allow adequate time to send the samples for overnight delivery to the laboratory since some samples must be processed at the laboratory within 30 hours of collection. You must not collect samples on Friday, Saturday or Sunday because sampling on these days would not allow samples to be shipped and received at the laboratory within 30 hours.

(B) No compositing of samples. You must not composite (that is, combine, mix or blend) the samples. You must collect, preserve and test each sample separately.

(C) Review and reporting of results. After you have received the laboratory results, you must review and confirm the system information and data regarding sample collection and test results. You must report the results as provided in Sec. 141.35.

(ii) Large systems. In addition to paragraph (a)(5)(i) of this section, you must comply with the following:

(A) Timeframe. You must collect the samples in one twelve-month period during the years indicated in column 6 of Table 1, Unregulated Contaminant Monitoring Regulation (1999) List.

(B) Frequency. You must collect the samples within the timeframe and according to the following frequency specified by contaminant type and water source type:

Table 3 – Monitoring Frequency by Contaminant and Water Source Types

Contaminant type	Water source type	Timeframe	Frequency
Chemical	Surface water	Twelve (12) months	Four quarterly samples taken as follows: Select either the first, second, or third month of a quarter and sample in that same month of each of four (4) consecutive quarters [a] to ensure that one of those sampling events occurs during the vulnerable time. [b]
	Ground water	Twelve (12) months	Two (2) times in a year taken as follows: Sample during one (1) month of the vulnerable time [b] and during one (1) month five (5) to seven (7) months earlier or later.[c]
Microbiological	Surface and ground water	Twelve (12) months	Six (6) times in a year taken as follows: Select either the first, second, or third month of a quarter and sample in that same month of each of four(4) consecutive quarters, and sample an additional 2 months during the warmest(vulnerable) quarter of the year. [d]

[a] "Select either the first, second, or third month of a quarter and sample in that same month of each of four (4) consecutive quarters" means that you must monitor during each of the four (4) months of either: January, April, July, October; or February, May, August, November; or March, June, September, December.

[b] "Vulnerable time" means May 1 through July 31, unless the State or EPA informs you that it has selected a different time period for sampling as your system's vulnerable time.

[c] "Sample during one (1) month of the vulnerable time and during one (1) month five (5) to seven (7) months earlier or later" means, for example, that if you select May as your "vulnerable time" month to sample, then one (1) month five (5) to seven (7) months earlier would be either October, November or December of the preceding year, and one (1) month five (5) to seven (7) months later would be either, October, November, or December of the same year.

[d] This means that you must monitor during each of the six (6) months of either: January, April, July, August, September, October; or February, May, July, August, September, November; or March, June, July, August, September, December; unless the State or EPA informs you that a different vulnerable quarter has been selected for your system.

(C) Location. You must collect samples at the location specified for each listed contaminant in column 5 of the Table 1, UCMR (1999) List, in paragraph (a)(3) of this section. The sampling location for chemical contaminants must be the entry point to the distribution system or the compliance monitoring point specified by the State or EPA under 40 CFR 141.24 (f)(1), (2), and (3). Except as provided in this paragraph (a)(5)(ii)(C), if the compliance monitoring point as specified by the State is for source (raw) water and any of the contaminants in paragraph (a)(3) of this section are detected, then you must complete the source water monitoring for the indicated timeframe and also sample at the entry point to the distribution system representative of the affected source water only for the contaminant(s) found in the source water over the next twelve month timeframe, beginning in the next required monitoring period as indicated in paragraph (a)(5)(ii)(B), Table 3 of this section, even though monitoring might extend beyond the last year indicated in column 6, Period during which monitoring to be completed, in Table 1 of paragraph (a)(3). Exception: If the State or EPA determines that sampling at the entry point to the distribution system is unnecessary because no treatment was instituted between the source water and the distribution system that would affect measurement of the contaminants listed in paragraph (a)(3) of this section, then you do not have to sample at the entry point to the distribution system. Note: The sampling for List 2 chemical contaminants must be at the entry point to the distribution system, as specified in Table 1, List 2.

(D) Sampling instructions. You must follow the sampling procedure for the method specified in column 3 of List 1 of Table 1, Unregulated Contaminant Monitoring Regulation (1999) List, in paragraph (a)(3) of this section, for each contaminant.

(E) Testing and analytical methods. For each listed contaminant, you must use the analytical method specified in column 3 of List 1 of Table 1, Unregulated Contaminant Monitoring Regulation (1999) List, in paragraph (a)(3) of this section, the minimum reporting levels in column 4 of List 1 of Table 1, Unregulated Contaminant Monitoring Regulation (1999) List, in paragraph (a)(3) of this section, and the quality control procedures specified in Appendix A of this section.

(F) Sampling deviations. If you do not collect a sample according to the procedures specified for a listed contaminant, you must resample within 14 days of observing the occurrence of the error (which may include notification from the laboratory that you must resample) following the procedures specified for the method. (This resampling is not for confirmation sampling but to correct the sampling error.)

(G) Testing.

(1) Except as provided in paragraph (a)(5)(ii)(G)(2) and (3) of this section, you must arrange for the testing of the contaminants identified in List 1 of Table 1 by a laboratory certified under Sec. 141.28 for compliance analysis using any of the analytical methods listed in column 3 for each contaminant in List 1 of Table 1, Unregulated Contaminant Monitoring Regulation (1999) List, in paragraph (a)(3) of this section, whether you use the EPA analytical methods or non-EPA methods listed in List 1 of Table 1. Laboratories are automatically certified for the analysis of UCMR contaminants in List 1 of Table 1 if they are already certified to conduct compliance monitoring for a contaminant included in the same method being approved for UCMR analysis. Laboratories certified under Sec. 141.28 for compliance analysis using EPA Method 515.3 are automatically approved to conduct UCMR analysis using EPA Method 515.4.

(2) You must arrange for the testing of Perchlorate as identified in List 1 of Table 1 by a laboratory certified under Sec. 141.28 for compliance analysis using an approved ion chromatographic method as listed in Sec. 141.28 and that has analyzed and successfully passed the Performance Testing (PT) Program administered by EPA.

(3) You must arrange for the testing of the chemical contaminants identified in List 2 of Table 1 by a laboratory certified under Sec. 141.28 for compliance analysis using EPA Method 525.2 if performing UCMR analysis using EPA Methods 526 or 528, or a laboratory certified under Sec. 141.28 for compliance analysis using EPA Methods 549.1 or 549.2 if performing UCMR analysis using EPA Method 532. You must arrange for the testing for Aeromonas using the approved method as identified in List 2 of Table 1 by a laboratory which is both certified under Sec. 141.28 for compliance analysis for coliform indicator bacteria using an EPA approved membrane filtration procedure and which also has been granted approval for UCMR monitoring of Aeromonas by successfully passing the Aeromonas Performance Testing (PT) Program administered by EPA.

(iii) Small systems that are part of the State Monitoring Plan. Unless directed otherwise by the State or EPA, in addition to paragraph (a)(5)(i) of this section, you must comply with the following:

(A) Timeframe and frequency. You must collect samples at the times specified for you by the State or EPA, within the timeframe specified in paragraph (a)(5)(ii)(A) of this section and according to the frequency specified in

paragraph (a)(5)(ii)(B) of this section for the contaminant type and water source type.

(B) Location. You must collect samples at the locations specified for you by the State or EPA.

(C) Sampling deviations. If you do not collect a sample according to the instructions provided to you for a listed contaminant, then you must report the deviation on the sample reporting form that you send to the laboratory with the samples. You must resample following instructions that you will be sent from EPA's designated laboratory or the State.

(D) Sample kits. You must store and maintain the sample collection kits sent to you by EPA's designated laboratory in a secure place until used for sampling. You should read the instructions for each kit when you receive it. If indicated in the kit's instructions, you must freeze the cold packs. The sample kit will include all necessary containers, packing materials and cold packs, instructions for collecting the sample and sample treatment (such as dechlorination or preservation), report forms for each sample, contact name and telephone number for the laboratory, and a prepaid return shipping docket and return address label. If any of the materials listed in the kit's instructions are not included or arrive damaged, you must notify EPA's designated laboratory which sent you the sample collection kits.

(E) Sampling instructions. You must comply with the instructions sent to you by the State or EPA concerning the use of containers, collection (how to fill the sample bottle), dechlorination and/or preservation, and sealing and preparing the sample and shipping containers for shipment. You must also comply with the instructions sent to you by EPA's designated laboratory concerning the handling of sample containers for specific contaminants.

(F) Duplicate samples. EPA will select systems in the State Monitoring Plan that must collect duplicate samples for quality control. If your system is selected, you will receive two sample kits that you must use. You must use the same sampling protocols for both sets of samples, following the instructions in the duplicate sample kit.

(G) Sampling forms. You must completely fill out the sampling forms sent to you by the laboratory, including the data elements 1 through 4 listed in Sec. 141.35(d) for each sample. If EPA requests that you conduct field analysis of water quality parameters specified in paragraph (a)(4)(i)(B) of this section, you must also complete the sampling form to include the information for data elements 5 through 10 listed in Sec. 141.35(d) for each sample. You must sign and date the sampling forms.

(H) Sample submission. Once you have collected the samples and completely filled in the sampling forms, you must send the samples and the sampling forms to the laboratory designated in your instructions.

(6) What additional requirements must I follow if my system is selected as an Index system? If your system is selected as an Index system in the State Monitoring Plan, you must assist the State or EPA in identifying appropriate sampling locations and provide information on which wells and intakes are in use at the time of sampling, well casing and screen depths (if known) for those wells, and the pumping rate of each well or intake at the time of sampling.

(7) What must I do if my system is selected for the Screening Surveys or Pre-Screen Testing?

(i) All systems. You must:

(A) Analyze the additional parameters specified in paragraph Sec. 141.40(a)(4)(i), Table 2, "Water Quality Parameters to be Monitored with UCMR Contaminants" for each relevant contaminant type. You must analyze the parameters for each sampling event of each sampling point, using the method indicated, and report the results using the data elements 1 through 10 in Table 1, Sec. 141.35(d), Unregulated Contaminant Monitoring Reporting requirements;

(B) Review the laboratory results to ensure reliability; and

(C) Report the results as specified in Sec. 141.35.

(ii) Large systems. If your system serves over 10,000 persons, you must collect and arrange for testing of the contaminants in List 2 and List 3 of Table 1, Unregulated Contaminant Monitoring Regulation (1999) List, in paragraph (a)(3) of this section, in accordance with the requirements set out in paragraphs (a)(4) and (5) of this section, with one exception: you must sample only at sampling locations specified in Table 1. You must send the samples to one of the laboratories approved under paragraph (G), this section. You are also responsible for reporting these results as required in Sec. 141.35.

(iii) Small systems. If your system serves 10,000 or fewer persons, you must collect samples in accordance with the instructions sent to you by the EPA or State, or, if informed by the EPA or State that the EPA or State will collect the sample, you must assist the State or EPA in identifying the appropriate sampling locations and in taking the samples. EPA will report the results to you and the State.

(8) What is a violation of this Rule? (i) Any failure to monitor in accordance with Sec. 141.40(a)(3) through (7) and Appendix A is a monitoring violation. (ii) Any failure to report in accordance with Sec. 141.35 is a reporting violation.

(b) Requirements for State and Tribal Participation.

(1) How can I, as the director of a State or Tribal drinking water program, participate in unregulated contaminant monitoring, including Assessment Monitoring (which includes the State Monitoring Plan for small systems), the Screening Surveys, and Pre-Screen Testing of all systems? You can enter into a Memorandum of Agreement (MOA) with the EPA that describes your State's or Tribe's activities to:

(i) Accept or modify the initial plan. EPA will first specify the systems serving 10,000 or fewer persons by water source and size in an initial State Monitoring Plan for each State using a random number generator. EPA will also generate a replacement list of systems for systems that may not have been correctly specified on the initial plan. This initial State Monitoring Plan will also indicate the year and day, plus or minus two (2) weeks from the day, that each system must monitor for the contaminants in List 1 of Table 1 of this section, Unregulated Contaminant Monitoring Regulation (1999) List. EPA will provide you with the initial monitoring plan for your State or Tribe, including systems to be Index systems and those systems to be part of the Screening Surveys. Within sixty (60) days of receiving your State's initial plan, you may notify EPA that you either accept it as your State Monitoring Plan or request to modify the initial plan by removing systems that have closed, merged or are purchasing water from another system and replacing them with other systems. Any purchased water system associated with a non-purchased water system must be added to the State Monitoring Plan if the State determines that its distribution system is the location of the maximum residence time or lowest disinfectant residual of the combined distribution system. In this case, the purchased water system must monitor for the contaminants for which the “distribution system” is identified as the point of “maximum residence time” or “lowest disinfectant residual,” depending on the contaminant, and not the community water system selling water to it. You must replace any systems you removed from the initial plan with systems from the replacement list in the order they are listed. Your request to modify the initial plan must include the modified plan and the reasons for the removal and replacement of systems. If you believe that there are reasons other than those previously listed for removing and replacing one or more other systems from the initial plan, you may include those systems and their replacement systems in your request to modify the initial plan. EPA will review your request to modify your State's initial plan. Please note that information about the actual or potential occurrence or non-occurrence of contaminants at a system or a system's vulnerability to contamination is not a basis for removal from or addition to the plan.

(ii) Determine an alternate vulnerable time. Within 60 days of receiving the initial State Monitoring Plan, you may also determine that the most vulnerable time of the year for any or all of the systems in the plan, and for any of the large systems that must monitor, is some period other than May 1 through July 31. If you make this determination, you must modify the initial plan to indicate the alternate

vulnerable time and to which systems the alternate vulnerable time applies. EPA will review these determinations when you submit your request to modify your State's initial monitoring plan to the EPA. You must notify the small system(s) in your final State Monitoring Plan and the large system(s) of the most vulnerable time(s) of the year that you have specified for them to sample for one of their sampling events. You must notify them at least 90 days before their first unregulated contaminant sampling is to occur. You may need to consider the timing of monitoring in paragraph (b)(1)(iii) of this section.

(iii) Modify the timing of monitoring. Within sixty (60) days of receiving the initial plan, you may also modify the plan by selecting an alternative year and day, plus or minus two (2) weeks, within the years specified in column 6, List 1 of Table 1, Unregulated Contaminant Monitoring Regulation (1999) List, in paragraph (a)(3) of this section, for monitoring for each system in the initial plan as long as approximately one-third of the systems in the State Plan monitor in each of the three (3) years listed. This monitoring may be coordinated with regulated contaminant compliance monitoring at your discretion. You must send the modified plan to EPA.

(iv) Identify alternate sampling points for small systems in the State Monitoring Plan. All systems are required to monitor for the contaminants at the sampling locations specified in column 5, List 1 of Table 1, Unregulated Contaminant Monitoring Regulation (1999) List, in paragraph (a)(3) of this section, unless the State specifies an alternate compliance sampling point as the sampling location. If the compliance sampling points for the small systems in the State Monitoring Plan are different than those specified in paragraph (a)(3) of this section, then you must indicate these sampling points in the plan. These alternative sampling points must allow proper sampling and testing for the unregulated contaminants.

(v) Notify small and large systems of their monitoring responsibilities. You must provide notification to systems in the plan and, where appropriate, the large systems, at least ninety (90) days before sampling must occur.

(vi) Provide instructions to systems that are part of the final State Monitoring Plan. You must send a monitoring schedule to each system listed in the State Monitoring Plan and instructions on location, frequency, timing of sampling, use of sampling equipment, and handling and shipment of samples based on these regulations. EPA will provide you with guidance for these instructions. If you perform the sampling or make alternative arrangements for the sampling at the systems in the plan, you must inform EPA at least six (6) months before the first monitoring is to occur and address the alternative monitoring arrangements in the MOA.

(vii) Participate in monitoring for the Screening Surveys for small and large systems. Within 120 days prior to sampling, EPA will notify you which systems have been selected to participate in the Screening Surveys, the sampling dates, the

designated laboratory for testing, and instructions for sampling. You must review the small systems that EPA selected for the State Monitoring Plan to ensure that the systems are not closed, merged or purchasing water from another system (unless the system is to conduct monitoring for a contaminant with the sampling location specified as "distribution system"), and then make any replacements in the plan, as described in paragraph (b)(1)(i) of this section. You must notify the selected systems in your State of these Screening Surveys requirements. You must provide the necessary Screening Surveys information to the selected systems at least ninety (90) days prior to the sampling date.

(viii) Participate in monitoring for Pre-Screen Testing for small and large systems. You can participate in Pre-Screen Testing in two ways.

(A) First, within ninety (90) days of EPA's letter to you concerning initiation of Pre-Screen Testing for specific contaminants, you can identify from five (5) up to twenty-five (25) systems in your State that you determine to be representative of the most vulnerable systems to these contaminants, modify your State Monitoring Plan to include these most vulnerable systems if any serve 10,000 or fewer persons, and notify EPA of the addition of these systems to the State Plan. These systems must be selected from all community and non-transient noncommunity water systems. EPA will use the State-identified vulnerable systems to select up to 200 systems nationally to be monitored considering the characteristics of the contaminants, precipitation, system operation, and environmental conditions.

(B) Second, within 120 days prior to sampling, EPA will notify you which systems have been selected, sampling dates, the designated laboratory for testing of samples for systems serving 10,000 or fewer persons and approved laboratories for systems serving more than 10,000 persons, and instructions for sampling. You must notify the owners or operators of the selected systems in your State of these Pre-Screen Testing requirements. At least ninety (90) days prior to the sampling date, you must provide the necessary Pre-Screen Testing information to the owners or operators of the selected systems and then inform EPA that you took this action to allow sufficient time for EPA to ensure laboratory readiness.

(ix) Revise system's treatment plant location(s) to include latitude and longitude. For reporting to the Safe Drinking Water Information System, EPA already requires reporting of either the latitude and longitude or the street address for the treatment plant location. If the State enters into an MOA, the State must report each system's treatment plant location(s) as latitude and longitude (in addition to street address, if previously reported) by the time of the system's reporting of Assessment Monitoring results to the National Drinking Water Contaminant Occurrence Database. The State may use the latitude and longitude of facilities related to the public water system on the same site, or closely adjacent to the same

site as the treatment plant, such as the latitude and longitude of the intake or wellhead/field or the entry point to the distribution system, if such measurements are available.

(2) What if I decide not to participate in an MOA? If you decide not to enter into an MOA with EPA to develop the State Monitoring Plan for small systems, the initial monitoring plan that EPA sent you will become the final State Monitoring Plan for your State or Tribe. In that case, you may still notify each public water system of its selection for the plan and instructions for monitoring as long as you notify EPA that you will be undertaking this responsibility at least six (6) months prior to the first unregulated contaminant monitoring.

(3) Can I add contaminants to the Unregulated Contaminant Monitoring List? Yes, the SDWA allows Governors of seven (7) or more States to petition the EPA Administrator to add one or more contaminants to the Unregulated Contaminant Monitoring Regulation (1999) List, in paragraph (a)(3) of this section. The petition must clearly identify the reason(s) for adding the contaminant(s) to the monitoring list in paragraph (a)(3) of this section, including the potential risk to public health, particularly any information that might be available regarding disproportional risks to the health and safety of children, the expected occurrence documented by any available data, any analytical methods known or proposed to be used to test for the contaminant(s), and any other information that could assist the Administrator in determining which contaminants present the greatest public health concern and should, therefore, be included on the Unregulated Contaminant Monitoring Regulation (1999) List, in paragraph (a)(3) of this section.

(4) Can I waive monitoring requirements? Only with EPA approval and under very limited conditions. Conditions and procedures for obtaining the only type of waiver available under these regulations are as follows:

(i) Application. You may apply to EPA for a State-wide waiver from the unregulated contaminant monitoring requirements for public water systems serving more than 10,000 persons. To apply for such a waiver, you must submit an application to EPA that includes the following information:

(A) The list of contaminants on the Unregulated Contaminant Monitoring List for which you request a waiver, and

(B) Documentation for each contaminant in your request demonstrating that the contaminants have not been used, applied, stored, disposed of, released, naturally present or detected in the source waters or distribution systems in your State during the past 15 years, and that it does not occur naturally in your State.

(ii) Approval. EPA will notify you if EPA agrees to waive monitoring requirements.

Sec. 141.40(Appendix A) Quality Control Requirements for Testing All Samples Collected

Your system must ensure that the quality control requirements listed below for testing of samples collected and submitted under Sec. 141.40 are followed:

(1) Sample Collection/Preservation. Follow the sample collection and preservation requirements for the specified method for each of the contaminants in Table 1, UCMR (1999) List, in paragraph (a)(3) of this section. These requirements specify sample containers, collection, dechlorination, preservation, storage, sample holding time, and extract storage and/or holding time that the laboratory must follow.

(2) Detection Limit. Calculate the laboratory detection limit for each contaminant in Table 1, Unregulated Contaminant Monitoring Regulation (1999) List, of paragraph (a)(3) of this section using the appropriate procedure in the specified method with the exception that the contaminant concentration used to fortify reagent water must be less than or equal to the minimum reporting level (MRL) for the contaminants as specified in column 4, Table 1, UCMR (1999) List, in paragraph (a)(3) of this section. The calculated detection limit is equal to the standard deviation times the Student's t value for 99% confidence level with n-1 degrees of freedom. (The detection limit must be less than or equal to one-half of the MRL.)

(3) Calibration. Follow the initial calibration requirements as specified in the method utilized. Calibration must be verified initially with a low-level standard at a concentration at or below the MRL for each contaminant. Perform a continuing calibration verification following every 10th sample. The calibration verification must be performed by alternating low-level and mid-level calibration standards. The low-level standard is defined as a concentration at or below the MRL with an acceptance range of $\pm$ 40%. The mid-level standard is in the middle of the calibration range with an acceptance range of $\pm$ 20%.

(4) Reagent Blank Analysis. Analyze one laboratory reagent (method) blank per sample set/batch that is treated exactly as a sample. The maximum allowable background concentration is one-half of the MRL for all contaminants. A field reagent blank is required only for EPA Method 524.2 (or equivalent listed methods, D5790.95, SM6210D, and SM6200B).

(5) Quality Control Sample. Obtain a quality control sample from an external source to check laboratory performance at least once each quarter.

(6) Matrix Spike and Duplicate. Prepare and analyze the sample matrix spike (SMS) for accuracy and matrix spike duplicate (MSD) samples for precision to determine method accuracy and precision for all contaminants in Table 1, Unregulated Contaminant Monitoring Regulation (1999) List, in paragraph (a)(3) of this section. SMS/MSD samples must be prepared and analyzed at a frequency of 5% (or one SMS/MSD set per every 20 samples) or with each sample batch whichever is more frequent. In addition,

the SMS/MSD spike concentrations must be alternated between a low-level spike and mid-level spike approximately 50% of the time. (For example: a set of 40 samples will require preparation and analysis of two SMS/MSD sets. The first set must be spiked at either the low-level or mid level, and the second set must be spiked with the other standard, either the low-level or mid-level, whichever was not used for the initial SMS/MSD set). The low-level SMS/MSD spike concentration must be within ± 20% of the MRL for each contaminant. The mid-level SMS/MSD spike concentration must be within ± 20% of the mid-level calibration standard for each contaminant, and should represent, where possible, an approximate average concentration observed in previous analyses of that analyte. The spiking concentrations must be reported in the same units of measure as the analytical results.

(7) Internal Standard Calibration. As appropriate to a method's requirements to be used, test and obtain an internal standard for the methods for each chemical contaminant in Table 1, Unregulated Contaminant Monitoring Regulation (1999) List, in paragraph (a)(3) of this section, a pure contaminant of known concentration, for calibration and quantitation purposes. The methods specify the percent recovery or response that you must obtain for acceptance.

(8) Method Performance Test. As appropriate to a method's requirements, test for surrogate compounds, a pure contaminant unlikely to be found in any sample, to be used to monitor method performance. The methods specify the percent recovery that you must obtain for acceptance.

(9) Detection Confirmation. Confirm any chemical contaminant analyzed using a gas chromatographic method and detected above the MRL, by gas chromatographic/mass spectrometric (GC/MS) methods. If testing resulted in first analyzing the sample extracts via specified gas chromatographic methods, an initial confirmation by a second column dissimilar to the primary column may be performed. If the contaminant detection is confirmed by the secondary column, then the contaminant must be reconfirmed by GC/MS using three (3) specified ion peaks for contaminant identification. Use one of the following confirming techniques: perform single point calibration of the GC/MS system for confirmation purposes only as long as the calibration standard is at a concentration within ± 50% of the concentration determined by the initial analysis; or perform a three (3) point calibration with single point daily calibration verification of the GC/MS system regardless of whether that verification standard concentration is within ± 50% of sample response. If GC/MS analysis confirms the initial contaminant detection, report results determined from the initial analysis.

(10) Reporting. Report the analytical results and other data, with the required data listed in 40 CFR 141.35, Table 1. Report this data electronically to EPA, unless EPA specifies otherwise, and provide a copy to the State. Systems must coordinate with their laboratories for electronic reporting to EPA to ensure proper formatting and timely data submission.

(11) Method Defined Quality Control. As appropriate to the method's requirements, perform analysis of Laboratory Fortified Blanks and Laboratory Performance Checks as specified in the method. Each method specifies acceptance criteria for these quality control checks.

[64 FR 50612, Sept. 17, 1999, as amended at 65 FR 11382, Mar. 2, 2000; 66 FR 2302, Jan. 11, 2001; 66 FR 27215, May 16, 2001; 66 FR 46225, Sept. 4, 2002]

Subpart G – National Revised Primary Drinking Water Regulations: Maximum Contaminant Levels and Maximum Residual Disinfectant Levels

Sec. 141.61 Maximum contaminant levels for organic contaminants.

(a) The following maximum contaminant levels for organic contaminants apply to community and non-transient, non-community water systems.

CAS No.	Contaminant	MCL (mg/l)
(1) 75-01-4	Vinyl chloride	0.002
(2) 71-43-2	Benzene	0.005
(3) 56-23-5	Carbon tetrachloride	0.005
(4) 107-06-2	1,2-Dichloroethane	0.005
(5) 79-01-6	Trichloroethylene	0.005
(6) 106-46-7	para-Dichlorobenzene	0.075
(7) 75-35-4	1,1-Dichloroethylene	0.007
(8) 71-55-6	1,1,1-Trichloroethane	0.2
(9) 156-59-2	cis-1,2-Dichloroethylene	0.07
(10) 78-87-5	1,2-Dichloropropane	0.005
(11) 100-41-4	Ethylbenzene	0.7
(12) 108-90-7	Monochlorobenzene	0.1
(13) 95-50-1	o-Dichlorobenzene	0.6
(14) 100-42-5	Styrene	0.1
(15) 127-18-4	Tetrachloroethylene	0.005
(16) 108-88-3	Toluene	1
(17) 156-60-5	trans-1,2-Dichloroethylene	0.1
(18) 1330-20-7	Xylenes (total)	10
(19) 75-09-2	Dichloromethane	0.005
(20) 120-82-1	1,2,4-Trichloro-benzene	.07
(21) 79-00-5	1,1,2-Trichloro- ethane	.005

(b) The Administrator, pursuant to section 1412 of the Act, hereby identifies as indicated in the Table below granular activated carbon (GAC), packed tower aeration (PTA), or oxidation (OX) as the best technology treatment technique, or other means available for achieving compliance with the maximum contaminant level for organic contaminants identified in paragraphs (a) and (c) of this section:

BAT for Organic Contaminants Listed in Sec. 141.61 (a) and (c)

CAS No.	Contaminant	GAC	PTA	OX
15972-60-8	Alachlor	X		
116-06-3	Aldicarb	X		
1646-88-4	Aldicarb sulfone	X		
1646-87-3	Aldicarb sulfoxide	X		
1912-24-9	Atrazine	X		
71-43-2	Benzene	X	X	
50-32-8	Benzo[a]pyrene	X		
1563-66-2	Carbofuran	X		
56-23-5	Carbon tetrachloride	X	X	
57-74-9	Chlordane	X		
75-99-0	Dalapon	X		
94-75-7	2,4-D	X		
103-23-1	Di (2-ethylhexyl) adipate	X	X	
117-81-7	Di (2-ethylhexyl) phthalate	X		
96-12-8	Dibromochloropropane (DBCP)	X	X	
95-50-1	o-Dichlorobenzene	X	X	
106-46-7	para-Dichlorobenzene	X	X	
107-06-2	1,2-Dichloroethane	X	X	
75-35-4	1,1-Dichloroethylene	X	X	
156-59-2	cis-1,2-Dichloroethylene	X	X	
156-60-5	trans-1,2-Dichloroethylene	X	X	
75-09-2	Dichloromethane		X	
78-87-5	1,2-Dichloropropane	X	X	
88-85-7	Dinoseb	X		
85-00-7	Diquat	X		
145-73-3	Endothall	X		
72-20-8	Endrin	X		
100-41-4	Ethylbenzene	X	X	
106-93-4	Ethylene Dibromide (EDB)	X	X	
1071-83-6	Gylphosate			X
76-44-8	Heptachlor	X		
1024-57-3	Heptachlor epoxide	X		
118-74-1	Hexachlorobenzene	X		
77-47-3	Hexachlorocyclopentadiene	X	X	
58-89-9	Lindane	X		
72-43-5	Methoxychlor	X		
108-90-7	Monochlorobenzene	X	X	
23135-22-0	Oxamyl (Vydate)	X		
87-86-5	Pentachlorophenol	X		
1918-02-1	Picloram	X		
1336-36-3	Polychlorinated biphenyls (PCB)	X		
122-34-9	Simazine	X		
100-42-5	Styrene	X	X	

CAS No.	Contaminant	GAC	PTA	OX
1746-01-6	2,3,7,8-TCDD (Dioxin)	X		
127-18-4	Tetrachloroethylene	X	X	
108-88-3	Toluene	X	X	
8001-35-2	Toxaphene	X		
93-72-1	2,4,5-TP (Silvex)	X		
120-82-1	1,2,4-Trichlorobenzene	X	X	
71-55-6	1,1,1-Trichloroethane	X	X	
79-00-5	1,1,2-Trichloroethane	X	X	
79-01-6	Trichloroethylene	X	X	
75-01-4	Vinyl chloride		X	
1330-20-7	Xylene	X	X	

(c) The following maximum contaminant levels for synthetic organic contaminants apply to community water systems and non-transient, non-community water systems:

CAS No.	Contaminant	MCL (mg/l)
(1) 15972-60-8	Alachlor	0.002
(2) 116-06-3	Aldicarb	0.003
(3) 1646-87-3	Aldicarb sulfoxide	0.004
(4) 1646-87-4	Aldicarb sulfone	0.002
(5) 1912-24-9	Atrazine	0.003
(6) 1563-66-2	Carbofuran	0.04
(7) 57-74-9	Chlordane	0.002
(8) 96-12-8	Dibromochloropropane	0.0002
(9) 94-75-7	2,4-D	0.07
(10) 106-93-4	Ethylene dibromide	0.00005
(11) 76-44-8	Heptachlor	0.0004
(12) 1024-57-3	Heptachlor epoxide	0.0002
(13) 58-89-9	Lindane	0.0002
(14) 72-43-5	Methoxychlor	0.04
(15) 1336-36-3	Polychlorinated biphenyls	0.0005
(16) 87-86-5	Pentachlorophenol	0.001
(17) 8001-35-2	Toxaphene	0.003
(18) 93-72-1	2,4,5-TP	0.05
(19) 50-32-8	Benzo[a]pyrene	0.0002
(20) 75-99-0	Dalapon	0.2
(21) 103-23-1	Di(2-ethylhexyl) adipate	0.4
(22) 117-81-7	Di(2-ethylhexyl) phthalate	0.006
(23) 88-85-7	Dinoseb	0.007
(24) 85-00-7	Diquat	0.02
(25) 145-73-3	Endothall	0.1
(26) 72-20-8	Endrin	0.002
(27) 1071-53-6	Glyphosate	0.7
(28) 118-74-1	Hexacholorbenzene	0.001
(29) 77-47-4	Hexachlorocyclopentadiene	0.05

CAS No.	Contaminant	MCL (mg/l)
(30) 23135-22-0	Oxamyl (Vydate)	0.2
(31) 1918-02-1	Picloram	0.5
(32) 122-34-9	Simazine	0.004
(33) 1746-01-6	2,3,7,8-TCDD (Dioxin)	$3x10^{-8}$

[56 FR 3593, Jan. 30, 1991, as amended at 56 FR 30280, July 1, 1991; 57 FR 31846, July 17, 1992; 59 FR 34324, July 1, 1994]

Sec. 141.62 excluding (b) Maximum contaminant levels for inorganic contaminants.

(a) [Reserved]

(c) The Administrator, pursuant to section 1412 of the Act, hereby identifies the following as the best technology, treatment technique, or other means available for achieving compliance with the maximum contaminant levels for inorganic contaminants identified in paragraph (b) of this section, except fluoride:

Bat For Inorganic Compounds
Listed In Section 141.62(b)

Chemical Name	BAT(s)
Antimony	2,7
Arsenic [4]	1,2,5,6,7,9,12 [5]
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
Mercury	2 [1],4,6 [1],7 [1]
Nickel	5,6,7
Nitrate	5,7,9
Nitrite	5,7
Selenium	1,2 [3],6,7,9
Thallium	1,5

[1] BAT only if influent Hg concentrations $\leq$10µg/1.

[2] BAT for Chromium III only.

[3] BAT for Selenium IV only.

[4] BATs for Arsenic V. Pre-oxidation may be required to convert Arsenic III to Arsenic V.

[5] To obtain high removals, iron to arsenic ratio must be at least 20:1.

Key to BATS in Table

1 = Activated Alumina
2 = Coagulation/Filtration (not BAT for systems < 500 service connections)
2 = Coagulation/Filtration
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 = Oxidation/Filtration

(d) The Administrator, pursuant to section 1412 of the Act, hereby identifies in the following table the affordable technology, treatment technique, or other means available to systems serving 10,000 persons or fewer for achieving compliance with the maximum contaminant level for arsenic:

Small System Compliance Technologies (SSCTs) [1] for Arsenic [2]

Small system compliance technology	Affordable for listed small system categories [3]
Activated Alumina (centralized)	All size categories
Activated Alumina (Point-of-Use) [4]	All size categories
Coagulation/Filtration [5]	501-3,300, 3,301-10,000
Coagulation-assisted Microfiltration	501-3,300, 3,301-10,000
Electrodialysis reversal [6]	501-3,300, 3,301-10,000
Enhanced coagulation/filtration	All size categories
Enhanced lime softening (pH 10.5)	All size categories
Ion Exchange	All size categories
Lime Softening [5]	501-3,300, 3,301-10,000
Oxidation/Filtration [7]	All size categories
Reverse Osmosis (centralized) [6]	501-3,300, 3,301-10,000
Reverse Osmosis (Point-of-Use) [4]	All size categories

[1] Section 1412(b)(4)(E)(ii) of SDWA specifies that SSCTs must be affordable and technically feasible for small systems.

[2] SSCTs for Arsenic V. Pre-oxidation may be required to convert Arsenic III to Arsenic V.

[3] The Act (ibid.) specifies three categories of small systems: (i) those serving 25 or more, but fewer than 501, (ii) those serving more than 500, but fewer than 3,301, and (iii) those serving more than 3,300, but fewer than 10,001.

[4] When POU or POE devices are used for compliance, programs to ensure proper long-term operation, maintenance, and monitoring must be provided by the water system to ensure adequate performance.

[5] Unlikely to be installed solely for arsenic removal. May require pH adjustment to optimal range if high removals are needed.

[6] Technologies reject a large volume of water--may not be appropriate for areas where water quantity may be an issue.

7 To obtain high removals, iron to arsenic ratio must be at least 20:1.

[56 FR 3594, Jan. 30, 1991, as amended at 56 FR 30280, July 1, 1991; 57 FR 31847, July 17, 1992; 59 FR 34325, July 1, 1994; 60 FR 33932, June 29, 1995; 66 FR 7063, Jan. 22, 2001]

Sec. 141.64(c) Maximum contaminant levels for disinfection byproducts.

(c) The Administrator, pursuant to Section 1412 of the Act, hereby identifies the following as the best technology, treatment techniques, or other means available for achieving compliance with the maximum contaminant levels for disinfection byproducts identified in paragraph (a) of this section:

Disinfection byproduct	Best available technology
TTHM	Enhanced coagulation or enhanced softening or GAC10, with chlorine as the primary and residual disinfectant.
HAA5	Enhanced coagulation or enhanced softening or GAC10, with chlorine as the primary and residual disinfectant.
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.

[63 FR 69465, Dec. 16, 1998, as amended at 66 FR 3776, Jan. 16, 2001]

Sec. 141.65(c) Maximum residual disinfectant levels.

(c) The Administrator, pursuant to Section 1412 of the Act, hereby identifies the following as the best technology, treatment techniques, or other means available for achieving compliance with the maximum residual disinfectant levels identified in paragraph (a) of this section: control of treatment processes to reduce disinfectant demand and control of disinfection treatment processes to reduce disinfectant levels.

[63 FR 69465, Dec. 16, 1998, as amended at 66 FR 3776, Jan. 16, 2001]

Sec. 141.66 Maximum contaminant levels for radionuclides.

(a) [Reserved]

(b) MCL for combined radium-226 and -228. The maximum contaminant level for combined radium-226 and radium-228 is 5 pCi/L. The combined radium-226 and radium-228 value is determined by the addition of the results of the analysis for radium-226 and the analysis for radium-228.

(c) MCL for gross alpha particle activity (excluding radon and uranium). The maximum contaminant level for gross alpha particle activity (including radium-226 but excluding radon and uranium) is 15 pCi/L.

(d) MCL for beta particle and photon radioactivity.

(1) The average annual concentration of beta particle and photon radioactivity from man-made radionuclides in drinking water must not produce an annual dose equivalent to the total body or any internal organ greater than 4 millirem/year (mrem/year).

(2) Except for the radionuclides listed in table A, the concentration of man-made radionuclides causing 4 mrem total body or organ dose equivalents must be calculated on the basis of 2 liter per day drinking water intake using the 168 hour data list in "Maximum Permissible Body Burdens and Maximum Permissible Concentrations of Radionuclides in Air and in Water for Occupational Exposure," NBS (National Bureau of Standards) Handbook 69 as amended August 1963, U.S. Department of Commerce. This incorporation by reference was approved by the Director of the Federal Register in accordance with 5 U.S.C. 552(a) and 1 CFR part 51. Copies of this document are available from the National Technical Information Service, NTIS ADA 280 282, U.S. Department of Commerce, 5285 Port Royal Road, Springfield, Virginia 22161. The toll-free number is 800-553-6847. Copies may be inspected at EPA's Drinking Water Docket, 401 M Street, SW., Washington, DC 20460; or at the Office of the Federal Register, 800 North Capitol Street, NW., Suite 700, Washington, DC. If two or more radionuclides are present, the sum of their annual dose equivalent to the total body or to any organ shall not exceed 4 mrem/year.

Table A – Average Annual Concentrations Assumed to Produce:
a Total Body or Organ Dose of 4 mrem/yr

1. Radionuclide	Critical organ	pCi per liter
2. Tritium	Total body	20,000
3. Strontium-90	Bone Marrow	8

(e) MCL for uranium. The maximum contaminant level for uranium is 30 µg/L.

(f) Compliance dates.

(1) Compliance dates for combined radium-226 and -228, gross alpha particle activity, gross beta particle and photon radioactivity, and uranium: Community water systems must comply with the MCLs listed in paragraphs (b), (c), (d), and (e) of this section beginning December 8, 2003 and compliance shall be determined in accordance with the requirements of Secs. 141.25 and 141.26. Compliance with reporting requirements for the radionuclides under appendix A to subpart O and appendices A and B to subpart Q is required on December 8, 2003.

(2) [Reserved]

(g) Best available technologies (BATs) for radionuclides. The Administrator, pursuant to section 1412 of the Act, hereby identifies as indicated in the following table the best technology available for achieving compliance with the maximum contaminant levels for combined radium-226 and -228, uranium, gross alpha particle activity, and beta particle and photon radioactivity.

Table B – BAT for Combined Radium-226 and Radium-228, Uranium, Gross Alpha Particle Activity, and Beta Particle and Photon Radioactivity

Contaminant	BAT
1. Combined radium-226 and radium-228	Ion exchange, reverse osmosis, lime softening.
2. Uranium	Ion exchange, reverse osmosis, lime softening, coagulation/filtration.
3. Gross alpha particle activity (excluding Radon and Uranium)	Reverse osmosis.
4. Beta particle and photon radioactivity	Ion exchange, reverse osmosis.

(h) Small systems compliance technologies list for radionuclides.

Table C – List of Small Systems Compliance Technologies
for Radionuclides and Limitations to Use

Unit technologies	Limitations (see footnotes)	Operator skill level required [1]	Raw water quality range and considerations [1]
1. Ion exchange (IE)	([a])	Intermediate	All ground waters
2. Point of use (POU [2]) IE	([b])	Basic	All ground waters
3. Reverse osmosis (RO)	([c])	Advanced	Surface waters usually require pre-filtration
4. POU [2] RO	([b])	Basic	Surface waters usually require pre-filtration
5. Lime softening	([d])	Advanced	All waters
6. Green sand filtration	([e])	Basic	
7. Co-precipitation with Barium sulfate	([f])	Intermediate to Advanced	Ground waters with suitable water quality
8. Electrodialysis/electrodialysis reversal		Basic to Intermediate	All ground waters
9. Pre-formed hydrous Manganese oxide filtration	([g])	Intermediate	All ground waters
10. Activated alumina	([a]), ([h])	Advanced	All ground waters; competing anion concentrations may affect regeneration frequency
11. Enhanced coagulation/filtration	([i])	Advanced	Can treat a wide range of water qualities

[1] National Research Council (NRC). Safe Water from Every Tap: Improving Water Service to Small Communities. National Academy Press. Washington, D.C. 1997.

[2] A POU, or "point-of-use" technology is a treatment device installed at a single tap used for the purpose of reducing contaminants in drinking water at that one tap. POU devices are typically installed at the kitchen tap. See the April 21, 2000 NODA for more details.

Limitations Footnotes: Technologies for Radionuclides:

[a] The regeneration solution contains high concentrations of the contaminant ions. Disposal options should be carefully considered before choosing this technology.

[b] When POU devices are used for compliance, programs for long-term operation, maintenance, and monitoring must be provided by water utility to ensure proper performance.

[c] Reject water disposal options should be carefully considered before choosing this technology. See other RO limitations described in the SWTR Compliance Technologies Table.

[d] The combination of variable source water quality and the complexity of the water chemistry involved may make this technology too complex for small surface water systems.

[e] Removal efficiencies can vary depending on water quality.

[f] This technology may be very limited in application to small systems. Since the process requires static mixing, detention basins, and filtration, it is most applicable to systems with sufficiently high sulfate levels that already have a suitable filtration treatment train in place.

[g] This technology is most applicable to small systems that already have filtration in place.

[h] Handling of chemicals required during regeneration and pH adjustment may be too difficult for small systems without an adequately trained operator.

[i] Assumes modification to a coagulation/filtration process already in place.

Table D – Compliance Technologies by System Size Category for Radionuclide NPDWR's

Contaminant	Compliance technologies [1] for system size categories (population served)		3,300-10,000
	25-500	501-3,300	
1. Combined radium-226 and radium-228	1, 2, 3, 4, 5, 6, 7, 8, 9	1, 2, 3, 4, 5, 6, 7, 8, 9	1, 2, 3, 4, 5, 6, 7, 8, 9
2. Gross alpha particle activity	3, 4	3, 4	3, 4
3. Beta particle activity and photon activity	1, 2, 3, 4	1, 2, 3, 4.	1, 2, 3, 4
4. Uranium	1, 2, 4, 10, 11	1, 2, 3, 4, 5, 10, 11	1, 2, 3, 4, 5, 10, 11

[1] Numbers correspond to those technologies found listed in the table C of 141.66(h).

[65 FR 76748, Dec. 7, 2000]

Effective Date Note: At 65 FR 76748, Dec. 7, 2000, Sec. 141.66 was added, effective Dec. 8, 2003.

Subpart I – Control of Lead and Copper

Sec. 141.80 General requirements.

Source: 56 FR 26548, June 7, 1991, unless otherwise noted.

(a) Applicability and effective dates.

(1) The requirements of this subpart I constitute the national primary drinking water regulations for lead and copper. Unless otherwise indicated, each of the provisions of this subpart applies to community water systems and non-transient, non-community water systems (hereinafter referred to as “water systems” or “systems”).

(2) The requirements set forth in Secs. 141.86 to 141.91 shall take effect on July 7, 1991. The requirements set forth in Secs. 141.80 to 141.85 shall take effect on December 7, 1992.

(b) Scope. These regulations establish a treatment technique that includes requirements for corrosion control treatment, source water treatment, lead service line replacement, and public education. These requirements are triggered, in some cases, by lead and copper action levels measured in samples collected at consumers' taps.

(c) Lead and copper action levels.

(1) The lead action level is exceeded if the concentration of lead in more than 10 percent of tap water samples collected during any monitoring period conducted in accordance with Sec. 141.86 is greater than 0.015 mg/L (i.e., if the “90th percentile” lead level is greater than 0.015 mg/L).

(2) The copper action level is exceeded if the concentration of copper in more than 10 percent of tap water samples collected during any monitoring period conducted in accordance with Sec. 141.86 is greater than 1.3 mg/L (i.e., if the “90th percentile” copper level is greater than 1.3 mg/L).

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

(i) The results of all lead or copper samples taken during a monitoring period shall be placed in ascending order from the sample with the lowest concentration to the sample with the highest concentration. Each sampling result shall be assigned a number, ascending by single integers beginning with the number 1 for the sample with the lowest contaminant level. The number assigned to the sample with the highest contaminant level shall be equal to the total number of samples taken.

(ii) The number of samples taken during the monitoring period shall be multiplied by 0.9.

(iii) The contaminant concentration in the numbered sample yielded by the calculation in paragraph (c)(3)(ii) 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 concentrations.

(d) Corrosion control treatment requirements.

(1) All water systems shall install and operate optimal corrosion control treatment as defined in Sec. 141.2.

(2) Any water system that complies with the applicable corrosion control treatment requirements specified by the State under Secs. 141.81 and 141.82 shall be deemed in compliance with the treatment requirement contained in paragraph (d)(1) of this section.

(e) Source water treatment requirements. Any system exceeding the lead or copper action level shall implement all applicable source water treatment requirements specified by the State under Sec. 141.83.

(f) Lead service line replacement requirements. Any system exceeding the lead action level after implementation of applicable corrosion control and source water treatment requirements shall complete the lead service line replacement requirements contained in Sec. 141.84.

(g) Public education requirements. Any system exceeding the lead action level shall implement the public education requirements contained in Sec. 141.85.

(h) Monitoring and analytical requirements. Tap water monitoring for lead and copper, monitoring for water quality parameters, source water monitoring for lead and copper, and analyses of the monitoring results under this subpart shall be completed in compliance with Secs. 141.86, 141.87, 141.88, and 141.89.

(i) Reporting requirements. Systems shall report to the State any information required by the treatment provisions of this subpart and Sec. 141.90.

(j) Recordkeeping requirements. Systems shall maintain records in accordance with Sec. 141.91.

(k) Violation of national primary drinking water regulations. Failure to comply with the applicable requirements of Secs. 141.80-141.91, including requirements established by the State pursuant to these provisions, shall constitute a violation of the national primary drinking water regulations for lead and/or copper.

[56 FR 26548, June 7, 1991; 57 FR 28788, June 29, 1992]

Sec. 141.81 Applicability of corrosion control treatment steps to small, medium-size and large water systems.

(a) Systems shall complete the applicable corrosion control treatment requirements described in Sec. 141.82 by the deadlines established in this section.

(1) A large system (serving >50,000 persons) shall complete the corrosion control treatment steps specified in paragraph (d) of this section, unless it is deemed to have optimized corrosion control under paragraph (b)(2) or (b)(3) of this section.

(2) A small system (serving ≤3300 persons) and a medium-size system (serving >3,300 and ≤50,000 persons) shall complete the corrosion control treatment steps specified in paragraph (e) of this section, unless it is deemed to have optimized corrosion control under paragraph (b)(1), (b)(2), or (b)(3) of this section.

(b) 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 system satisfies one of the criteria specified in paragraphs (b)(1) through (b)(3) of this section. Any such system deemed to have optimized corrosion control under this paragraph, 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) A small or medium-size water system is deemed to have optimized corrosion control if the system meets the lead and copper action levels during each of two consecutive six-month monitoring periods conducted in accordance with Sec. 141.86.

(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 the corrosion control steps applicable to such system under this section. If the State makes this determination, it shall provide the system with written notice explaining the basis for its decision and shall specify the water quality control parameters representing optimal corrosion control in accordance with Sec. 141.82(f). Water systems deemed to have optimized corrosion control under this paragraph shall operate in compliance with the State-designated optimal water quality control parameters in accordance with Sec. 141.82(g) and continue to conduct lead and copper tap and water quality parameter sampling in accordance with Sec. 141.86(d)(3) and Sec. 141.87(d), respectively. A system shall provide the State with the following information in order to support a determination under this paragraph:

(i) The results of all test samples collected for each of the water quality parameters in Sec. 141.82(c)(3).

(ii) A report explaining the test methods used by the water system to evaluate the corrosion control treatments listed in Sec. 141.82(c)(1), 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 tap water samples collected in accordance with Sec. 141.86 at least once every six months for one year after corrosion control has been installed.

(3) Any water system is deemed to have optimized corrosion control if it submits results of tap water monitoring conducted in accordance with Sec. 141.86 and source water monitoring conducted in accordance with Sec. 141.88 that demonstrates for two consecutive 6-month monitoring periods that the difference between the 90th percentile tap water lead level computed under Sec. 141.80(c)(3), and the highest source water lead concentration is less than the Practical Quantitation Level for lead specified in Sec. 141.89(a)(1)(ii).

(i) Those systems whose highest source water lead level is below the Method Detection Limit may also be deemed to have optimized corrosion control under this paragraph if the 90th percentile tap water lead level is less than or equal to the Practical Quantitation Level for lead for two consecutive 6-month monitoring periods.

(ii) Any water system deemed to have optimized corrosion control in accordance with this paragraph shall continue monitoring for lead and copper at the tap no less frequently than once every three calendar years using the reduced number of sites specified in Sec. 141.86(c) and collecting the samples at times and locations specified in Sec. 141.86(d)(4)(iv). Any such system that has not conducted a round of monitoring pursuant to Sec. 141.86(d) since September 30, 1997, shall complete a round of monitoring pursuant to this paragraph no later than September 30, 2000.

(iii) Any water system deemed to have optimized corrosion control pursuant to this paragraph shall notify the State in writing pursuant to Sec. 141.90(a)(3) of any change in treatment or the addition of a new source. 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.

(iv) As of July 12, 2001, a system is not deemed to have optimized corrosion control under this paragraph, and shall implement corrosion control treatment pursuant to paragraph (b)(3)(v) of this section unless it meets the copper action level.

(v) Any system triggered into corrosion control because it is no longer deemed to have optimized corrosion control under this paragraph shall implement corrosion

control treatment in accordance with the deadlines in paragraph (e) of this section. Any such large system shall adhere to the schedule specified in that paragraph for medium-size systems, 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 paragraph.

(c) Any small or medium-size water system 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 system meets both action levels during each of two consecutive monitoring periods conducted pursuant to Sec. 141.86 and submits the results to the State. If any such water system thereafter exceeds the lead or copper action level during any monitoring period, the system (or the State, as the case may be) shall recommence completion of the applicable treatment steps, beginning with the first treatment step which was not previously completed in its entirety. The State may require a system to repeat treatment steps previously completed by the system where the State determines that this is necessary to implement properly the treatment requirements of this section. The State shall notify the system in writing of such a determination and explain the basis for its decision. The requirement for any small- or medium-size system to implement corrosion control treatment steps in accordance with paragraph (e) of this section (including systems deemed to have optimized corrosion control under paragraph (b)(1) of this section) is triggered whenever any small- or medium-size system exceeds the lead or copper action level.

(d) Treatment steps and deadlines for large systems. Except as provided in paragraph (b) (2) and (3) of this section, large systems shall complete the following corrosion control treatment steps (described in the referenced portions of Secs. 141.82, 141.86, and 141.87) by the indicated dates.

(1) Step 1: The system shall conduct initial monitoring (Sec. 141.86(d)(1) and Sec. 141.87(b)) during two consecutive six-month monitoring periods by January 1, 1993.

(2) Step 2: The system shall complete corrosion control studies (Sec. 141.82(c)) by July 1, 1994.

(3) Step 3: The State shall designate optimal corrosion control treatment (Sec. 141.82(d)) by January 1, 1995.

(4) Step 4: The system shall install optimal corrosion control treatment (Sec. 141.82(e)) by January 1, 1997.

(5) Step 5: The system shall complete follow-up sampling (Sec. 141.86(d)(2) and Sec. 141.87(c)) by January 1, l998.

(6) Step 6: The State shall review installation of treatment and designate optimal water quality control parameters (Sec. 141.82(f)) by July 1, 1998.

(7) Step 7: The system shall operate in compliance with the State-specified optimal water quality control parameters (Sec. 141.82(g)) and continue to conduct tap sampling (Sec. 141.86(d)(3) and Sec. 141.87(d)).

(e) Treatment Steps and deadlines for small and medium-size systems. Except as provided in paragraph (b) of this section, small and medium-size systems shall complete the following corrosion control treatment steps (described in the referenced portions of Secs. 141.82, 141.86 and 141.87) by the indicated time periods.

(1) Step 1: The system shall conduct initial tap sampling (Sec. 141.86(d)(1) and Sec. 141.87(b)) until the system either exceeds the lead or copper action level or becomes eligible for reduced monitoring under Sec. 141.86(d)(4). A system exceeding the lead or copper action level shall recommend optimal corrosion control treatment (Sec. 141.82(a)) within six months after it exceeds one of the action levels.

(2) Step 2: Within 12 months after a system exceeds the lead or copper action level, the State may require the system to perform corrosion control studies (Sec. 141.82(b)). If the State does not require the system to perform such studies, the State shall specify optimal corrosion control treatment (Sec. 141.82(d)) within the following timeframes:

(i) For medium-size systems, within 18 months after such system exceeds the lead or copper action level,

(ii) For small systems, within 24 months after such system exceeds the lead or copper action level.

(3) Step 3: If the State requires a system to perform corrosion control studies under step 2, the system shall complete the studies (Sec. 141.82(c)) within 18 months after the State requires that such studies be conducted.

(4) Step 4: If the system has performed corrosion control studies under step 2, the State shall designate optimal corrosion control treatment (Sec. 141.82(d)) within 6 months after completion of step 3.

(5) Step 5: The system shall install optimal corrosion control treatment (Sec. 141.82(e)) within 24 months after the State designates such treatment.

(6) Step 6: The system shall complete follow-up sampling (Sec. 141.86(d)(2) and Sec. 141.87(c)) within 36 months after the State designates optimal corrosion control treatment.

(7) Step 7: The State shall review the system's installation of treatment and designate optimal water quality control parameters (Sec. 141.82(f)) within 6 months after completion of step 6.

(8) Step 8: The system shall operate in compliance with the State-designated optimal water quality control parameters (Sec. 141.82(g)) and continue to conduct tap sampling (Sec. 141.86(d)(3) and Sec. 141.87(d)).

[56 FR 26548, June 7, 1991, as amended at 59 FR 33862, June 30, 1994; 65 FR 2004, Jan. 12, 2000]

Sec. 141.82(a) – 141.82(h) Description of corrosion control treatment requirements.

Each system shall complete the corrosion control treatment requirements described below which are applicable to such system under Sec. 141.81.

(a) System recommendation regarding corrosion control treatment. Based upon the results of lead and copper tap monitoring and water quality parameter monitoring, small and medium-size water systems exceeding the lead or copper action level shall recommend installation of one or more of the corrosion control treatments listed in paragraph (c)(1) of this section which the system believes constitutes optimal corrosion control for that system. The State may require the system to conduct additional water quality parameter monitoring in accordance with Sec. 141.87(b) to assist the State in reviewing the system's recommendation.

(b) State decision to require studies of corrosion control treatment (applicable to small and medium-size systems). The State may require any small or medium-size system that exceeds the lead or copper action level to perform corrosion control studies under paragraph (c) of this section to identify optimal corrosion control treatment for the system.

(c) Performance of corrosion control studies.

(1) Any public water system performing corrosion control studies shall evaluate the effectiveness of each of the following treatments, and, if appropriate, combinations of the following treatments to identify the optimal corrosion control treatment for that system:

(i) Alkalinity and pH adjustment;

(ii) Calcium hardness adjustment; and

(iii) 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.

(2) The water system shall evaluate each of the corrosion control treatments using either pipe rig/loop tests, metal coupon tests, partial-system tests, or analyses based on documented analogous treatments with other systems of similar size, water chemistry and distribution system configuration.

(3) The water system shall measure the following water quality parameters in any tests conducted under this paragraph before and after evaluating the corrosion control treatments listed above:

(i) Lead;

(ii) Copper;

(iii) pH;

(iv) Alkalinity;

(v) Calcium;

(vi) Conductivity;

(vii) Orthophosphate (when an inhibitor containing a phosphate compound is used);

(viii) Silicate (when an inhibitor containing a silicate compound is used);

(ix) Water temperature.

(4) The water system shall identify all chemical or physical constraints that limit or prohibit the use of a particular corrosion control treatment and document such constraints with at least one of the following:

(i) Data and documentation showing that a particular corrosion control treatment has adversely affected other water treatment processes when used by another water system with comparable water quality characteristics; and/or

(ii) Data and documentation demonstrating that the water system has previously attempted to evaluate a particular corrosion control treatment and has found that the treatment is ineffective or adversely affects other water quality treatment processes.

(5) The water system shall evaluate the effect of the chemicals used for corrosion control treatment on other water quality treatment processes.

(6) On the basis of an analysis of the data generated during each evaluation, the water system shall recommend to the State in writing the treatment option that the corrosion control studies indicate constitutes optimal corrosion control treatment for that system. The water system shall provide a rationale for its recommendation along with all supporting documentation specified in paragraphs (c) (1) through (5) of this section.

(d) State designation of optimal corrosion control treatment.

(1) Based upon consideration of available information including, where applicable, studies performed under paragraph (c) of this section and a system's recommended treatment alternative, the State shall either approve the corrosion control treatment option

recommended by the system, or designate alternative corrosion control treatment(s) from among those listed in paragraph (c)(1) of this section. When designating optimal treatment the State shall consider the effects that additional corrosion control treatment will have on water quality parameters and on other water quality treatment processes.

(2) The State shall notify the system of its decision on optimal corrosion control treatment in writing and explain the basis for this determination. If the State requests additional information to aid its review, the water system shall provide the information.

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

(f) State review of treatment and specification of optimal water quality control parameters. The State shall evaluate the results of all lead and copper tap samples and water quality parameter samples submitted by the water system and determine whether the system has properly installed and operated the optimal corrosion control treatment designated by the State in paragraph (d) of this section. Upon reviewing the results of tap water and water quality parameter monitoring by the system, both before and after the system installs optimal corrosion control treatment, the State shall designate:

(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;

(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 monitoring. 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 paragraph (f) of this section, in accordance with this paragraph for all samples collected under Sec. 141.87(d) through (f). Compliance with the requirements of this paragraph shall be determined every six months, as specified under Sec. 141.87(d). A water system is out of compliance with the requirements of this paragraph for a six-month period if it has excursions for any State-specified parameter on more than nine days during the 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. Daily values are calculated as follows. States have discretion to delete results of obvious sampling errors from this calculation.

(1) 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. If EPA has approved an alternative formula under Sec. 142.16 of this chapter in the State's application for a program revision submitted pursuant to Sec. 142.12 of this chapter, the State's formula shall be used to aggregate multiple measurements taken at a sampling point for the water quality parameter in lieu of the formula in this paragraph.

(2) 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.

(3) 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.

(h) Modification of State treatment decisions. Upon its own initiative or in response to a request by a water system or other interested party, a State may modify its determination of the optimal corrosion control treatment under paragraph (d) of this section or optimal water quality control parameters under paragraph (f) of this section. A request for modification by a system or other interested party shall be in writing, explain why the modification is appropriate, and provide supporting documentation. The State may modify its determination where it concludes that such change is necessary to ensure that the system continues to optimize corrosion control treatment. A revised determination shall be made in writing, set forth the new treatment requirements, explain the basis for the State's decision, and provide an implementation schedule for completing the treatment modifications.

[56 FR 26548, June 7, 1991, as amended at 65 FR 2004, Jan. 12, 2000]

Sec. 141.83 Source water treatment requirements.

Systems shall complete the applicable source water monitoring and treatment requirements (described in the referenced portions of paragraph (b) of this section, and in Secs. 141.86, and 141.88) by the following deadlines.

(a) Deadlines for completing source water treatment steps--

(1) Step 1: A system exceeding the lead or copper action level shall complete lead and copper source water monitoring (Sec. 141.88(b)) and make a treatment recommendation to the State (Sec. 141.83(b)(1)) within 6 months after exceeding the lead or copper action level.

(2) Step 2: The State shall make a determination regarding source water treatment (Sec. 141.83(b)(2)) within 6 months after submission of monitoring results under step 1.

(3) Step 3: If the State requires installation of source water treatment, the system shall install the treatment (Sec. 141.83(b)(3)) within 24 months after completion of step 2.

(4) Step 4: The system shall complete follow-up tap water monitoring (Sec. 141.86(d)(2) and source water monitoring (Sec. 141.88(c)) within 36 months after completion of step 2.

(5) Step 5: The State shall review the system's installation and operation of source water treatment and specify maximum permissible source water levels (Sec. 141.83(b)(4)) within 6 months after completion of step 4.

(6) Step 6: The system shall operate in compliance with the State-specified maximum permissible lead and copper source water levels (Sec. 141.83(b)(4)) and continue source water monitoring (Sec. 141.88(d)).

(b) Description of source water treatment requirements--

(1) System treatment recommendation. Any system which exceeds the lead or copper action level shall recommend in writing to the State the installation and operation of one of the source water treatments listed in paragraph (b)(2) of this section. 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) State determination regarding source water treatment. The State shall complete an evaluation of the results of all source water samples submitted by the water system to determine whether source water treatment is necessary to minimize lead or copper levels in water delivered to users' taps. If the State determines that treatment is needed, the State shall either require installation and operation of the source water treatment recommended by the system (if any) or require the installation and operation of another

source water treatment from among the following: Ion exchange, reverse osmosis, lime softening or coagulation/filtration. If the State requests additional information to aid in its review, the water system shall provide the information by the date specified by the State in its request. The State shall notify the system in writing of its determination and set forth the basis for its decision.

(3) Installation of source water treatment. Each system shall properly install and operate the source water treatment designated by the State under paragraph (b)(2) of this section.

(4) State review of source water treatment and specification of maximum permissible source water levels. The State shall review the source water samples taken by the water system both before and after the system installs source water treatment, and determine whether the system has properly installed and operated the source water treatment designated by the State. Based upon its review, the State shall designate the maximum permissible lead and copper concentrations for finished water entering the distribution system. Such levels shall reflect the contaminant removal capability of the treatment properly operated and maintained. The State shall notify the system in writing and explain the basis for its decision.

(5) Continued operation and maintenance. Each water system shall maintain lead and copper levels below the maximum permissible concentrations designated by the State at each sampling point monitored in accordance with Sec. 141.88. The system is out of compliance with this paragraph if the level of lead or copper at any sampling point is greater than the maximum permissible concentration designated by the State.

(6) Modification of State treatment decisions. Upon its own initiative or in response to a request by a water system or other interested party, a State may modify its determination of the source water treatment under paragraph (b)(2) of this section, or maximum permissible lead and copper concentrations for finished water entering the distribution system under paragraph (b)(4) of this section. A request for modification by a system or other interested party shall be in writing, explain why the modification is appropriate, and provide supporting documentation. The State may modify its determination where it concludes that such change is necessary to ensure that the system continues to minimize lead and copper concentrations in source water. A revised determination shall be made in writing, set forth the new treatment requirements, explain the basis for the State's decision, and provide an implementation schedule for completing the treatment modifications.

(7) Treatment decisions by EPA in lieu of the State. Pursuant to the procedures in Sec. 142.19, the EPA Regional Administrator may review treatment determinations made by a State under paragraphs (b) (2), (4), or (6) of this section and issue Federal treatment determinations consistent with the requirements of those paragraphs where the Administrator finds that:

(i) A State has failed to issue a treatment determination by the applicable deadlines contained in Sec. 141.83(a),

(ii) A state has abused its discretion in a substantial number of cases or in cases affecting a substantial population, or

(iii) The technical aspects of a State's determination would be indefensible in an expected Federal enforcement action taken against a system.

Sec. 141.84 Lead service line replacement requirements.

(b) Systems that fail to meet the lead action level in tap samples taken pursuant to Sec. 141.86(d)(2), after installing corrosion control and/or source water treatment (whichever sampling occurs later), shall replace lead service lines in accordance with the requirements of this section. If a system is in violation of Sec. 141.81 or Sec. 141.83 for failure to install source water or corrosion control treatment, the State may require the system to commence lead service line replacement under this section after the date by which the system was required to conduct monitoring under Sec. 141.86(d)(2) has passed.

(c) 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 a materials evaluation, including the evaluation required under Sec. 141.86(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 date the action level was exceeded in tap sampling referenced in paragraph (a) of this section.

(d) A system is not required to replace an individual lead service line if the lead concentration in all service line samples from that line, taken pursuant to Sec. 141.86(b)(3), is less than or equal to 0.015 mg/L.

(e) A water system shall replace that 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, nor is it required to replace the privately-owned portion 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 the 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 under the previous sentence less than 45 days prior to commencing partial lead service line replacement where such replacement is 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 under Sec. 141.86(b)(3), 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 paragraph (d)(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 line, the water system shall have the option to post the information at a conspicuous location.

(f) 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 such 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 referenced in paragraph (a) of this section.

(g) Any system may cease replacing lead service lines whenever first draw samples collected pursuant to Sec. 141.86(b)(2) meet the lead action level during each of two consecutive monitoring periods and the system submits the results to the State. If first draw tap samples collected in any such system thereafter exceeds the lead action level, the system shall recommence replacing lead service lines pursuant to paragraph (b) of this section.

(h) To demonstrate compliance with paragraphs (a) through (d) of this section, a system shall report to the State the information specified in Sec. 141.90(e).

[56 FR 26548, June 7, 1991; 57 FR 28788, June 29, 1992, as amended at 65 FR 2005, Jan. 12, 2000]

Sec. 141.85 Public education and supplemental monitoring requirements.

A water system that exceeds the lead action level based on tap water samples collected in accordance with Sec. 141.86 shall deliver the public education materials contained in paragraphs (a) and (b) of this section in accordance with the requirements in paragraph (c) of this section.

(a) Content of written public education materials.

(1) Community water systems. A community water system shall include the following text in all of the printed materials it distributes through its lead public education program. Systems may delete information pertaining to lead service lines, upon approval by the

State, if no lead service lines exist anywhere in the water system service area. Public education language at paragraphs (a)(1)(iv)(B)(5) and (a)(1)(iv)(D)(2) of this section may be modified regarding building permit record availability and consumer access to these records, if approved by the State. Systems may also continue to utilize pre-printed materials that meet the public education language requirements in 40 CFR 141.85, effective November 6, 1991, and contained in the 40 CFR, parts 100 to 149, edition revised as of July 1, 1991. Any additional information presented by a system shall be consistent with the information below and be in plain English that can be understood by lay people.

(i) Introduction. The United States Environmental Protection Agency (EPA) and [insert name of water supplier] are concerned about lead in your drinking water. Although most homes have very low levels of lead in their drinking water, some homes in the community have lead levels above the EPA action level of 15 parts per billion (ppb), or 0.015 milligrams of lead per liter of water (mg/L). Under Federal law we are required to have a program in place to minimize lead in your drinking water by [insert date when corrosion control will be completed for your system]. This program includes corrosion control treatment, source water treatment, and public education. We are also required to replace the portion of each lead service line that we own if the line contributes lead concentrations of more than 15 ppb after we have completed the comprehensive treatment program. If you have any questions about how we are carrying out the requirements of the lead regulation please give us a call at [insert water system's phone number]. This brochure explains the simple steps you can take to protect you and your family by reducing your exposure to lead in drinking water.

(ii) Health effects of lead. Lead is a common metal found throughout the environment in lead-based paint, air, soil, household dust, food, certain types of pottery porcelain and pewter, and water. Lead can pose a significant risk to your health if too much of it enters your body. Lead builds up in the body over many years and can cause damage to the brain, red blood cells and kidneys. The greatest risk is to young children and pregnant women. Amounts of lead that won't hurt adults can slow down normal mental and physical development of growing bodies. In addition, a child at play often comes into contact with sources of lead contamination--like dirt and dust--that rarely affect an adult. It is important to wash children's hands and toys often, and to try to make sure they only put food in their mouths.

(iii) Lead in drinking water.

(A) Lead in drinking water, although rarely the sole cause of lead poisoning, can significantly increase a person's total lead exposure, particularly the exposure of infants who drink baby formulas and concentrated juices that are mixed with water. The EPA estimates that drinking water can make up 20 percent or more of a person's total exposure to lead.

(B) Lead is unusual among drinking water contaminants in that it seldom occurs naturally in water supplies like rivers and lakes. Lead enters drinking water primarily as a result of the corrosion, or wearing away, of materials containing lead in the water distribution system and household plumbing. These materials include lead-based solder used to join copper pipe, brass and chrome plated brass faucets, and in some cases, pipes made of lead that connect your house to the water main (service lines). In 1986, Congress banned the use of lead solder containing greater than 0.2% lead, and restricted the lead content of faucets, pipes and other plumbing materials to 8.0%.

(C) When water stands in lead pipes or plumbing systems containing lead for several hours or more, the lead may dissolve into your drinking water. This means the first water drawn from the tap in the morning, or later in the afternoon after returning from work or school, can contain fairly high levels of lead.

(iv) Steps you can take in the home to reduce exposure to lead in drinking water.

(A) Despite our best efforts mentioned earlier to control water corrosivity and remove lead from the water supply, lead levels in some homes or buildings can be high. To find out whether you need to take action in your own home, have your drinking water tested to determine if it contains excessive concentrations of lead. Testing the water is essential because you cannot see, taste, or smell lead in drinking water. Some local laboratories that can provide this service are listed at the end of this booklet. For more information on having your water tested, please call [insert phone number of water system].

(B) If a water test indicates that the drinking water drawn from a tap in your home contains lead above 15 ppb, then you should take the following precautions:

(1) Let the water run from the tap before using it for drinking or cooking any time the water in a faucet has gone unused for more than six hours. The longer water resides in your home's plumbing the more lead it may contain. Flushing the tap means running the cold water faucet until the water gets noticeably colder, usually about 15-30 seconds. If your house has a lead service line to the water main, you may have to flush the water for a longer time, perhaps one minute, before drinking. Although toilet flushing or showering flushes water through a portion of your home's plumbing system, you still need to flush the water in each faucet before using it for drinking or cooking. Flushing tap water is a simple and inexpensive measure you can take to protect your family's health. It usually uses less than one or two gallons of water and costs less than [insert a cost estimate based on flushing two times a day for 30 days] per

month. To conserve water, fill a couple of bottles for drinking water after flushing the tap, and whenever possible use the first flush water to wash the dishes or water the plants. If you live in a high-rise building, letting the water flow before using it may not work to lessen your risk from lead. The plumbing systems have more, and sometimes larger pipes than smaller buildings. Ask your landlord for help in locating the source of the lead and for advice on reducing the lead level.

(2) Try not to cook with, or drink water from the hot water tap. Hot water can dissolve more lead more quickly than cold water. If you need hot water, draw water from the cold tap and heat it on the stove.

(3) Remove loose lead solder and debris from the plumbing materials installed in newly constructed homes, or homes in which the plumbing has recently been replaced, by removing the faucet strainers from all taps and running the water from 3 to 5 minutes. Thereafter, periodically remove the strainers and flush out any debris that has accumulated over time.

(4) If your copper pipes are joined with lead solder that has been installed illegally since it was banned in 1986, notify the plumber who did the work and request that he or she replace the lead solder with lead-free solder. Lead solder looks dull gray, and when scratched with a key looks shiny. In addition, notify your State [insert name of department responsible for enforcing the Safe Drinking Water Act in your State] about the violation.

(5) Determine whether or not the service line that connects your home or apartment to the water main is made of lead. The best way to determine if your service line is made of lead is by either hiring a licensed plumber to inspect the line or by contacting the plumbing contractor who installed the line. You can identify the plumbing contractor by checking the city's record of building permits which should be maintained in the files of the [insert name of department that issues building permits]. A licensed plumber can at the same time check to see if your home's plumbing contains lead solder, lead pipes, or pipe fittings that contain lead. The public water system that delivers water to your home should also maintain records of the materials located in the distribution system. If the service line that connects your dwelling to the water main contributes more than 15 ppb to drinking water, after our comprehensive treatment program is in place, we are required to replace the portion of the line we own. If the line is only partially owned by the [insert the name of the city, county, or water system that owns the line], we are required to provide the owner of the privately-owned portion of the line with information on how to replace the privately-owned portion of the service line, and offer to replace that portion of the line at the owner's

expense. If we replace only the portion of the line that we own, we also are required to notify you in advance and provide you with information on the steps you can take to minimize exposure to any temporary increase in lead levels that may result from the partial replacement, to take a follow-up sample at our expense from the line within 72 hours after the partial replacement, and to mail or otherwise provide you with the results of that sample within three business days of receiving the results. Acceptable replacement alternatives include copper, steel, iron, and plastic pipes.

(6) Have an electrician check your wiring. If grounding wires from the electrical system are attached to your pipes, corrosion may be greater. Check with a licensed electrician or your local electrical code to determine if your wiring can be grounded elsewhere. DO NOT attempt to change the wiring yourself because improper grounding can cause electrical shock and fire hazards.

(C) The steps described above will reduce the lead concentrations in your drinking water. However, if a water test indicates that the drinking water coming from your tap contains lead concentrations in excess of 15 ppb after flushing, or after we have completed our actions to minimize lead levels, then you may want to take the following additional measures:

(1) Purchase or lease a home treatment device. Home treatment devices are limited in that each unit treats only the water that flows from the faucet to which it is connected, and all of the devices require periodic maintenance and replacement. Devices such as reverse osmosis systems or distillers can effectively remove lead from your drinking water. Some activated carbon filters may reduce lead levels at the tap, however all lead reduction claims should be investigated. Be sure to check the actual performance of a specific home treatment device before and after installing the unit.

(2) Purchase bottled water for drinking and cooking.

(D) You can consult a variety of sources for additional information. Your family doctor or pediatrician can perform a blood test for lead and provide you with information about the health effects of lead. State and local government agencies that can be contacted include:

(1) [insert the name of city or county department of public utilities] at [insert phone number] can provide you with information about your community's water supply, and a list of local laboratories that have been certified by EPA for testing water quality;

(2) [insert the name of city or county department that issues building permits] at [insert phone number] can provide you with information about building permit records that should contain the names of plumbing contractors that plumbed your home; and

(3) [insert the name of the State Department of Public Health] at [insert phone number] or the [insert the name of the city or county health department] at [insert phone number] can provide you with information about the health effects of lead and how you can have your child's blood tested.

(E) The following is a list of some State approved laboratories in your area that you can call to have your water tested for lead. [Insert names and phone numbers of at least two laboratories].

(1) * * *

(2) Non-transient non-community water systems. A non-transient non-community water system shall either include the text specified in paragraph (a)(1) of this section or shall include the following text in all of the printed materials it distributes through its lead public education program. Water systems may delete information pertaining to lead service lines upon approval by the State if no lead service lines exist anywhere in the water system service area. Any additional information presented by a system shall be consistent with the information below and be in plain English that can be understood by lay people.

(i) Introduction. The United States Environmental Protection Agency (EPA) and [insert name of water supplier] are concerned about lead in your drinking water. Some drinking water samples taken from this facility have lead levels above the EPA action level of 15 parts per billion (ppb), or 0.015 milligrams of lead per liter of water (mg/L). Under Federal law we are required to have a program in place to minimize lead in your drinking water by [insert date when corrosion control will be completed for your system]. This program includes corrosion control treatment, source water treatment, and public education. We are also required to replace the portion of each lead service line that we own if the line contributes lead concentrations of more than 15 ppb after we have completed the comprehensive treatment program. If you have any questions about how we are carrying out the requirements of the lead regulation please give us a call at [insert water system's phone number]. This brochure explains the simple steps you can take to protect yourself by reducing your exposure to lead in drinking water.

(ii) Health effects of lead. Lead is found throughout the environment in lead-based paint, air, soil, household dust, food, certain types of pottery porcelain and pewter, and water. Lead can pose a significant risk to your health if too much of it enters your body. Lead builds up in the body over many years and can cause damage to the brain, red blood cells and kidneys. The greatest risk is to young children and pregnant women. Amounts of lead that won't hurt adults can slow down normal mental and physical development of growing bodies. In addition, a child at play often comes into contact with sources of lead contamination--like dirt and dust--that rarely affect an adult. It is important to wash children's hands and toys often, and to try to make sure they only put food in their mouths.

(iii) Lead in drinking water.

(A) Lead in drinking water, although rarely the sole cause of lead poisoning, can significantly increase a person's total lead exposure, particularly the exposure of infants who drink baby formulas and concentrated juices that are mixed with water. The EPA estimates that drinking water can make up 20 percent or more of a person's total exposure to lead.

(B) Lead is unusual among drinking water contaminants in that it seldom occurs naturally in water supplies like rivers and lakes. Lead enters drinking water primarily as a result of the corrosion, or wearing away, of materials containing lead in the water distribution system and household plumbing. These materials include lead-based solder used to join copper pipe, brass and chrome-plated brass faucets, and in some cases, pipes made of lead that connect houses and buildings to water mains (service lines). In 1986, Congress banned the use of lead solder containing greater than 0.2% lead, and restricted the lead content of faucets, pipes and other plumbing materials to 8.0%.

(C) When water stands in lead pipes or plumbing systems containing lead for several hours or more, the lead may dissolve into your drinking water. This means the first water drawn from the tap in the morning, or later in the afternoon if the water has not been used all day, can contain fairly high levels of lead.

(iv) Steps you can take to reduce exposure to lead in drinking water.

(A) Let the water run from the tap before using it for drinking or cooking any time the water in a faucet has gone unused for more than six hours. The longer water resides in plumbing the more lead it may contain. Flushing the tap means running the cold water

faucet for about 15-30 seconds. Although toilet flushing or showering flushes water through a portion of the plumbing system, you still need to flush the water in each faucet before using it for drinking or cooking. Flushing tap water is a simple and inexpensive measure you can take to protect your health. It usually uses less than one gallon of water.

(B) Do not cook with, or drink water from the hot water tap. Hot water can dissolve more lead more quickly than cold water. If you need hot water, draw water from the cold tap and then heat it.

(C) The steps described above will reduce the lead concentrations in your drinking water. However, if you are still concerned, you may wish to use bottled water for drinking and cooking.

(D) You can consult a variety of sources for additional information. Your family doctor or pediatrician can perform a blood test for lead and provide you with information about the health effects of lead. State and local government agencies that can be contacted include:

(1) [insert the name or title of facility official if appropriate] at [insert phone number] can provide you with information about your facility's water supply; and

(2) [insert the name or title of the State Department of Public Health] at [insert phone number] or the [insert the name of the city or county health department] at [insert phone number] can provide you with information about the health effects of lead.

(b) Content of broadcast materials. A water system shall include the following information in all public service announcements submitted under its lead public education program to television and radio stations for broadcasting:

(1) Why should everyone want to know the facts about lead and drinking water? Because unhealthy amounts of lead can enter drinking water through the plumbing in your home. That's why I urge you to do what I did. I had my water tested for [insert free or $ per sample]. You can contact the [insert the name of the city or water system] for information on testing and on simple ways to reduce your exposure to lead in drinking water.

(2) To have your water tested for lead, or to get more information about this public health concern, please call [insert the phone number of the city or water system].

(c) Delivery of a public education program.

(1) In communities where a significant proportion of the population speaks a language other than English, public education materials shall be communicated in the appropriate language(s).

(2) A community water system that exceeds the lead action level on the basis of tap water samples collected in accordance with Sec. 141.86, and that is not already repeating public education tasks pursuant to paragraph (c)(3), (c)(7), or (c)(8), of this section, shall, within 60 days:

(i) Insert notices in each customer's water utility bill containing the information in paragraph (a)(1) of this section, along with the following alert on the water bill itself in large print: "SOME HOMES IN THIS COMMUNITY HAVE ELEVATED LEAD LEVELS IN THEIR DRINKING WATER. LEAD CAN POSE A SIGNIFICANT RISK TO YOUR HEALTH. PLEASE READ THE ENCLOSED NOTICE FOR FURTHER INFORMATION." A community water system having a billing cycle that does not include a billing within 60 days of exceeding the action level, or that cannot insert information in the water utility bill without making major changes to its billing system, may use a separate ailing to deliver the information in paragraph (a)(1) of this section as long as the information is delivered to each customer within 60 days of exceeding the action level. Such water systems shall also include the "alert" language specified in this paragraph.

(ii) Submit the information in paragraph (a)(1) of this section to the editorial departments of the major daily and weekly newspapers circulated throughout the community.

(iii) Deliver pamphlets and/or brochures that contain the public education materials in paragraphs (a)(1)(ii) and (a)(1)(iv) of this section to facilities and organizations, including the following:

(iv) Submit the public service announcement in paragraph (b) of this section to at least five of the radio and television stations with the largest audiences that broadcast to the community served by the water system.

(3) A community water system shall repeat the tasks contained in paragraphs (c)(2) (i), (ii) and (iii) of this section every 12 months, and the tasks contained in paragraphs (c)(2)(iv) of this section every 6 months for as long as the system exceeds the lead action level.

(4) Within 60 days after it exceeds the lead action level (unless it already is repeating public education tasks pursuant to paragraph (c)(5) of this section), a non-transient non-community water system shall deliver the public education materials specified by paragraph (a)(1) of this section or the public education materials specified by paragraph (a)(2) of this section as follows:

(i) 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

(ii) Distribute informational pamphlets and/or brochures on lead in drinking water to each person served by the non-transient non-community 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.

(5) A non-transient non-community water system shall repeat the tasks contained in paragraph (c)(4) of this section at least once during each calendar year in which the system exceeds the lead action level.

(6) 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 conducted pursuant to Sec. 141.86. Such a system shall recommence public education in accordance with this section if it subsequently exceeds the lead action level during any monitoring period.

(7) A community water system may apply to the State, in writing, (unless the State has waived the requirement for prior State approval) to use the text specified in paragraph (a)(2) of this section in lieu of the text in paragraph (a)(1) of this section and to perform the tasks listed in paragraphs (c)(4) and (c)(5) of this section in lieu of the tasks in paragraphs (c)(2) and (c)(3) of this section if:

(i) 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; and

(ii) The system provides water as part of the cost of services provided and does not separately charge for water consumption.

(8) * * *

(i) A community water system serving 3,300 or fewer people may omit the task contained in paragraph (c)(2)(iv) of this section. As long as it distributes notices containing the information contained in paragraph (a)(1) of this section to every household served by the system, such systems may further limit their public education programs as follows:

(A) Systems serving 500 or fewer people may forego the task contained in paragraph (c)(2)(ii) of this section. Such a system may limit the distribution of the public education materials required under paragraph (c)(2)(iii) of this section to facilities and organizations served by the system that are most likely to be visited regularly by pregnant women and children, unless it is notified by the State in writing that it must make a broader distribution.

(B) If approved by the State in writing, a system serving 501 to 3,300 people may omit the task in paragraph (c)(2)(ii) of this section and/or limit the distribution of the public education materials required under paragraph (c)(2)(iii) of this section to facilities and organizations served by the system that are most likely to be visited regularly by pregnant women and children.

(ii) A community water system serving 3,300 or fewer people that delivers public education in accordance with paragraph (c)(8)(i) of this section shall repeat the required public education tasks at least once during each calendar year in which the system exceeds the lead action level.

(d) Supplemental monitoring and notification of results. A water system that fails to meet the lead action level on the basis of tap samples collected in accordance with Sec. 141.86 shall offer to sample the tap water of any customer who requests it. The system is not required to pay for collecting or analyzing the sample, nor is the system required to collect and analyze the sample itself.

[56 FR 26548, June 7, 1991; 57 FR 28788, June 29, 1992; 65 FR 2005, Jan. 12, 2000]

Sec. 141.86(a) – 141.86(f) Monitoring requirements for lead and copper in tap water.

(a) Sample site location.

(1) By the applicable date for commencement of monitoring under paragraph (d)(1) of this section, 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 paragraph (c) 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.

(2) A water system shall use the information on lead, copper, and galvanized steel that it is required to collect under Sec. 141.42(d) of this part [special monitoring for corrosivity characteristics] when conducting a materials evaluation. When an evaluation of the information collected pursuant to Sec. 141.42(d) is insufficient to locate the requisite number of lead and copper sampling sites that meet the targeting criteria in paragraph (a) of this section, the water system shall review the 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 materials when reading water meters or performing maintenance activities):

(i) 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;

(ii) 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

(iii) 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.

(3) The sampling sites selected for a community water system's sampling pool ("tier l sampling sites") shall consist of single family structures that:

(i) Contain copper pipes with lead solder installed after 1982 or contain lead pipes; and/or

(ii) Are served by a lead service line. When multiple-family residences comprise at least 20 percent of the structures served by a water system, the system may include these types of structures in its sampling pool.

(4) 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:

(i) Contain copper pipes with lead solder installed after 1982 or contain lead pipes; and/or

(ii) Are served by a lead service line.

(5) Any community water system with insufficient tier 1 and tier 2 sampling sites shall complete its sampling pool with "tier 3 sampling sites", consisting of single family structures that contain copper pipes with lead solder installed before 1983. A community water system with insufficient tier 1, tier 2, and tier 3 sampling sites shall complete its sampling pool with representative sites throughout the distribution system. For the purpose of this paragraph, a representative site is a site in which the plumbing materials used at that site would be commonly found at other sites served by the water system.

(6) The sampling sites selected for a non-transient noncommunity water system ("tier l sampling sites") shall consist of buildings that:

(i) Contain copper pipes with lead solder installed after 1982 or contain lead pipes; and/or

(ii) Are served by a lead service line.

(7) A non-transient non-community water system with insufficient tier 1 sites that meet the targeting criteria in paragraph (a)(6) of this section shall complete its sampling pool with sampling sites that contain copper pipes with lead solder installed before 1983. If additional sites are needed to complete the sampling pool, the non-transient non-community water system shall use representative sites throughout the distribution system. For the purpose of this paragraph, a representative site is a site in which the plumbing materials used at that site would be commonly found at other sites served by the water system.

(8) 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.

(b) Sample collection methods.

(1) All tap samples for lead and copper collected in accordance with this subpart, with the exception of lead service line samples collected under Sec. 141.84(c) and samples collected under paragraph (b)(5) of this section, shall be first-draw samples.

(2) 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 paragraph (b)(5) 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.

(3) 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:

(i) 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;

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

(iii) 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.

(4) 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 in order 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.

(5) A non-transient non-community water system, or a community water system that meets the criteria of Secs. 141.85(c)(7)(i) and (ii), that does not have enough taps that can supply first-draw samples, as defined in Sec. 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.

(c) Number of samples. Water systems shall collect at least one sample during each monitoring period specified in paragraph (d) of this section from the number of sites listed in the first column ("standard monitoring") of the table in this paragraph. A system conducting reduced monitoring under paragraph (d)(4) of this section shall collect at least one sample from the number of sites specified in the second column ("reduced monitoring") of the table in this paragraph during each monitoring period specified in paragraph (d)(4) of this section. Such reduced monitoring sites shall be representative of the sites required for standard monitoring. States may specify sampling locations when a system is conducting reduced monitoring. The table is as follows:

System size (number of people served)	Number of sites (standard monitoring)	Number of sites (reduced monitoring)
>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

(d) Timing of monitoring

(1) Initial tap sampling. The first six-month monitoring period for small, medium-size and large systems shall begin on the following dates:

System size (No. people served)	First six-month monitoring period begins on
>50,000	January 1, 1992
3,301 to 50,000	July 1, 1992
≤ 3,300	July 1, 1993

(i) All large systems shall monitor during two consecutive six-month periods.

(ii) All small and medium-size systems shall monitor during each six-month monitoring period until:

(A) The system exceeds the lead or copper action level and is therefore required to implement the corrosion control treatment requirements under Sec. 141.81, in which case the system shall continue monitoring in accordance with paragraph (d)(2) of this section, or

(B) The system meets the lead and copper action levels during two consecutive six-month monitoring periods, in which case the system may reduce monitoring in accordance with paragraph (d)(4) of this section.

(2) Monitoring after installation of corrosion control and source water treatment.

(i) Any large system which installs optimal corrosion control treatment pursuant to Sec. 141.81(d)(4) shall monitor during two consecutive six-month monitoring periods by the date specified in Sec. 141.81(d)(5).

(ii) Any small or medium-size system which installs optimal corrosion control treatment pursuant to Sec. 141.81(e)(5) shall monitor during two consecutive six-month monitoring periods by the date specified in Sec. 141.81(e)(6).

(iii) Any system which installs source water treatment pursuant to Sec. 141.83(a)(3) shall monitor during two consecutive six-month monitoring periods by the date specified in Sec. 141.83(a)(4).

(3) Monitoring after State specifies water quality parameter values for optimal corrosion control. After the State specifies the values for water quality control parameters under Sec. 141.82(f), the system shall monitor during each subsequent six-month monitoring period, with the first monitoring period to begin on the date the State specifies the optimal values under Sec. 141.82(f).

(4) Reduced monitoring.

(i) A small or medium-size water system 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 paragraph (c) of this section, and reduce the frequency of sampling to once per year.

(ii) Any water system that maintains the range of values for the water quality control parameters reflecting optimal corrosion control treatment specified by the State under Sec. 141.82(f) 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 paragraph (c) of this section if it receives written approval from the State. The State shall review monitoring, treatment, and other relevant information submitted by the water system in accordance with Sec. 141.90, and shall notify the system in writing when it determines the system is eligible to commence reduced monitoring pursuant to this paragraph. The State shall review, and where appropriate, revise its determination when the system submits new monitoring or treatment data, or when other data relevant to the number and frequency of tap sampling becomes available.

(iii) A small or medium-size water system that meets the lead and copper action levels during three consecutive years of monitoring may reduce the frequency of monitoring for lead and copper from annually to once every three years. Any water system that maintains the range of values for the water quality control parameters reflecting optimal corrosion control treatment specified by the State under Sec. 141.82(f) during three consecutive years of monitoring may reduce the frequency of monitoring from annually to once every three years if it receives written approval from the State. The State shall review monitoring, treatment, and other relevant information submitted by the water system in accordance with Sec. 141.90, and shall notify the system in writing when it determines the system is eligible to reduce the frequency of monitoring to once every three years. The State shall review, and where appropriate, revise its determination when the system submits new monitoring or treatment data, or when other data relevant to the number and frequency of tap sampling becomes available.

(iv) A water system that reduces the number and frequency of sampling shall collect these samples from representative sites included in the pool of targeted sampling sites identified in paragraph (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 paragraph (d)(4)(iv)(A) of this section.

(A) The State, at its discretion, may approve a different period for conducting the lead and copper tap sampling for systems collecting a reduced number of samples. Such a period shall be no longer than four consecutive months and must represent a time of normal operation where the highest levels of lead are most likely to occur. For a non-transient non-community water system

that does not operate during the months of June through September, and for which the period of normal operation where the highest levels of lead are most likely to occur is not known, the State shall designate a period that represents a time of normal operation for the system.

(B) Systems monitoring annually, that have been collecting samples during the months of June through September and that receive State approval to alter their sample collection period under paragraph (d)(4)(iv)(A) of this section, must 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 paragraph (d)(4)(iv)(A) of this section, must 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 must be collected annually or triennially, as required by this section. Small systems with waivers, granted pursuant to paragraph (g) of this section, that have been collecting samples during the months of June through September and receive State approval to alter their sample collection period under paragraph (d)(4)(iv)(A) of this section must collect their next round of samples before the end of the 9-year period.

(v) Any water system that demonstrates for two consecutive 6-month monitoring periods that the tap water lead level computed under Sec. 141.80(c)(3) is less than or equal to 0.005 mg/L and the tap water copper level computed under Sec. 141.80(c)(3) is less than or equal to 0.65 mg/L may reduce the number of samples in accordance with paragraph (c) of this section and reduce the frequency of sampling to once every three calendar years.

(vi) * * *

(A) A small or medium-size water system subject to reduced monitoring that exceeds the lead or copper action level shall resume sampling in accordance with paragraph (d)(3) of this section and collect the number of samples specified for standard monitoring under paragraph (c) of this section. Such a system shall also conduct water quality parameter monitoring in accordance with Sec. 141.87(b), (c) or (d) (as appropriate) during the monitoring period in which it exceeded the action level. Any such system may resume annual monitoring for lead and copper at the tap at the reduced number of sites specified in paragraph (c) of this section after it has completed two subsequent consecutive six-month rounds of monitoring that meet the criteria of paragraph (d)(4)(i) of this section and/or may resume triennial monitoring for lead and copper at the reduced number of sites after it demonstrates through subsequent rounds of monitoring that it meets the criteria of either paragraph (d)(4)(iii) or (d)(4)(v) of this section.

(B) 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 Sec. 141.82(f) for more than nine days in any six-month period specified in Sec. 141.87(d) shall conduct tap water sampling for lead and copper at the frequency specified in paragraph (d)(3) of this section, collect the number of samples specified for standard monitoring under paragraph (c) of this section, and shall resume monitoring for water quality parameters within the distribution system in accordance with Sec. 141.87(d). Such a system may resume reduced monitoring for lead and copper at the tap and for water quality parameters within the distribution system under the following conditions:

(1) The system may resume annual monitoring for lead and copper at the tap at the reduced number of sites specified in paragraph (c) of this section after it has completed two subsequent six-month rounds of monitoring that meet the criteria of paragraph (d)(4)(ii) of this section and the system has received written approval from the State that it is appropriate to resume reduced monitoring on an annual frequency.

(2) The system may resume triennial monitoring for lead and copper at the tap at the reduced number of sites after it demonstrates through subsequent rounds of monitoring that it meets the criteria of either paragraph (d)(4)(iii) or (d)(4)(v) of this section and the system has received written approval from the State that it is appropriate to resume triennial monitoring.

(3) The system may reduce the number of water quality parameter tap water samples required in accordance with Sec. 141.87(e)(1) and the frequency with which it collects such samples in accordance with Sec. 141.87(e)(2). Such a system may not resume triennial monitoring for water quality parameters at the tap until it demonstrates, in accordance with the requirements of Sec. 141.87(e)(2), that it has re-qualified for triennial monitoring.

(vii) Any water system subject to a reduced monitoring frequency under paragraph (d)(4) of this section that either adds a new source of water or changes any water treatment shall inform the State in writing in accordance with Sec. 141.90(a)(3). The State may require the system to resume sampling in accordance with paragraph (d)(3) of this section and collect the number of samples specified for standard monitoring under paragraph (c) 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.

(e) 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 this subpart.

(f) Invalidation of lead or copper tap water samples. A sample invalidated under this paragraph does not count toward determining lead or copper 90th percentile levels under Sec. 141.80(c)(3) or toward meeting the minimum monitoring requirements of paragraph (c) of this section.

(1) The State may invalidate a lead or copper tap water sample at least if one of the following conditions is met.

(i) The laboratory establishes that improper sample analysis caused erroneous results.

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

(iii) The sample container was damaged in transit.

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

(2) The system must report the results of all samples to the State and all supporting documentation for samples the system believes should be invalidated.

(3) To invalidate a sample under paragraph (f)(1) of this section, the decision and the rationale for the decision must be documented in writing. States may not invalidate a sample solely on the grounds that a follow-up sample result is higher or lower than that of the original sample.

(4) The water system must collect replacement samples for any samples invalidated under this section if, after the invalidation of one or more samples, the system has too few samples to meet the minimum requirements of paragraph (c) of this section. Any such replacement samples must be taken as soon as possible, but no later than 20 days after the date the State invalidates the sample or by the end of the applicable monitoring period, whichever occurs later. Replacement samples taken after the end of the applicable monitoring period shall not also be used to meet the monitoring requirements of a subsequent monitoring period. The replacement samples shall be taken at the same locations as the invalidated samples or, if that is not possible, at locations other than those already used for sampling during the monitoring period.

[56 FR 26548, June 7, 1991; 56 FR 32113, July 15, 1991; 57 FR 28788, June 29, 1992; as amended at 65 FR 2007, Jan. 12, 2000]

Sec. 141.87 Monitoring requirements for water quality parameters.

All large water systems, and all small- and medium-size systems that exceed the lead or copper action level shall monitor water quality parameters in addition to lead and copper in accordance

with this section. The requirements of this section are summarized in the table at the end of this section.

(a) General requirements

(1) Sample collection methods.

(i) 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. Tap sampling under this section is not required to be conducted at taps targeted for lead and copper sampling under Sec. 141.86(a). [Note: Systems may find it convenient to conduct tap sampling for water quality parameters at sites used for coliform sampling under 40 CFR 141.21.]

(ii) Samples collected at the entry point(s) 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 must sample at an entry point to the distribution system during periods of normal operating conditions (i.e., when water is representative of all sources being used).

(2) Number of samples.

(i) Systems shall collect two tap samples for applicable water quality parameters during each monitoring period specified under paragraphs (b) through (e) of this section from the following number of sites.

System size (No. people served)	No. of sites for water quality parameters
> 100,000	25
10,001 to 100,000	10
3,301 to 10,000	3
501 to 3,300	2
101 to 500	1
≦ 100	1

(ii) Except as provided in paragraph (c)(3) of this section, systems shall collect two samples for each applicable water quality parameter at each entry point to the distribution system during each monitoring period specified in paragraph (b) of this section. During each monitoring period specified in paragraphs (c)-(e) of this section, systems shall collect one sample for each applicable water quality parameter at each entry point to the distribution system.

(b) Initial sampling All large water systems shall measure the applicable water quality parameters as specified below at taps and at each entry point to the distribution system during each six-month monitoring period specified in Sec. 141.86(d)(1). All small and medium-size systems shall measure the applicable water quality parameters at the locations specified below during each six-month monitoring period specified in Sec. 141.86(d)(1) during which the system exceeds the lead or copper action level.

(1) At taps:

(i) pH;

(ii) Alkalinity;

(iii) Orthophosphate, when an inhibitor containing a phosphate compound is used;

(iv) Silica, when an inhibitor containing a silicate compound is used;

(v) Calcium;

(vi) Conductivity; and

(vii) Water temperature.

(2) At each entry point to the distribution system: all of the applicable parameters listed in paragraph (b)(1) of this section.

(c) Monitoring after installation of corrosion control. Any large system which installs optimal corrosion control treatment pursuant to Sec. 141.81(d)(4) shall measure the water quality parameters at the locations and frequencies specified below during each six-month monitoring period specified in Sec. 141.86(d)(2)(i). Any small or medium-size system which installs optimal corrosion control treatment shall conduct such monitoring during each six-month monitoring period specified in Sec. 141.86(d)(2)(ii) in which the system exceeds the lead or copper action level.

(1) At taps, two samples for:

(i) pH;

(ii) Alkalinity;

(iii) Orthophosphate, when an inhibitor containing a phosphate compound is used;

(iv) Silica, when an inhibitor containing a silicate compound is used;

(v) Calcium, when calcium carbonate stabilization is used as part of corrosion control.

(2) Except as provided in paragraph (c)(3) of this section, at each entry point to the distribution system, at least one sample no less frequently than every two weeks (biweekly) for:

(i) pH;

(ii) When alkalinity is adjusted as part of optimal corrosion control, a reading of the dosage rate of the chemical used to adjust alkalinity, and the alkalinity concentration; and

(iii) When a corrosion inhibitor is used as part of optimal corrosion control, a reading of the dosage rate of the inhibitor used, and the concentration of orthophosphate or silica (whichever is applicable).

(3) Any ground water system can limit entry point sampling described in paragraph (c)(2) 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 must 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.

(d) 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 under Sec. 141.82(f), all large systems shall measure the applicable water quality parameters in accordance with paragraph (c) of this section and determine compliance with the requirements of Sec. 141.82(g) every six months with the first six-month period to begin on the date the State specifies the optimal values under Sec. 141.82(f). Any small or medium-size system shall conduct such monitoring during each six-month period specified in this paragraph in which the system exceeds the lead or copper action level. For any such small and medium-size system that is subject to a reduced monitoring frequency pursuant to Sec. 141.86(d)(4) at the time of the action level exceedance, the end of the applicable six-month period under this paragraph shall coincide with the end of the applicable monitoring period under Sec. 141.86(d)(4). Compliance with State-designated optimal water quality parameter values shall be determined as specified under Sec. 141.82(g).

(e) Reduced monitoring.

(1) Any water system that maintains the range of values for the water quality parameters reflecting optimal corrosion control treatment during each of two consecutive six-month monitoring periods under paragraph (d) of this section shall continue monitoring at the entry point(s) to the distribution system as specified in paragraph (c)(2) of this section. Such system may collect two tap samples for applicable water quality

parameters from the following reduced number of sites during each six-month monitoring period.

System size (No. of people served)	Reduced No. of sites for water quality parameters
> 100,000	10
10,001 to 100,000	7
3,301 to 10,000	3
501 to 3,300	2
101 to 500	1
≦ 100	1

(2) * * *

(i) Any water system that maintains the range of values for the water quality parameters reflecting optimal corrosion control treatment specified by the State under Sec. 141.82(f) during three consecutive years of monitoring may reduce the frequency with which it collects the number of tap samples for applicable water quality parameters specified in this paragraph (e)(1) of this section from every six months to annually. Any water system that maintains the range of values for the water quality parameters reflecting optimal corrosion control treatment specified by the State under Sec. 141.82(f) during three consecutive years of annual monitoring under this paragraph may reduce the frequency with which it collects the number of tap samples for applicable water quality parameters specified in paragraph (e)(1) from annually to every three years.

(ii) A water system may reduce the frequency with which it collects tap samples for applicable water quality parameters specified in paragraph (e)(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 Sec. 141.89 (a)(1)(ii), that its tap water copper level at the 90th percentile is less than or equal to 0.65 mg/L for copper in Sec. 141.80(c)(2), 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 Sec. 141.82(f).

(3) A water system that conducts sampling annually shall collect these samples evenly throughout the year 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 in Sec. 141.82(f) for more than nine days in any six-month period specified in Sec. 141.82(g) shall resume distribution system tap water sampling in accordance with the number and frequency requirements in paragraph (d) of this section. Such a system may resume annual monitoring for water quality parameters at

the tap at the reduced number of sites specified in paragraph (e)(1) of this section after it has completed two subsequent consecutive six-month rounds of monitoring that meet the criteria of that paragraph and/or may resume triennial monitoring for water quality parameters at the tap at the reduced number of sites after it demonstrates through subsequent rounds of monitoring that it meets the criteria of either paragraph (e)(2)(i) or (e)(2)(ii) of this section.

(f) 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., determining concentrations of water quality parameters) under this section or Sec. 141.82.

Summary of Monitoring Requirements for Water Quality Parameters [1]

Monitoring period	Parameters [2]	Location	Frequency
Initial monitoring	pH, alkalinity, orthophosphate or silica [3], calcium, conductivity, temperature.	Taps and at entry point(s) to distribution system	Every 6 months.
After installation of corrosion control	pH, alkalinity, orthophosphate or silica [3], calcium [4].	Taps	Every 6 months.
	pH, alkalinity, dosage rate and concentration (if alkalinity adjusted as part of corrosion control), inhibitor dosage rate and inhibitor residual [5].	Entry point(s) to distribution system [6]	No less frequently than every two weeks.
After State specifies parameter values for optimal corrosion control	pH, alkalinity, orthophosphate or silica [3], calcium [4]	Taps	Every 6 months.
	pH, alkalinity dosage rate and concentration (if alkalinity adjusted as part of corrosion control), inhibitor dosage rate and inhibitor residual [5].	Entry point(s) to distribution system [6]	No less frequently than every two weeks.
Reduced monitoring	pH, alkalinity, orthophosphate or silica [3], calcium [4].	Taps	Every 6 months, annually [7] or every 3 years [8]; reduced number of sites.
	pH, alkalinity dosage rate and concentration (if alkalinity adjusted as part of corrosion control), inhibitor dosage rate and inhibitor residual [5].	Entry point(s) to distribution system [6]	No less frequently than every two weeks.

[1] Table is for illustrative purposes; consult the text of this section for precise regulatory requirements.

[2] Small and medium-size systems have to monitor for water quality parameters only during monitoring periods in which the system exceeds the lead or copper action level.

[3] Orthophosphate must be measured only when an inhibitor containing a phosphate compound is used. Silica must be measured only when an inhibitor containing silicate compound is used.

[4] Calcium must be measured only when calcium carbonate stabilization is used as part of corrosion control.

[5] Inhibitor dosage rates and inhibitor residual concentrations (orthophosphate or silica) must be measured only when an inhibitor is used.

[6] Ground water systems may limit monitoring to representative locations throughout the system.

[7] Water systems may reduce frequency of monitoring for water quality parameters at the tap from every six months to annually if they have maintained the range of values for water quality parameters reflecting optimal corrosion control during 3 consecutive years of monitoring.

[8] Water systems may further reduce the frequency of monitoring for water quality parameters at the tap from annually to once every 3 years if they have maintained the range of values for water quality parameters reflecting optimal corrosion control during 3 consecutive years of annual monitoring. Water systems may accelerate to triennial monitoring for water quality parameters at the tap if they have maintained 90th percentile lead levels less than or equal to 0.005 mg/L, 90th percentile copper levels less than or equal to 0.65 mg/L, and the range of water quality parameters designated by the State under Sec. 141.82(f) as representing optimal corrosion control during two consecutive six-month monitoring periods.

[56 FR 26548, June 7, 1991; 57 FR 28788, June 29, 1992, as amended at 59 FR 33862, June 30, 1994; 65 FR 2010, Jan. 12, 2000]

Sec. 141.88 Monitoring requirements for lead and copper in source water.

(a) Sample location, collection methods, and number of samples.

(1) A water system that fails to meet the lead or copper action level on the basis of tap samples collected in accordance with Sec. 141.86 shall collect lead and copper source water samples in accordance with the following requirements regarding sample location, number of samples, and collection methods:

(i) Groundwater systems shall take a minimum of one sample at every entry point to the distribution system which is representative of each well after treatment (hereafter called a sampling point). The system shall take one sample at the same sampling point unless conditions make another sampling point more representative of each source or treatment plant.

(ii) Surface water systems shall take a minimum of one sample at every entry point to the distribution system after any application of treatment or in the distribution system at a point which is representative of each source after treatment (hereafter called a sampling point). 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.

Note to paragraph (a)(1)(ii): For the purposes of this paragraph, surface water systems include systems with a combination of surface and ground sources.

(iii) 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 (i.e., when water is representative of all sources being used).

(iv) The State may reduce the total number of samples which must be analyzed by allowing the use of compositing. Compositing of samples must be done by certified laboratory personnel. Composite samples from a maximum of five samples are allowed, provided that 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:

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

(B) 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.

(2) Where the results of sampling indicate an exceedance of maximum permissible source water levels established under Sec. 141.83(b)(4), the State may require that one additional 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 confirmation sample is taken for lead or copper, then the results of the initial and confirmation sample shall be averaged in determining 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 PQL shall either be considered as the measured value or be considered one-half the PQL.

(b) Monitoring frequency after system exceeds tap water action level. Any system which exceeds the lead or copper action level at the tap shall collect one source water sample from each entry point to the distribution system within six months after the exceedance.

(c) Monitoring frequency after installation of source water treatment. Any system which installs source water treatment pursuant to Sec. 141.83(a)(3) shall collect an additional source water sample from each entry point to the distribution system during two consecutive six-month monitoring periods by the deadline specified in Sec. 141.83(a)(4).

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

(1) A system shall monitor at the frequency specified below in cases where the State specifies maximum permissible source water levels under Sec. 141.83(b)(4) or determines that the system is not required to install source water treatment under Sec. 141.83(b)(2).

(i) A water system using only groundwater shall collect samples once during the three-year compliance period (as that term is defined in Sec. 141.2) in effect when the applicable State determination under paragraph (d)(1) of this section is made. Such systems shall collect samples once during each subsequent compliance period.

(ii) A water system using surface water (or a combination of surface and groundwater) shall collect samples once during each year, the first annual monitoring period to begin on the date on which the applicable State determination is made under paragraph (d)(1) of this section.

(2) 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 paragraph (d)(1)(i) or (ii) of this section.

(e) Reduced monitoring frequency.

(1) A water system using only ground water may reduce the monitoring frequency for lead and copper in source water to once during each nine-year compliance cycle (as that term is defined in Sec. 141.2) 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 in Sec. 141.83(b)(4) during at least three consecutive compliance periods under paragraph (d)(1) of this section; or

(ii) The State has determined that source water treatment is not needed and the system demonstrates that, during at least three consecutive compliance periods in which sampling was conducted under paragraph (d)(1) of this section, 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.

(2) A water system using surface water (or a combination of surface water and ground water) may reduce the monitoring frequency in paragraph (d)(1) of this section to once during each nine-year compliance cycle (as that term is defined in Sec. 141.2) 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 in Sec. 141.83(b)(4) 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 are below the maximum permissible lead and copper concentrations specified by the State in Sec. 141.83(a)(5).

[56 FR 26548, June 7, 1991; 57 FR 28788 and 28789, June 29, 1992, as amended at 65 FR 2012, Jan. 12, 2000]

Sec. 141.89 Analytical methods.

(a) Analyses for lead, copper, pH, conductivity, calcium, alkalinity, orthophosphate, silica, and temperature shall be conducted with the methods in Sec. 141.23(k)(1).

(1) Analyses for alkalinity, calcium, conductivity, orthophosphate, pH, silica, and temperature may be performed by any person acceptable to the State. Analyses under this section for lead and copper shall only be conducted by laboratories that have been certified by EPA or the State. To obtain certification to conduct analyses for lead and copper, laboratories must:

(i) Analyze Performance Evaluation samples, which include lead and copper, provided by or acceptable to EPA or the State at least once a year by each method for which the laboratory desires certification; and

(ii) Achieve quantitative acceptance limits as follows:

(A) For lead: ± 30 percent of the actual amount in the Performance Evaluation sample when the actual amount is greater than or equal to 0.005 mg/L. The Practical Quantitation Level, or PQL for lead is 0.005 mg/L.

(B) For Copper: ± 10 percent of the actual amount in the Performance Evaluation sample when the actual amount is greater than or equal to 0.050 mg/L. The Practical Quantitation Level, or PQL for copper is 0.050 mg/L.

(iii) Achieve the method detection limit for lead of 0.001 mg/L according to the procedures in appendix B of part 136 of this title. This need only be accomplished if the laboratory will be processing source water composite samples under Sec. 141.88(a)(1)(iii).

(iv) Be currently certified by EPA or the State to perform analyses to the specifications described in paragraph (a)(2) of this section.

(2) States have the authority to allow the use of previously collected monitoring data for purposes of monitoring, if the data were collected and analyzed in accordance with the requirements of this subpart.

(3) All lead and copper levels measured between the PQL and MDL must be either reported as measured or they can be reported as one-half the PQL specified for lead and copper in paragraph (a)(1)(ii) of this section. All levels below the lead and copper MDLs must be reported as zero.

(4) All copper levels measured between the PQL and the MDL must be either reported as measured or they can be reported as one-half the PQL (0.025 mg/L). All levels below the copper MDL must be reported as zero.

(b) [Reserved]

[56 FR 26548, June 7, 1991, as amended at 57 FR 28789, June 29, 1992; 57 FR 31847, July 17, 1992; 59 FR 33863, June 30, 1994; 59 FR 62470, Dec. 5, 1994; 64 FR 67466, Dec. 1, 1999; 65 FR 2012, Jan. 12, 2000]

Sec. 141.90 excluding (a)(4) Reporting requirements.

All water systems shall report all of the following information to the State in accordance with this section.

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

(1) Except as provided in paragraph (a)(1)(viii) of this section, a water system shall report the information specified below for all tap water samples specified in Sec. 141.86 and for all water quality parameter samples specified in Sec. 141.87 within the first 10 days following the end of each applicable monitoring period specified in Sec. 141.86 and Sec. 141.87 (i.e., every six months, annually, every 3 years, or every 9 years):

(i) The results of all tap samples for lead and copper including the location of each site and the criteria under Sec. 141.86(a) (3), (4), (5), (6), and/or (7) under which the site was selected for the system's sampling pool;

(ii) Documentation for each tap water lead or copper sample for which the water system requests invalidation pursuant to Sec. 141.86(f)(2);

(iii) [Reserved]

(iv) The 90th percentile lead and copper concentrations measured from among all lead and copper tap water samples collected during each monitoring period (calculated in accordance with Sec. 141.80(c)(3)), unless the State calculates the system's 90th percentile lead and copper levels under paragraph (h) of this section;

(v) With the exception of initial tap sampling conducted pursuant to Sec. 141.86(d)(1), the system shall designate any site which was not sampled during previous monitoring periods, and include an explanation of why sampling sites have changed;

(vi) The results of all tap samples for pH, and where applicable, alkalinity, calcium, conductivity, temperature, and orthophosphate or silica collected under Sec. 141.87 (b)-(e);

(vii) The results of all samples collected at the entry point(s) to the distribution system for applicable water quality parameters under Sec. 141.87 (b)-(e);

(viii) A water system shall report the results of all water quality parameter samples collected under Sec. 141.87(c) through (f) during each six-month monitoring

period specified in Sec. 141.87(d) within the first 10 days following the end of the monitoring period unless the State has specified a more frequent reporting requirement.

(2) For a non-transient non-community water system, or a community water system meeting the criteria of Secs. 141.85(c)(7)(i) and (ii), that does not have enough taps that can provide first-draw samples, the system must either:

(i) Provide written documentation to the State identifying standing times and locations for enough non-first-draw samples to make up its sampling pool under Sec. 141.86(b)(5) by the start of the first applicable monitoring period under Sec. 141.86(d) that commences after April 11, 2000, unless the State has waived prior State approval of non-first-draw sample sites selected by the system pursuant to Sec. 141.86(b)(5); or

(ii) If the State has waived prior approval of non-first-draw sample sites selected by the system, identify, in writing, each site that did not meet the six-hour minimum standing time and the length of standing time for that particular substitute sample collected pursuant to Sec. 141.86(b)(5) and include this information with the lead and copper tap sample results required to be submitted pursuant to paragraph (a)(1)(i) of this section.

(3) No later than 60 days after the addition of a new source or any change in water treatment, unless the State requires earlier notification, a water system deemed to have optimized corrosion control under Sec. 141.81(b)(3), a water system subject to reduced monitoring pursuant to Sec. 141.86(d)(4), or a water system subject to a monitoring waiver pursuant to Sec. 141.86(g), shall send written documentation to the State describing the change. In those instances where prior State approval of the treatment change or new source is not required, water systems are encouraged to provide the notification to the State beforehand to minimize the risk the treatment change or new source will adversely affect optimal corrosion control.

(5) Each ground water system that limits water quality parameter monitoring to a subset of entry points under Sec. 141.87(c)(3) 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 Sec. 141.88 within the first 10 days following the end of each source water monitoring period (i.e., annually, per compliance period, per compliance cycle) specified in Sec. 141.88.

(2) With the exception of the first round of source water sampling conducted pursuant to Sec. 141.88(b), 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 Sec. 141.81, systems shall report the following information:

(1) For systems demonstrating that they have already optimized corrosion control, information required in Sec. 141.81(b) (2) or (3).

(2) For systems required to optimize corrosion control, their recommendation regarding optimal corrosion control treatment under Sec. 141.82(a).

(3) For systems required to evaluate the effectiveness of corrosion control treatments under Sec. 141.82(c), the information required by that paragraph.

(4) For systems required to install optimal corrosion control designated by the State under Sec. 141.82(d), a letter certifying that the system has completed installing that treatment.

(d) Source water treatment reporting requirements. By the applicable dates in Sec. 141.83, systems shall provide the following information to the State:

(1) If required under Sec. 141.83(b)(1), their recommendation regarding source water treatment;

(2) For systems required to install source water treatment under Sec. 141.83(b)(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. Systems shall report the following information to the State to demonstrate compliance with the requirements of Sec. 141.84:

(1) Within 12 months after a system exceeds the lead action level in sampling referred to in Sec. 141.84(a), the system shall demonstrate in writing to the State that it has conducted a material evaluation, including the evaluation in Sec. 141.86(a), to identify the initial number of lead service lines in its distribution system, and shall provide the State with the system's schedule for replacing annually at least 7 percent of the initial number of lead service lines in its distribution system.

(2) Within 12 months after a system exceeds the lead action level in sampling referred to in Sec. 141.84(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 (or a greater number of lines specified by the State under Sec. 141.84(e)) in its distribution system, or

(ii) Conducted sampling which demonstrates that the lead concentration in all service line samples from an individual line(s), taken pursuant to Sec. 141.86(b)(3), 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 Sec. 141.84(c) shall equal at least 7 percent of the initial number of lead lines identified under paragraph (a) of this section (or the percentage specified by the State under Sec. 141.84(e)).

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

(i) The number of lead service lines scheduled to be 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;

(iii) If measured, the water lead concentration and 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 required by Sec. 141.84 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. States, at their discretion may eliminate this requirement to report these monitoring results. 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 program reporting requirements.

(1) Any water system that is subject to the public education requirements in Sec. 141.85 shall, within ten days after the end of each period in which the system is required to perform public education tasks in accordance with Sec. 141.85(c), 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 Sec. 141.85(a) and (b) and the delivery requirements in Sec. 141.85(c); and

(ii) A list of all the 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.

(2) Unless required by the State, a system that previously has submitted the information required by paragraph (f)(1)(ii) of this section need not resubmit the information required by paragraph (f)(1)(ii) of this section, 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 subpart shall report the results to the State within the first ten days following the end of the applicable monitoring period under Secs. 141.86, 141.87 and 141.88 during which the samples are collected.

(h) Reporting of 90th percentile lead and copper concentrations where the State calculates a system's 90th percentile concentrations. A water system is not required to report the 90th percentile lead and copper concentrations measured from among all lead and copper tap water samples collected during each monitoring period, as required by paragraph (a)(1)(iv) 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 paragraph (h)(2)(i) of this section, and has specified a date before the end of the applicable monitoring period by which the system must provide the results of lead and copper tap water samples;

(2) The system has provided the following information to the State by the date specified in paragraph (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 Sec. 141.86(a)(3), (4), (5), (6), and/or (7) under which the site was selected for the system's sampling pool, pursuant to paragraph (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.

[56 FR 26548, June 7, 1991; 57 FR 28789, June 29, 1992, as amended at 59 FR 33864, June 30, 1994; 65 FR 2012, Jan. 12, 2000]

Sec. 141.91 Recordkeeping requirements.

Any system subject to the requirements of this subpart shall retain on its premises original records of all sampling data and analyses, reports, surveys, letters, evaluations, schedules, State determinations, and any other information required by Secs. 141.81 through 141.88. Each water system shall retain the records required by this section for no fewer than 12 years.

Subpart L – Disinfectant Residuals, Disinfection Byproducts, and Disinfection byproduct Precursors

Sec. 141.130 General requirements.

(a) The requirements of this subpart L constitute national primary drinking water regulations.

(1) The regulations in this subpart establish criteria under which community water systems (CWSs) and nontransient, noncommunity water systems (NTNCWSs) which add a chemical disinfectant to the water in any part of the drinking water treatment process must modify their practices to meet MCLs and MRDLs in Secs. 141.64 and 141.65, respectively, and must meet the treatment technique requirements for disinfection byproduct precursors in Sec. 141.135.

(2) The regulations in this subpart establish criteria under which transient NCWSs that use chlorine dioxide as a disinfectant or oxidant must modify their practices to meet the MRDL for chlorine dioxide in Sec. 141.65.

(3) EPA has established MCLs for TTHM and HAA5 and treatment technique requirements for disinfection byproduct precursors to limit the levels of known and unknown disinfection byproducts which may have adverse health effects. These disinfection byproducts may include chloroform; bromodichloromethane; dibromochloromethane; bromoform; dichloroacetic acid; and trichloroacetic acid.

(b) Compliance dates.

(1) CWSs and NTNCWSs. Unless otherwise noted, systems must comply with the requirements of this subpart as follows. Subpart H systems serving 10,000 or more persons must comply with this subpart beginning January 1, 2002. Subpart H systems serving fewer than 10,000 persons and systems using only ground water not under the direct influence of surface water must comply with this subpart beginning January 1, 2004.

(2) Transient NCWSs. Subpart H systems serving 10,000 or more persons and using chlorine dioxide as a disinfectant or oxidant must comply with any requirements for chlorine dioxide in this subpart beginning January 1, 2002. Subpart H systems serving fewer than 10,000 persons and using chlorine dioxide as a disinfectant or oxidant and systems using only ground water not under the direct influence of surface water and using chlorine dioxide as a disinfectant or oxidant must comply with any requirements for chlorine dioxide in this subpart beginning January 1, 2004.

(c) Each CWS and NTNCWS regulated under paragraph (a) of this section must be operated by qualified personnel who meet the requirements specified by the State and are included in a State register of qualified operators.

(d) Control of disinfectant residuals. Notwithstanding the MRDLs in Sec. 141.65, systems may increase residual disinfectant levels in the distribution system of chlorine or chloramines (but not chlorine dioxide) to a level and for a time necessary to protect public health, to address specific microbiological contamination problems caused by circumstances such as, but not limited to, distribution line breaks, storm run-off events, source water contamination events, or cross-connection events.

[63 FR 69466, Dec. 16, 1998, as amended at 66 FR 3776, Jan. 16, 2001]

Sec. 141.131 Analytical requirements.

(a) General.

(1) Systems must use only the analytical method(s) specified in this section, or otherwise approved by EPA for monitoring under this subpart, to demonstrate compliance with the requirements of this subpart. These methods are effective for compliance monitoring February 16, 1999.

(2) The following documents are incorporated by reference. The Director of the Federal Register approves this incorporation by reference in accordance with 5 U.S.C. 552(a) and 1 CFR part 51. Copies may be inspected at EPA's Drinking Water Docket, 401 M St., SW., Washington, DC 20460, or at the Office of the Federal Register, 800 North Capitol Street, NW, Suite 700, Washington DC. EPA Method 552.1 is in Methods for the Determination of Organic Compounds in Drinking Water-Supplement II, USEPA, August 1992, EPA/600/R-92/129 (available through National Information Technical Service (NTIS), PB92-207703). EPA Methods 502.2, 524.2, 551.1, and 552.2 are in Methods for the Determination of Organic Compounds in Drinking Water-Supplement III, USEPA, August 1995, EPA/600/R-95/131. (available through NTIS, PB95-261616). EPA Method 300.0 is in Methods for the Determination of Inorganic Substances in Environmental Samples, USEPA, August 1993, EPA/600/R-93/100. (available through NTIS, PB94-121811). EPA Method 300.1 is titled USEPA Method 300.1, Determination of Inorganic Anions in Drinking Water by Ion Chromatography, Revision 1.0, USEPA, 1997, EPA/600/R-98/118 (available through NTIS, PB98-169196); also available from: Chemical Exposure Research Branch, Microbiological & Chemical Exposure Assessment Research Division, National Exposure Research Laboratory, U.S. Environmental Protection Agency, Cincinnati, OH 45268, Fax Number: 513-569-7757, Phone number: 513-569-7586. Standard Methods 4500-Cl D, 4500-Cl E, 4500-Cl F, 4500-Cl G, 4500-Cl H, 4500-Cl I, 4500-ClO_2 D, 4500-ClO_2 E, 6251 B, and 5910 B shall be followed in accordance with Standard Methods for the Examination of Water and Wastewater, 19th Edition, American Public Health Association, 1995; copies may be obtained from the American Public Health Association, 1015 Fifteenth Street, NW, Washington, DC 20005. Standard Methods 5310 B, 5310 C, and 5310 D shall be followed in accordance with the Supplement to the 19th Edition of Standard Methods for the Examination of Water and Wastewater, American Public Health Association, 1996; copies may be obtained from the American Public Health Association, 1015 Fifteenth Street, NW, Washington, DC 20005. ASTM Method D 1253-86 shall be followed in accordance with the Annual Book of ASTM

Standards, Volume 11.01, American Society for Testing and Materials, 1996 edition; copies may be obtained from the American Society for Testing and Materials, 100 Barr Harbor Drive, West Conshohoken, PA 19428.

(b) Disinfection byproducts.

(1) Systems must measure disinfection byproducts by the methods (as modified by the footnotes) listed in the following table:

Approved Methods for Disinfection Byproduct Compliance Monitoring

Methodology [2]	EPA method	Standard method	Byproduct measured [1]			
			TTHM	HAA5	Chlorite [4]	Bromate
P&T/GC/ElCD & PID	[3]502.2		X			
P&T/GC/MS	524.2		X			
LLE/GC/ECD	551.1		X			
LLE/GC/ECD		6251 B		X		
SPE/GC/ECD	552.1			X		
LLE/GC/ECD	552.2			X		
Amperometric Titration		4500-ClO_2 E			X	
IC	300.0				X	
IC	300.1				X	X

[1] X indicates method is approved for measuring specified disinfection byproduct.

[2] P&T = purge and trap; GC = gas chromatography; ElCD = electrolytic conductivity detector; PID = photoionization detector; MS = mass spectrometer; LLE = liquid/liquid extraction; ECD = electron capture detector; SPE = solid phase extractor; IC = ion chromatography.

[3] If TTHMs are the only analytes being measured in the sample, then a PID is not required.

[4] Amperometric titration may be used for routine daily monitoring of chlorite at the entrance to the distribution system, as prescribed in Sec. 141.132(b)(2)(i)(A). Ion chromatography must be used for routine monthly monitoring of chlorite and additional monitoring of chlorite in the distribution system, as prescribed in Sec. 141.132(b)(2)(i)(B) and (b)(2)(ii).

(2) Analysis under this section for disinfection byproducts must be conducted by laboratories that have received certification by EPA or the State, except as specified under paragraph (b)(3) of this section. To receive certification to conduct analyses for the contaminants in Sec. 141.64(a), the laboratory must carry out annual analyses of performance evaluation (PE) samples approved by EPA or the State. In these analyses of PE samples, the laboratory must achieve quantitative results within the acceptance limit on a minimum of 80% of the analytes included in each PE sample. The acceptance limit is defined as the 95% confidence interval calculated around the mean of the PE

study data between a maximum and minimum acceptance limit of +/-50% and +/-15% of the study mean.

(3) A party approved by EPA or the State must measure daily chlorite samples at the entrance to the distribution system.

(c) Disinfectant residuals.

(1) Systems must measure residual disinfectant concentrations for free chlorine, combined chlorine (chloramines), and chlorine dioxide by the methods listed in the following table:

Approved Methods for Disinfectant Residual Compliance Monitoring

Methodology	Standard method	ASTM method	Residual Measured [1]			
			Free chlorine	Combined chlorine	Total chlorine	Chlorine dioxide
Amperometric Titration	4500-Cl D	D 1253-86	X	X	X	
Low Level Amperometric Titration	4500-Cl E				X	
DPD Ferrous Titrimetric	4500-Cl F		X	X	X	
DPD Colorimetric	4500-Cl G		X	X	X	
Syringaldazine (FACTS)	4500-Cl H		X			
Iodometric Electrode	4500-Cl I				X	
DPD	4500-ClO_2 D					X
Amperometric Method II	4500-ClO_2 E					X

[1] X indicates method is approved for measuring specified disinfectant residual.

(2) If approved by the State, systems may also measure residual disinfectant concentrations for chlorine, chloramines, and chlorine dioxide by using DPD colorimetric test kits.

(3) A party approved by EPA or the State must measure residual disinfectant concentration.

(d) Additional analytical methods. Systems required to analyze parameters not included in paragraphs (b) and (c) of this section must use the following methods. A party approved by EPA or the State must measure these parameters.

(1) Alkalinity. All methods allowed in Sec. 141.89(a) for measuring alkalinity.

(2) Bromide. EPA Method 300.0 or EPA Method 300.1.

(3) Total Organic Carbon (TOC). Standard Method 5310 B (High-Temperature Combustion Method) or Standard Method 5310 C (Persulfate-Ultraviolet or Heated-Persulfate Oxidation Method) or Standard Method 5310 D (Wet-Oxidation Method). TOC samples may not be filtered prior to analysis. TOC samples must either be analyzed or must be acidified to achieve pH less than 2.0 by minimal addition of phosphoric or sulfuric acid as soon as practical after sampling, not to exceed 24 hours. Acidified TOC samples must be analyzed within 28 days.

(4) Specific Ultraviolet Absorbance (SUVA). SUVA is equal to the UV absorption at 254nm (UV_{254}) (measured in m^{-1} divided by the dissolved organic carbon (DOC) concentration (measured as mg/L). In order to determine SUVA, it is necessary to separately measure UV_{254} and DOC. When determining SUVA, systems must use the methods stipulated in paragraph (d)(4)(i) of this section to measure DOC and the method stipulated in paragraph (d)(4)(ii) of this section to measure UV_{254}. SUVA must be determined on water prior to the addition of disinfectants/oxidants by the system. DOC and UV_{254} samples used to determine a SUVA value must be taken at the same time and at the same location.

(i) Dissolved Organic Carbon (DOC). Standard Method 5310 B (High-Temperature Combustion Method) or Standard Method 5310 C (Persulfate-Ultraviolet or Heated-Persulfate Oxidation Method) or Standard Method 5310 D (Wet-Oxidation Method). Prior to analysis, DOC samples must be filtered through a 0.45 µm pore-diameter filter. 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. DOC samples must be filtered through the 0.45 µm pore-diameter filter prior to acidification. DOC samples must either be analyzed or must be acidified to achieve pH less than 2.0 by minimal addition of phosphoric or sulfuric acid as soon as practical after sampling, not to exceed 48 hours. Acidified DOC samples must be analyzed within 28 days.

(ii) Ultraviolet Absorption at 254 nm (UV_{254}). Method 5910 B (Ultraviolet Absorption Method). UV absorption must be measured at 253.7 nm (may be rounded off to 254 nm). Prior to analysis, UV_{254} samples must be filtered through a 0.45 µm pore-diameter filter. The pH of UV_{254} samples may not be adjusted. Samples must be analyzed as soon as practical after sampling, not to exceed 48 hours.

(5) pH. All methods allowed in Sec. 141.23(k)(1) for measuring pH.

[63 FR 69466, Dec. 16, 1998, as amended at 66 FR 3776, Jan. 16, 2001]

Sec. 141.132 Monitoring requirements.

(a) General requirements.

(1) Systems must take all samples during normal operating conditions.

(2) Systems may consider multiple wells drawing water from a single aquifer as one treatment plant for determining the minimum number of TTHM and HAA5 samples required, with State approval in accordance with criteria developed under Sec. 142.16(h)(5) of this chapter.

(3) Failure to monitor in accordance with the monitoring plan required under paragraph (f) of this section is a monitoring violation.

(4) Failure to monitor will be treated as a violation for the entire period covered by the annual average where compliance is based on a running annual average of monthly or quarterly samples or averages and the system's failure to monitor makes it impossible to determine compliance with MCLs or MRDLs.

(5) Systems may use only data collected under the provisions of this subpart or subpart M of this part to qualify for reduced monitoring.

(b) Monitoring requirements for disinfection byproducts

(1) TTHMs and HAA5

(i) Routine monitoring. Systems must monitor at the frequency indicated in the following table:

Routine Monitoring Frequency for TTHM and HAA5

Type of system	Minimum monitoring frequency	Sample location in the distribution system
Subpart H system serving at least 10,000 persons.	Four water samples per quarter per treatment plant.	At least 25 percent of all samples collected each quarter at locations representing maximum residence time. Remaining samples taken at locations representative of at least average residence time in the distribution system and representing the entire distribution system, taking into account number of persons served, different sources of water, and different treatment methods.[1]
Subpart H system serving from 500 to 9,999 persons.	One water sample per quarter per treatment plant.	Locations representing maximum residence time.[1]
Subpart H system serving fewer than 500 persons.	One sample per year per treatment plant during month of warmest water temperature.	Locations representing maximum residence time.[1] If the sample (or average of annual samples, if more than one sample is taken) exceeds the MCL, the system must increase monitoring to one sample per treatment plant per quarter, taken at a point reflecting the maximum residence time in the distribution system, until the system meets criteria in paragraph (b)(1)(iv) of this section.
System using only ground water not under direct influence of surface water using chemical disinfectant and serving at least 10,000 persons.	One water sample per quarter per treatment plant [2].	Locations representing maximum residence time.[1]
System using only ground water not under direct influence of surface water using chemical disinfectant and serving fewer than 10,000 persons.	One sample per year per treatment plant [2] during month of warmest water temperature.	Locations representing maximum residence time.[1] If the sample (or average of annual samples, if more than one sample is taken) exceeds the MCL, the system must increase monitoring to one sample per treatment plant per quarter, taken at a point reflecting the maximum residence time in the distribution system, until the system meets criteria in paragraph (b)(1)(iv) of this section.

[1] If a system elects to sample more frequently than the minimum required, at least 25 percent of all samples collected each quarter (including those taken in excess of the required frequency) must be taken at locations that represent the maximum residence time of the water in the distribution system. The remaining samples must be taken at locations representative of at least average residence time in the distribution system.

[2] Multiple wells drawing water from a single aquifer may be considered one treatment plant for determining the minimum number of samples required, with State approval in accordance with criteria developed under Sec. 142.16(h)(5) of this chapter.

(ii) Systems may reduce monitoring, except as otherwise provided, in accordance with the following table:

Reduced Monitoring Frequency for TTHM and HAA5

If you are a…	You may reduce monitoring if you have monitored at least one year and your…	To this level
Subpart H system serving at least 10,000 persons which has a source water annual average TOC level, before any treatment, ≤ 4.0 mg/L.	TTHM annual average ≤ 0.040 mg/L and HAA5 annual average ≤ 0.030 mg/L.	One sample per treatment plant per quarter at distribution system location reflecting maximum residence time.
Subpart H system serving from 500 to 9,999 persons which has a source water annual average TOC level, before any treatment, ≤ 4.0 mg/L.	TTHM annual average ≤ 0.040 mg/L and HAA5 annual average ≤ 0.030 mg/L.	One sample per treatment plant per year at distribution system location reflecting maximum residence time during month of warmest water temperature. NOTE: Any Subpart H system serving fewer than 500 persons may not reduce its monitoring to less than one sample per treatment plant per year.
System using only ground water not under direct influence of surface water using chemical disinfectant and serving at least 10,000 persons.	TTHM annual average ≤ 0.040 mg/L and HAA5 annual average ≤ 0.030 mg/L.	One sample per treatment plant per year at distribution system location reflecting maximum residence time during month of warmest water temperature.

If you are a…	You may reduce monitoring if you have monitored at least one year and your…	To this level
System using only ground water not under direct influence of surface water using chemical disinfectant and serving fewer than 10,000 persons.	TTHM annual average ≤ 0.040 mg/L and HAA5 annual average ≤ 0.030 mg/L for two consecutive years OR TTHM annual average ≤ 0.020 mg/L and HAA5 annual average ≤ 0.015 mg/L for one year.	One sample per treatment plant per three year monitoring cycle at distribution system location reflecting maximum residence time during month of warmest water temperature, with the three-year cycle beginning on January 1 following quarter in which system qualifies for reduced monitoring.

(iii) Systems that do not meet these levels must resume monitoring at the frequency identified in paragraph (b)(1)(i) of this section (minimum monitoring frequency column) in the quarter immediately following the monitoring period in which the system exceeds 0.060 mg/L or 0.045 mg/L for TTHM or HAA5 respectively. For systems using only ground water not under the direct influence of surface water and serving fewer than 10,000 persons, if either the TTHM annual average is > 0.080 mg/L or the HAA5 annual average is > 0.060 mg/L, the system must go to the increased monitoring identified in paragraph (b)(1)(i) of this section (sample location column) in the quarter immediately following the monitoring period in which the system exceeds 0.080 mg/L or 0.060 mg/L for TTHMs or HAA5 respectively.

(iv) Systems on increased monitoring may return to routine monitoring if, after at least one year of monitoring their TTHM annual average is ≤ 0.060 mg/L and their HAA5 annual average is ≤ 0.045 mg/L.

(v) The State may return a system to routine monitoring at the State's discretion.

(2) Chlorite. Community and nontransient noncommunity water systems using chlorine dioxide, for disinfection or oxidation, must conduct monitoring for chlorite.

(i) Routine monitoring.

(A) Daily monitoring. Systems must take daily samples at the entrance to the distribution system. For any daily sample that exceeds the chlorite MCL, the system must take additional samples in the distribution system the following day at the locations required by paragraph (b)(2)(ii) of this section, in addition to the sample required at the entrance to the distribution system.

(B) Monthly monitoring. Systems must take a three-sample set each month in the distribution system. The system must take one sample at each of the following locations: near the first customer, at a location representative of

average residence time, and at a location reflecting maximum residence time in the distribution system. Any additional routine sampling must be conducted in the same manner (as three-sample sets, at the specified locations). The system may use the results of additional monitoring conducted under paragraph (b)(2)(ii) of this section to meet the requirement for monitoring in this paragraph.

(ii) Additional monitoring. On each day following a routine sample monitoring result that exceeds the chlorite MCL at the entrance to the distribution system, the system is required to 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 as close to the end of the distribution system as possible (reflecting maximum residence time in the distribution system).

(iii) Reduced monitoring.

(A) Chlorite monitoring at the entrance to the distribution system required by paragraph (b)(2)(i)(A) of this section may not be reduced.

(B) Chlorite monitoring in the distribution system required by paragraph (b)(2)(i)(B) of this section 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 under paragraph (b)(2)(i)(B) of this section has exceeded the chlorite MCL and the system has not been required to conduct monitoring under paragraph (b)(2)(ii) of this section. The system may remain on the reduced monitoring schedule until either any of the three individual chlorite samples taken quarterly in the distribution system under paragraph (b)(2)(i)(B) of this section exceeds the chlorite MCL or the system is required to conduct monitoring under paragraph (b)(2)(ii) of this section, at which time the system must revert to routine monitoring.

(3) Bromate

(i) Routine monitoring. Community and nontransient noncommunity systems using ozone, for disinfection or oxidation, must take one sample per month for each treatment plant in the system using ozone. Systems must take samples monthly at the entrance to the distribution system while the ozonation system is operating under normal conditions.

(ii) Reduced monitoring. Systems required to analyze for bromate may reduce monitoring from monthly to once per quarter, if the system demonstrates that the average source water bromide concentration is less than 0.05 mg/L based upon representative monthly bromide measurements for one year. The system may remain on reduced bromate monitoring until the running annual average source water bromide concentration, computed quarterly, is equal to or greater than 0.05

mg/L based upon representative monthly measurements. If the running annual average source water bromide concentration is ≥ 0.05 mg/L, the system must resume routine monitoring required by paragraph (b)(3)(i) of this section.

(c) Monitoring requirements for disinfectant residuals.

(1) Chlorine and chloramines.

(i) Routine monitoring. Community and nontransient noncommunity water systems that use chlorine or chloramines must measure the residual disinfectant level in the distribution system at the same point in the distribution system and at the same time as total coliforms are sampled, as specified in Sec. 141.21. Subpart H systems may use the results of residual disinfectant concentration sampling conducted under Sec. 141.74(b)(6)(i) for unfiltered systems or Sec. 141.74(c)(3)(i) for systems which filter, in lieu of taking separate samples.

(ii) Reduced monitoring. Monitoring may not be reduced.

(2) Chlorine dioxide.

(i) Routine monitoring. Community, nontransient noncommunity, and transient noncommunity water systems that use chlorine dioxide for disinfection or oxidation must take daily samples at the entrance to the distribution system. For any daily sample that exceeds the MRDL, the system must take samples in the distribution system the following day at the locations required by paragraph (c)(2)(ii) of this section, in addition to the sample required at the entrance to the distribution system.

(ii) Additional monitoring. On each day following a routine sample monitoring result that exceeds the MRDL, the system is required to take three chlorine dioxide distribution system samples. If chlorine dioxide or chloramines are used to maintain a disinfectant residual in the distribution system, or if chlorine is used to maintain a disinfectant residual in the distribution system and there are no disinfection addition points after the entrance to the distribution system (i.e., no booster chlorination), the system must take three samples as close to the first customer as possible, at intervals of at least six hours. If chlorine is used to maintain a disinfectant residual in the distribution system and there are one or more disinfection addition points after the entrance to the distribution system (i.e., booster chlorination), the system must take one sample at each of the following locations: as close to the first customer as possible, in a location representative of average residence time, and as close to the end of the distribution system as possible (reflecting maximum residence time in the distribution system).

(iii) Reduced monitoring. Chlorine dioxide monitoring may not be reduced.

(d) Monitoring requirements for disinfection byproduct precursors (DBPP).

(1) Routine monitoring. Subpart H systems which use conventional filtration treatment (as defined in Sec. 141.2) must monitor each treatment plant for TOC no later than the point of combined filter effluent turbidity monitoring and representative of the treated water. All systems required to monitor under this paragraph (d)(1) must also monitor for TOC in the source water prior to any treatment at the same time as monitoring for TOC in the treated water. These samples (source water and treated water) are referred to as paired samples. At the same time as the source water sample is taken, all systems must monitor for alkalinity in the source water prior to any treatment. Systems must take one paired sample and one source water alkalinity sample per month per plant at a time representative of normal operating conditions and influent water quality.

(2) Reduced monitoring. Subpart H systems with an average treated water TOC of less than 2.0 mg/L for two consecutive years, or less than 1.0 mg/L for one year, may reduce monitoring for both TOC and alkalinity to one paired sample and one source water alkalinity sample per plant per quarter. The system must revert to routine monitoring in the month following the quarter when the annual average treated water TOC $\geq$ 2.0 mg/L.

(e) Bromide. Systems required to analyze for bromate may reduce bromate monitoring from monthly to once per quarter, if the system demonstrates that the average source water bromide concentration is less than 0.05 mg/L based upon representative monthly measurements for one year. The system must continue bromide monitoring to remain on reduced bromate monitoring.

(f) Monitoring plans. Each system required to monitor under this subpart must develop and implement a monitoring plan. The system must maintain the plan and make it available for inspection by the State and the general public no later than 30 days following the applicable compliance dates in Sec. 141.130(b). All Subpart H systems serving more than 3300 people must submit a copy of the monitoring plan to the State no later than the date of the first report required under Sec. 141.134. The State may also require the plan to be submitted by any other system. After review, the State may require changes in any plan elements. The plan must include at least the following elements.

(1) Specific locations and schedules for collecting samples for any parameters included in this subpart.

(2) How the system will calculate compliance with MCLs, MRDLs, and treatment techniques.

(3) If approved for monitoring as a consecutive system, or if providing water to a consecutive system, under the provisions of Sec. 141.29, the sampling plan must reflect the entire distribution system.

[63 FR 69466, Dec. 16, 1998, as amended at 66 FR 3776, Jan. 16, 2001]

Sec. 141.133 Compliance requirements.

(a) General requirements.

(1) Where compliance is based on a running annual average of monthly or quarterly samples or averages and the system fails to monitor for TTHM, HAA5, or bromate, this failure to monitor will be treated as a monitoring violation for the entire period covered by the annual average. Where compliance is based on a running annual average of monthly or quarterly samples or averages and the system failure to monitor makes it impossible to determine compliance with MRDLs for chlorine and chloramines, this failure to monitor will be treated as a monitoring violation for the entire period covered by the annual average.

(2) All samples taken and analyzed under the provisions of this subpart must be included in determining compliance, even if that number is greater than the minimum required.

(3) If, during the first year of monitoring under Sec. 141.132, any individual quarter's average will cause the running annual average of that system to exceed the MCL, the system is out of compliance at the end of that quarter.

(b) Disinfection byproducts.

(1) TTHMs and HAA5.

(i) For systems monitoring quarterly, compliance with MCLs in Sec. 141.64 must be based on a running annual arithmetic average, computed quarterly, of quarterly arithmetic averages of all samples collected by the system as prescribed by Sec. 141.132(b)(1).

(ii) For systems monitoring less frequently than quarterly, systems demonstrate MCL compliance if the average of samples taken that year under the provisions of Sec. 141.132(b)(1) does not exceed the MCLs in Sec. 141.64. If the average of these samples exceeds the MCL, the system must increase monitoring to once per quarter per treatment plant and such a system is not in violation of the MCL until it has completed one year of quarterly monitoring, unless the result of fewer than four quarters of monitoring will cause the running annual average to exceed the MCL, in which case the system is in violation at the end of that quarter. Systems required to increase monitoring frequency to quarterly monitoring must calculate compliance by including the sample which triggered the increased monitoring plus the following three quarters of monitoring.

(iii) If the running annual arithmetic average of quarterly averages covering any consecutive four-quarter period exceeds the MCL, the system is in violation of the MCL and must notify the public pursuant to Sec. 141.32 or Sec. 141.202,

whichever is effective for your system, in addition to reporting to the State pursuant to Sec. 141.134.

(iv) If a PWS fails to complete four consecutive quarters of monitoring, compliance with the MCL for the last four-quarter compliance period must be based on an average of the available data.

(2) Bromate. Compliance must be based on a running annual arithmetic average, computed quarterly, of monthly samples (or, for months in which the system takes more than one sample, the average f all samples taken during the month) collected by the system as prescribed by Sec. 141.132(b)(3). 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 pursuant to subpart Q, in addition to reporting to the State pursuant to Sec. 141.134. If a PWS fails to complete 12 consecutive months' monitoring, compliance with the MCL for the last four-quarter compliance period must be based on an average of the available data.

(3) Chlorite. Compliance must be based on an arithmetic average of each three sample set taken in the distribution system as prescribed by Sec. 141.132(b)(2)(i)(B) and Sec. 141.132(b)(2)(ii). If the arithmetic average of any three sample set exceeds the MCL, the system is in violation of the MCL and must notify the public pursuant to subpart Q, in addition to reporting to the State pursuant to Sec. 141.134.

(c) Disinfectant residuals.

(1) Chlorine and chloramines.

(i) Compliance must be based on a running annual arithmetic average, computed quarterly, of monthly averages of all samples collected by the system under Sec. 141.132(c)(1). If the average covering any consecutive four-quarter period exceeds the MRDL, the system is in violation of the MRDL and must notify the public pursuant to subpart Q, in addition to reporting to the State pursuant to Sec. 141.134.

(ii) 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 monitoring results of both chlorine and chloramines in calculating compliance. Reports submitted pursuant to Sec. 141.134 must clearly indicate which residual disinfectant was analyzed for each sample.

(2) Chlorine dioxide.

(i) Acute violations. Compliance must be based on consecutive daily samples collected by the system under Sec. 141.132(c)(2). 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 exceed the

MRDL, the system is in violation of the MRDL and must take immediate corrective action to lower the level of chlorine dioxide below the MRDL and must notify the public pursuant to the procedures for acute health risks in subpart Q in addition to reporting to the State pursuant to Sec. 141.134. Failure to take samples in the distribution system the day following an exceedance of the chlorine dioxide MRDL at the entrance to the distribution system will also be considered an MRDL violation and the system must notify the public of the violation in accordance with the provisions for acute violations under subpart Q in addition to reporting to the State pursuant to Sec. 141.134.

(ii) Nonacute violations. Compliance must be based on consecutive daily samples collected by the system under Sec. 141.132(c)(2). 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 of the MRDL and must take corrective action to lower the level of chlorine dioxide below the MRDL at the point of sampling and will notify the public pursuant to the procedures for nonacute health risks in subpart Q in addition to reporting to the State pursuant to Sec. 141.134. Failure to monitor at the entrance to the distribution system the day following an exceedance of the chlorine dioxide MRDL at the entrance to the distribution system is also an MRDL violation and the system must notify the public of the violation in accordance with the provisions for nonacute violations under Sec. 141.32(e)(78) in addition to reporting to the State pursuant to Sec. 141.134.

(d) Disinfection byproduct precursors (DBPP). Compliance must be determined as specified by Sec. 141.135(c). Systems may begin monitoring to determine whether Step 1 TOC removals can be met 12 months prior to the compliance date for the system. This monitoring is not required and failure to monitor during this period is not a violation. However, any system that does not monitor during this period, and then determines in the first 12 months after the compliance date that it is not able to meet the Step 1 requirements in Sec. 141.135(b)(2) and must therefore apply for alternate minimum TOC removal (Step 2) requirements, is not eligible for retroactive approval of alternate minimum TOC removal (Step 2) requirements as allowed pursuant to Sec. 141.135(b)(3) and is in violation. Systems may apply for alternate minimum TOC removal (Step 2) requirements any time after the compliance date. For systems required to meet Step 1 TOC removals, if the value calculated under Sec. 141.135(c)(1)(iv) is less than 1.00, the system is in violation of the treatment technique requirements and must notify the public pursuant to Sec. 141.32, in addition to reporting to the State pursuant to Sec. 141.134.

[63 FR 69466, Dec. 16, 1998, as amended at 65 FR 26022, May 4, 2000; 65 FR 40521, June 30, 2000; 66 FR 3777, Jan. 16, 2001]

Sec. 141.134 Reporting and recordkeeping requirements.

(a) Systems required to sample quarterly or more frequently must report to the State within 10 days after the end of each quarter in which samples were collected, notwithstanding the provisions of Sec. 141.31. Systems required to sample less frequently than quarterly must

report to the State within 10 days after the end of each monitoring period in which samples were collected.

(b) Disinfection byproducts. Systems must report the information specified in the following table:

If you are a…	You must report…[1]
(1) System monitoring for TTHMs and HAA5 under the requirements of Sec. 141.132(b) on a quarterly or more frequent basis.	(i) The number of samples taken during the last quarter. (ii) The location, date, and result of each sample taken during the last quarter. (iii) The arithmetic average of all samples taken in the last quarter. (iv) The annual arithmetic average of the quarterly arithmetic averages of this section for the last four quarters. (v) Whether, based on Sec. 141.133(b)(1), the MCL was violated.
(2) System monitoring for TTHMs and HAA5 under the requirements of Sec. 141.132(b) less frequently than quarterly (but as least annually).	(i) The number of samples taken during the last year. (ii) The location, date, and result of each sample taken during the last monitoring period. (iii) The arithmetic average of all samples taken over the last year. (iv) Whether, based on Sec. 141.133(b)(1), the MCL was violated.
(3) System monitoring for TTHMs and HAA5 under the requirements of Sec. 141.132(b) less frequently than annually.	(i) The location, date, and result of each sample taken. (ii) Whether, based on Sec. 141.133(b)(1), the MCL was violated.
(4) System monitoring for chlorite under the requirements of Sec. 141.132(b).	(i) The number of entry point samples taken each month for the last 3 months. (ii) The location, date, and result of each sample (both entry point and distribution system) taken during the last quarter. (iii) For each month in the reporting period, the arithmetic average of all samples taken in each three samples set taken in the distribution system. (iv) Whether, based on Sec. 141.133(b)(3), the MCL was violated, in which month, and how many times it was violated each month.

If you are a…	You must report…[1]
(5) System monitoring for bromate under the requirements of Sec. 141.132(b).	(i) The number of samples taken during the last quarter. (ii) The location, date, and result of each sample taken during the last quarter. (iii) The arithmetic average of the monthly arithmetic averages of all samples taken in the last year. (iv) Whether, based on Sec. 141.133(b)(2), the MCL was violated.

[1] The State may choose to perform calculations and determine whether the MCL was exceeded, in lieu of having the system report that information.

(c) Disinfectants. Systems must report the information specified in the following table:

If you are a…	You must report…[1]
(1) System monitoring for chlorine or chloramines under the requirements of Sec. 141.132(c).	(i) The number of samples taken during each month of the last quarter. (ii) The month arithmetic average of all samples taken in each month for the last 12 months. (iii) The arithmetic average of the monthly averages for the last 12 months. (iv) Whether, based on Sec. 141.133(c)(1), the MRD was violated.
(2) System monitoring for chlorine dioxide under the requirements of Sec. 141.132(c).	(i) The dates, result, and locations of samples taken during the last quarter. (ii) Whether, based on Sec. 141.133(c)(2), the MRDL was violated. (iii) Whether the MRDL was exceeded in any two consecutive daily samples and whether the resulting violation was acute or nonacute.

[1] The State may choose to perform calculations and determine whether the MRDL was exceeded, in lieu of having the system report that information.

(d) Disinfection byproduct precursors and enhanced coagulation or enhanced softening. Systems must report the information specified in the following table:

If you are a…	You must report…[1]
(1) System monitoring monthly or quarterly for TOC under the requirements of Sec. 141.132(d) and required to meet the enhanced coagulation or enhanced softening requirements in Sec. 141.135(b)(2) or (3).	(i) The number of paired (source water and treated water) samples taken during the last quarter. (ii) The location, date, and results of each paired sample and associated alkalinity taken during the last quarter. (iii) For each month in the reporting period that paired samples were taken, the arithmetic average of the percent reduction of TOC for each paired sample and the required TOC percent removal. (iv) Calculations for determining compliance with the TOC percent removal requirements, as provided in Sec. 141.135(c)(1). (v) Whether the system is in compliance with the enhanced coagulation or enhanced softening percent removal requirements in Sec. 141.135(b) for the last four quarters.
(2) System monitoring monthly or quarterly for TOC under the requirements of Sec. 141.132(d) and meeting one or more of the alternative compliance criteria in Sec. 141.135(a)(2) or (3).	(i) The alternative compliance criterion that the system is using. (ii) The number of paired samples taken during the last quarter. (iii) The location, date, and result of each paired sample and associated alkalinity taken during the last quarter. (iv) The running annual arithmetic average based on monthly averages (or quarterly samples) of source water TOC for systems meeting a criterion in Secs. 141.135(a)(2)(i) or (iii) or of treated water TOC for systems meeting the criterion in Sec. 141.135(a)(2)(ii). (v) The running annual arithmetic average based on monthly averages (or quarterly samples) of source water SUVA for systems meeting the criterion in Sec. 141.135(a)(2)(v) or of treated water SUVA for systems meeting the criterion in Sec. 141.135(a)(2)(vi). (vi) The running annual average of source water alkalinity for systems meeting the

If you are a…	You must report…[1]
	criterion in Sec. 141.135(a)(2)(iii) and of treated water alkalinity for systems meeting the criterion in Sec. 141.135(a)(3)(i). (vii) The running annual average for both TTHM and HAA5 for systems meeting the criterion in Sec. 141.135(a)(2)(iii) or (iv). (viii) The running annual average of the amount of magnesium hardness removal (as $CaCO_3$, in mg/L) for systems meeting the criterion in Sec. 141.135(a)(3)(ii). (ix) Whether the system is in compliance with the particular alternative compliance criterion in Sec. 141.135(a)(2) or (3).

[1] The State may choose to perform calculations and determine whether the treatment technique was met, in lieu of having the system report that information.

[63 FR 69466, Dec. 16, 1998, as amended at 66 FR 3778, Jan. 16, 2001; 66 FR 9903, Feb. 12, 2001]

Sec. 141.135 Treatment technique for control of disinfection byproduct (DBP) precursors.

(a) Applicability.

(1) Subpart H systems using conventional filtration treatment (as defined in Sec. 141.2) must operate with enhanced coagulation or enhanced softening to achieve the TOC percent removal levels specified in paragraph (b) of this section unless the system meets at least one of the alternative compliance criteria listed in paragraph (a)(2) or (a)(3) of this section.

(2) Alternative compliance criteria for enhanced coagulation and enhanced softening systems. Subpart H systems using conventional filtration treatment may use the alternative compliance criteria in paragraphs (a)(2)(i) through (vi) of this section to comply with this section in lieu of complying with paragraph (b) of this section. Systems must still comply with monitoring requirements in Sec. 141.132(d).

(i) The system's source water TOC level, measured according to Sec. 141.131(d)(3), is less than 2.0 mg/L, calculated quarterly as a running annual average.

(ii) The system's treated water TOC level, measured according to Sec. 141.131(d)(3), is less than 2.0 mg/L, calculated quarterly as a running annual average.

(iii) The system's source water TOC level, measured according to Sec. 141.131(d)(3), is less than 4.0 mg/L, calculated quarterly as a running annual average; the source water alkalinity, measured according to Sec. 141.131(d)(1), is greater than 60 mg/L (as $CaCO_3$), calculated quarterly as a running annual average; and either the TTHM and HAA5 running annual averages are no greater than 0.040 mg/L and 0.030 mg/L, respectively; or prior to the effective date for compliance in Sec. 141.130(b), the system has made a clear and irrevocable financial commitment not later than the effective date for compliance in Sec. 141.130(b) to use of technologies that will limit the levels of TTHMs and HAA5 to no more than 0.040 mg/L and 0.030 mg/L, respectively. Systems must submit evidence of a clear and irrevocable financial commitment, in addition to a schedule containing milestones and periodic progress reports for installation and operation of appropriate technologies, to the State for approval not later than the effective date for compliance in Sec. 141.130(b). These technologies must be installed and operating not later than June 30, 2005. Failure to install and operate these technologies by the date in the approved schedule will constitute a violation of National Primary Drinking Water Regulations.

(iv) The TTHM and HAA5 running annual averages are no greater than 0.040 mg/L and 0.030 mg/L, respectively, and the system uses only chlorine for primary disinfection and maintenance of a residual in the distribution system.

(v) The system's source water SUVA, prior to any treatment and measured monthly according to Sec. 141.131(d)(4), is less than or equal to 2.0 L/mg-m, calculated quarterly as a running annual average.

(vi) The system's finished water SUVA, measured monthly according to Sec. 141.131(d)(4), is less than or equal to 2.0 L/mg-m, calculated quarterly as a running annual average.

(3) Additional alternative compliance criteria for softening systems. Systems practicing enhanced softening that cannot achieve the TOC removals required by paragraph (b)(2) of this section may use the alternative compliance criteria in paragraphs (a)(3)(i) and (ii) of this section in lieu of complying with paragraph (b) of this section. Systems must still comply with monitoring requirements in Sec. 141.132(d).

(i) Softening that results in lowering the treated water alkalinity to less than 60 mg/L (as $CaCO_3$), measured monthly according to Sec. 141.131(d)(1) and calculated quarterly as a running annual average.

(ii) Softening that results in removing at least 10 mg/L of magnesium hardness (as $CaCO_3$), measured monthly and calculated quarterly as an annual running average.

(b) Enhanced coagulation and enhanced softening performance requirements.

(1) Systems must achieve the percent reduction of TOC specified in paragraph (b)(2) of this section between the source water and the combined filter effluent, unless the State approves a system's request for alternate minimum TOC removal (Step 2) requirements under paragraph (b)(3) of this section.

(2) Required Step 1 TOC reductions, indicated in the following table, are based upon specified source water parameters measured in accordance with Sec. 141.131(d). Systems practicing softening are required to meet the Step 1 TOC reductions in the far-right column (Source water alkalinity >120 mg/L) for the specified source water TOC:

Step 1 Required Removal of TOC by Enhanced Coagulation and Enhanced Softening for Subpart H Systems Using Conventional Treatment [1] [2]

Source-water TOC, mg/L	Source-water alkalinity, mg/L as $CaCO_3$ (in percentages)		
	0-60	>60-120	>120 [3]
>2.0-4.0	35.0	25.0	15.0
>4.0-8.0	45.0	35.0	25.0
>8.0	50.0	40.0	30.0

[1] Systems meeting at least one of the conditions in paragraph (a)(2)(i)-(vi) of this section are not required to operate with enhanced coagulation.

[2] Softening system meeting one of the alternative compliance criteria in paragraph (a)(3) of this section are not required to operate with enhanced softening.

[3] System practicing softening must meet the TOC removal requirements in this column.

(3) Subpart H conventional treatment systems that cannot achieve the Step 1 TOC removals required by paragraph (b)(2) of this section due to water quality parameters or operational constraints must apply to the State, within three months of failure to achieve the TOC removals required by paragraph (b)(2) of this section, for approval of alternative minimum TOC (Step 2) removal requirements submitted by the system. If the State approves the alternative minimum TOC removal (Step 2) requirements, the State may make those requirements retroactive for the purposes of determining compliance. Until the State approves the alternate minimum TOC removal (Step 2) requirements, the system must meet the Step 1 TOC removals contained in paragraph (b)(2) of this section.

(4) Alternate minimum TOC removal (Step 2) requirements. Applications made to the State by enhanced coagulation systems for approval of alternate minimum TOC removal (Step 2) requirements under paragraph (b)(3) of this section must include, at a minimum, results of bench- or pilot-scale testing conducted under paragraph (b)(4)(i) of this section. The submitted bench- or pilot-scale testing must be used to determine the alternate enhanced coagulation level.

(i) Alternate enhanced coagulation level is defined as coagulation at a coagulant dose and pH as determined by the method described in paragraphs (b)(4)(i) through (v) of this section such that an incremental addition of 10 mg/L of alum (or equivalent amount of ferric salt) results in a TOC removal of $\leq$ 0.3 mg/L. The percent removal of TOC at this point on the "TOC removal versus coagulant dose" curve is then defined as the minimum TOC removal required for the system. Once approved by the State, this minimum requirement supersedes the minimum TOC removal required by the table in paragraph (b)(2) of this section. This requirement will be effective until such time as the State approves a new value based on the results of a new bench- and pilot-scale test. Failure to achieve State-set alternative minimum TOC removal levels is a violation of National Primary Drinking Water Regulations.

(ii) Bench- or pilot-scale testing of enhanced coagulation must be conducted by using representative water samples and adding 10 mg/L increments of alum (or equivalent amounts of ferric salt) until the pH is reduced to a level less than or equal to the enhanced coagulation Step 2 target pH shown in the following table:

Enhanced Coagulation Step 2 Target pH

Alkalinity (mg/L as $CaCO_3$)	Target pH
0-60	5.5
>60-120	6.3
>120-240	7.0
>240	7.5

(iii) For waters with alkalinities of less than 60 mg/L for which addition of small amounts of alum or equivalent addition of iron coagulant drives the pH below 5.5 before significant TOC removal occurs, the system must add necessary chemicals to maintain the pH between 5.3 and 5.7 in samples until the TOC removal of 0.3 mg/L per 10 mg/L alum added (or equivalent addition of iron coagulant) is reached.

(iv) The system may operate at any coagulant dose or pH necessary (consistent with other NPDWRs) to achieve the minimum TOC percent removal approved under paragraph (b)(3) of this section.

(v) If the TOC removal is consistently less than 0.3 mg/L of TOC per 10 mg/L of incremental alum dose at all dosages of alum (or equivalent addition of iron coagulant), the water is deemed to contain TOC not amenable to enhanced coagulation. The system may then apply to the State for a waiver of enhanced coagulation requirements.

(c) Compliance calculations.

(1) Subpart H systems other than those identified in paragraph (a)(2) or (a)(3) of this section must comply with requirements contained in paragraph (b)(2) or (b)(3) of this section. Systems must calculate compliance quarterly, beginning after the system has collected 12 months of data, by determining an annual average using the following method:

(i) Determine actual monthly TOC percent removal, equal to:

(1-(treated water TOC/source water TOC)) x 100

(ii) Determine the required monthly TOC percent removal (from either the table in paragraph (b)(2) of this section or from paragraph (b)(3) of this section).

(iii) Divide the value in paragraph (c)(1)(i) of this section by the value in paragraph (c)(1)(ii) of this section.

(iv) Add together the results of paragraph (c)(1)(iii) of this section for the last 12 months and divide by 12.

(v) If the value calculated in paragraph (c)(1)(iv) of this section is less than 1.00, the system is not in compliance with the TOC percent removal requirements.

(2) Systems may use the provisions in paragraphs (c)(2)(i) through (v) of this section in lieu of the calculations in paragraph (c)(1)(i) through (v) of this section to determine compliance with TOC percent removal requirements.

(i) In any month that the system's treated or source water TOC level, measured according to Sec. 141.131(d)(3), is less than 2.0 mg/L, the system may assign a monthly value of 1.0 (in lieu of the value calculated in paragraph (c)(1)(iii) of this section) when calculating compliance under the provisions of paragraph (c)(1) of this section.

(ii) In any month that a system practicing softening removes at least 10 mg/L of magnesium hardness (as $CaCO_3$), the system may assign a monthly value of 1.0 (in lieu of the value calculated in paragraph (c)(1)(iii) of this section) when calculating compliance under the provisions of paragraph (c)(1) of this section.

(iii) In any month that the system's source water SUVA, prior to any treatment and measured according to Sec. 141.131(d)(4), is $\leq$ 2.0 L/mg-m, the system may assign a monthly value of 1.0 (in lieu of the value calculated in paragraph (c)(1)(iii) of this section) when calculating compliance under the provisions of paragraph (c)(1) of this section.

(iv) In any month that the system's finished water SUVA, measured according to Sec. 141.131(d)(4), is $\leq$ 2.0 L/mg-m, the system may assign a monthly value of 1.0 (in lieu of the value calculated in paragraph (c)(1)(iii) of this section) when calculating compliance under the provisions of paragraph (c)(1) of this section.

(v) In any month that a system practicing enhanced softening lowers alkalinity below 60 mg/L (as $CaCO_3$), the system may assign a monthly value of 1.0 (in lieu of the value calculated in paragraph (c)(1)(iii) of this section) when calculating compliance under the provisions of paragraph (c)(1) of this section.

(3) Subpart H systems using conventional treatment may also comply with the requirements of this section by meeting the criteria in paragraph (a)(2) or (3) of this section.

(d) Treatment technique requirements for DBP precursors. The Administrator identifies the following as treatment techniques to control the level of disinfection byproduct precursors in drinking water treatment and distribution systems: For Subpart H systems using conventional treatment, enhanced coagulation or enhanced softening.

[63 FR 69466, Dec. 16, 1998, as amended at 66 FR 3779, Jan. 16, 2001]

Subpart P – Enhanced Filtration and Disinfection – Systems Serving 10,000 or More People

Sec. 141.175(b) Reporting and recordkeeping requirements.

(b) Systems must maintain the results of individual filter monitoring taken under Sec. 141.174 for at least three years. Systems must report that they have conducted individual filter turbidity monitoring under Sec. 141.174 within 10 days after the end of each month the system serves water to the public. Systems must report individual filter turbidity measurement results taken under Sec. 141.174 within 10 days after the end of each month the system serves water to the public only if measurements demonstrate one or more of the conditions in paragraphs (b)(1) through (4) of this section. Systems that use lime softening may apply to the State for alternative exceedance levels for the levels specified in paragraphs (b)(1) through (4) of this section if they can demonstrate that higher turbidity levels in individual filters are due to lime carryover only and not due to degraded filter performance.

(1) For any individual filter that has a measured turbidity level of greater than 1.0 NTU in two consecutive measurements taken 15 minutes apart, the system must report the filter number, the turbidity measurement, and the date(s) on which the exceedance occurred. In addition, the system must either produce a filter profile for the filter within 7 days of the exceedance (if the system is not able to identify an obvious reason for the abnormal filter performance) and report that the profile has been produced or report the obvious reason for the exceedance.

(2) For any individual filter that has a measured turbidity level of greater than 0.5 NTU in two consecutive measurements taken 15 minutes apart at the end of the first four hours of continuous filter operation after the filter has been backwashed or otherwise taken offline, the system must report the filter number, the turbidity, and the date(s) on which the exceedance occurred. In addition, the system must either produce a filter profile for the filter within 7 days of the exceedance (if the system is not able to identify an obvious reason for the abnormal filter performance) and report that the profile has been produced or report the obvious reason for the exceedance.

(3) For any individual filter that has a measured turbidity level of greater than 1.0 NTU in two consecutive measurements taken 15 minutes apart at any time in each of three consecutive months, the system must report the filter number, the turbidity measurement, and the date(s) on which the exceedance occurred. In addition, the system must conduct a self-assessment of the filter within 14 days of the exceedance and report that the self-assessment was conducted. The self assessment must consist of at least the following components: assessment of filter performance; development of a filter profile; identification and prioritization of factors limiting filter performance; assessment of the applicability of corrections; and preparation of a filter self-assessment report.

(4) For any individual filter that has a measured turbidity level of greater than 2.0 NTU in two consecutive measurements taken 15 minutes apart at any time in each of two

consecutive months, the system must report the filter number, the turbidity measurement, and the date(s) on which the exceedance occurred. In addition, the system must arrange for the conduct of a comprehensive performance evaluation by the State or a third party approved by the State no later than 30 days following the exceedance and have the evaluation completed and submitted to the State no later than 90 days following the exceedance.

[63 FR 69516, Dec. 16, 1998, as amended at 66 FR 3779, Jan. 16, 2001]

Subpart Q – Public Notification of Drinking Water Violations

Sec. 141.201 excluding (3)(ii) of Table 1 General public notification requirements.

Source: 65 FR 26035, May 4, 2000, unless otherwise noted.

Public water systems in states with primacy for the public water system supervision (PWSS) program must comply with the requirements in this subpart no later than May 6, 2002 or on the date the State-adopted rule becomes effective, whichever comes first. Public water systems in jurisdictions where EPA directly implements the PWSS program must comply with the requirements in this subpart on October 31, 2000. Prior to these dates, public water systems must continue to comply with the public notice requirements in Sec. 141.32 of this part. The term "primacy agency" is used in this subpart to refer to either EPA or the State or the Tribe in cases where EPA, the State, or the Tribe exercises primary enforcement responsibility for this subpart.

(a) Who must give public notice? Each owner or operator of a public water system (community water systems, non-transient non-community water systems, and transient non-community water systems) must give notice for all violations of national primary drinking water regulations (NPDWR) and for other situations, as listed in Table 1. The term "NPDWR violations" is used in this subpart to include violations of the maximum contaminant level (MCL), maximum residual disinfection level (MRDL), treatment technique (TT), monitoring requirements, and testing procedures in this part 141. Appendix A to this subpart identifies the tier assignment for each specific violation or situation requiring a public notice.

Table 1 to Sec. 141.201
Violation Categories and Other Situations Requiring a Public Notice

(1) NPDWR violations: (i) Failure to comply with an applicable maximum contaminant level (MCL) or maximum residual disinfectant level (MRDL). (ii) Failure to comply with a prescribed treatment technique (TT). (iii) Failure to perform water quality monitoring, as required by the drinking water regulations. (iv) Failure to comply with testing procedures as prescribed by a drinking water regulation.
(2) Variance and exemptions under sections 1415 and 1416 of SDWA: (i) Operation under a variance or an exemption. (ii) Failure to comply with the requirements of any schedule that has been set under a variance or exemption.
(3) Special public notices: (i) Occurrence of a waterborne disease outbreak or other waterborne emergency. (iii) Exceedance of the secondary maximum contaminant level (SMCL) for fluoride. (iv) Availability of unregulated contaminant monitoring data. (v) Other violations and situations determined by the primacy agency to require a public notice under this subpart, not already listed in Appendix A.

(b) What type of public notice is required for each violation or situation? Public notice requirements are divided into three tiers, to take into account the seriousness of the violation or situation and of any potential adverse health effects that may be involved. The public notice requirements for each violation or situation listed in Table 1 of this section are determined by the tier to which it is assigned. Table 2 of this section provides the definition of each tier. Appendix A of this part identifies the tier assignment for each specific violation or situation.

Table 2 to Sec. 141.201
Definition of Public Notice Tiers

(1) *Tier 1 public notice*--required for NPDWR violations and situations with significant potential to have serious adverse effects on human health as a result of short-term exposure.
(2) *Tier 2 public notice*--required for all other NPDWR violations and situations with potential to have serious adverse effects on human health.
(3) *Tier 3 public notice*--required for all other NPDWR violations and situations not included in Tier 1 and Tier 2.

(c) Who must be notified?

(1) Each public water system must provide public notice to persons served by the water system, in accordance with this subpart. Public water systems that sell or otherwise provide drinking water to other public water systems (i.e., to consecutive systems) are required to give public notice to the owner or operator of the consecutive system; the consecutive system is responsible for providing public notice to the persons it serves.

(2) If a public water system has a violation in a portion of the distribution system that is physically or hydraulically isolated from other parts of the distribution system, the primacy agency may allow the system to limit distribution of the public notice to only persons served by that portion of the system which is out of compliance. Permission by the primacy agency for limiting distribution of the notice must be granted in writing.

(3) A copy of the notice must also be sent to the primacy agency, in accordance with the requirements under Sec. 141.31(d).

Sec. 141.202 excluding (3) of Table 1 Tier 1 Public Notice--Form, manner, and frequency of notice.

(a) Which violations or situations require a Tier 1 public notice? Table 1 of this section lists the violation categories and other situations requiring a Tier 1 public notice. Appendix A to this subpart identifies the tier assignment for each specific violation or situation.

Table 1 to Sec. 141.202
Violation Categories and Other Situations Requiring a Tier 1 Public Notice

(1) Violation of the MCL for total coliforms when fecal coliform or E. coli are present in the water distribution system (as specified in Sec. 141.63(b)), or when the water system fails to test for fecal coliforms or E. coli when any repeat sample tests positive for coliform (as specified in Sec. 141.21(e));
(2) Violation of the MCL for nitrate, nitrite, or total nitrate and nitrite, as defined in Sec. 141.62, or when the water system fails to take a confirmation sample within 24 hours of the system's receipt of the first sample showing an exceedance of the nitrate or nitrite MCL, as specified in Sec. 141.23(f)(2);
(4) Violation of the MRDL for chlorine dioxide, as defined in Sec. 141.65(a), when one or more samples taken in the distribution system the day following an exceedance of the MRDL at the entrance of the distribution system exceed the MRDL, or when the water system does not take the required samples in the distribution system, as specified in Sec. 141.133(c)(2)(i);
(5) Violation of the turbidity MCL under Sec. 141.13(b), where the primacy agency determines after consultation that a Tier 1 notice is required or where consultation does not take place within 24 hours after the system learns of the violation;
(6) Violation of the Surface Water Treatment Rule (SWTR), Interim Enhanced Surface Water Treatment Rule (IESWTR) or Long Term 1 Enhanced Surface Water Treatment Rule (LT1ESWTR) treatment technique requirement resulting from a single exceedance of the maximum allowable turbidity limit (as identified in Appendix A), where the primacy agency determines after consultation that a Tier 1 notice is required or where consultation does not take place within 24 hours after the system learns of the violation;
(7) Occurrence of a waterborne disease outbreak, as defined in Sec. 141.2, or other waterborne emergency (such as a failure or significant interruption in key water treatment processes, a natural disaster that disrupts the water supply or distribution system, or a chemical spill or unexpected loading of possible pathogens into the source water that significantly increases the potential for drinking water contamination);
(8) Other violations or situations with significant potential to have serious adverse effects on human health as a result of short-term exposure, as determined by the primacy agency either in its regulations or on a case-by-case basis.

(b) When is the Tier 1 public notice to be provided? What additional steps are required? Public water systems must:

(1) Provide a public notice as soon as practical but no later than 24 hours after the system learns of the violation;

(2) Initiate consultation with the primacy agency as soon as practical, but no later than 24 hours after the public water system learns of the violation or situation, to determine additional public notice requirements; and

(3) Comply with any additional public notification requirements (including any repeat notices or direction on the duration of the posted notices) that are established as a result of the consultation with the primacy agency. Such requirements may include the timing, form, manner, frequency, and content of repeat notices (if any) and other actions designed to reach all persons served.

(c) What is the form and manner of the public notice? Public water systems must provide the notice within 24 hours in a form and manner reasonably calculated to reach all persons served. The form and manner used by the public water system are to fit the specific situation, but must be designed to reach residential, transient, and non-transient users of the water system. In order to reach all persons served, water systems are to use, at a minimum, one or more of the following forms of delivery:

(1) Appropriate broadcast media (such as radio and television);

(2) Posting of the notice in conspicuous locations throughout the area served by the water system;

(3) Hand delivery of the notice to persons served by the water system; or

(4) Another delivery method approved in writing by the primacy agency.

[65 FR 26035, May 4, 2000, as amended at 67 FR 1836, Jan. 14, 2002]

Sec. 141.203 Tier 2 Public Notice--Form, manner, and frequency of notice.

(a) Which violations or situations require a Tier 2 public notice? Table 1 of this section lists the violation categories and other situations requiring a Tier 2 public notice. Appendix A to this subpart identifies the tier assignment for each specific violation or situation.

Table 1 to Sec. 141.203
Violation Categories and Other Situations Requiring a Tier 2 Public Notice

(1) All violations of the MCL, MRDL, and treatment technique requirements, except where a Tier 1 notice is required under Sec. 141.202(a) or where the primacy agency determines that a Tier 1 notice is required;
(2) Violations of the monitoring and testing procedure requirements, where the primacy agency determines that a Tier 2 rather than a Tier 3 public notice is required, taking into account potential health impacts and persistence of the violation; and
(3) Failure to comply with the terms and conditions of any variance or exemption in place.

(b) When is the Tier 2 public notice to be provided?

(1) Public water systems must provide the public notice as soon as practical, but no later than 30 days after the system learns of the violation. If the public notice is posted, the notice must remain in place for as long as the violation or situation persists, but in no case for less than seven days, even if the violation or situation is resolved. The primacy agency may, in appropriate circumstances, allow additional time for the initial notice of up to three months from the date the system learns of the violation. It is not appropriate for the primacy agency to grant an extension to the 30-day deadline for any unresolved violation or to allow across-the-board extensions by rule or policy for other violations or situations requiring a Tier 2 public notice. Extensions granted by the primacy agency must be in writing.

(2) The public water system must repeat the notice every three months as long as the violation or situation persists, unless the primacy agency determines that appropriate circumstances warrant a different repeat notice frequency. In no circumstance may the repeat notice be given less frequently than once per year. It is not appropriate for the primacy agency to allow less frequent repeat notice for an MCL violation under the Total Coliform Rule or a treatment technique violation under the Surface Water Treatment Rule or Interim Enhanced Surface Water Treatment Rule. It is also not appropriate for the primacy agency to allow through its rules or policies across-the-board reductions in the repeat notice frequency for other ongoing violations requiring a Tier 2 repeat notice. Primacy agency determinations allowing repeat notices to be given less frequently than once every three months must be in writing.

(3) For the turbidity violations specified in this paragraph, public water systems must consult with the primacy agency as soon as practical but no later than 24 hours after the public water system learns of the violation, to determine whether a Tier 1 public notice

under Sec. 141.202(a) is required to protect public health. When consultation does not take place within the 24-hour period, the water system must distribute a Tier 1 notice of the violation within the next 24 hours (i.e., no later than 48 hours after the system learns of the violation), following the requirements under Sec. 141.202(b) and (c). Consultation with the primacy agency is required for:

(i) Violation of the turbidity MCL under Sec. 141.13(b); or

(ii) Violation of the SWTR, IESWTR or LT1ESWTR treatment technique requirement resulting from a single exceedance of the maximum allowable turbidity limit.

(c) What is the form and manner of the Tier 2 public notice? Public water systems must provide the initial public notice and any repeat notices in a form and manner that is reasonably calculated to reach persons served in the required time period. The form and manner of the public notice may vary based on the specific situation and type of water system, but it must at a minimum meet the following requirements:

(1) Unless directed otherwise by the primacy agency in writing, community water systems must provide notice by:

(i) Mail or other direct delivery to each customer receiving a bill and to other service connections to which water is delivered by the public water system; and

(ii) Any other method reasonably calculated to reach other persons regularly served by the system, if they would not normally be reached by the notice required in paragraph (c)(1)(i) of this section. Such persons may include those who do not pay water bills or do not have service connection addresses (e.g., house renters, apartment dwellers, university students, nursing home patients, prison inmates, etc.). Other methods may include: Publication in a local newspaper; delivery of multiple copies for distribution by customers that provide their drinking water to others (e.g., apartment building owners or large private employers); posting in public places served by the system or on the Internet; or delivery to community organizations.

(2) Unless directed otherwise by the primacy agency in writing, non-community water systems must provide notice by:

(i) Posting the notice in conspicuous locations throughout the distribution system frequented by persons served by the system, or by mail or direct delivery to each customer and service connection (where known); and

(ii) Any other method reasonably calculated to reach other persons served by the system if they would not normally be reached by the notice required in paragraph (c)(2)(i) of this section. Such persons may include those served who may not see a posted notice because the posted notice is not in a location they routinely pass by.

Other methods may include: Publication in a local newspaper or newsletter distributed to customers; use of E-mail to notify employees or students; or, delivery of multiple copies in central locations (e.g., community centers).

[65 FR 26035, May 4, 2000, as amended at 67 FR 1836, Jan. 14, 2002]

Sec. 141.204 Tier 3 Public Notice--Form, manner, and frequency of notice.

(a) Which violations or situations require a Tier 3 public notice? Table 1 of this section lists the violation categories and other situations requiring a Tier 3 public notice. Appendix A to this subpart identifies the tier assignment for each specific violation or situation.

Table 1 to Sec. 141.204
Violation Categories and Other Situations Requiring a Tier 3 Public Notice

(1) Monitoring violations under 40 CFR part 141, except where a Tier 1 notice is required under Sec. 141.202(a) or where the primacy agency determines that a Tier 2 notice is required;
(2) Failure to comply with a testing procedure established in 40 CFR part 141, except where a Tier 1 notice is required under Sec. 141.202(a)) or where the primacy agency determines that a Tier 2 notice is required;
(3) Operation under a variance granted under Section 1415 or an exemption granted under Section 1416 of the Safe Drinking Water Act;
(4) Availability of unregulated contaminant monitoring results, as required under Sec. 141.207; and
(5) Exceedance of the fluoride secondary maximum contaminant level (SMCL), as required under Sec. 141.208.

(b) When is the Tier 3 public notice to be provided?

(1) Public water systems must provide the public notice not later than one year after the public water system learns of the violation or situation or begins operating under a variance or exemption. Following the initial notice, the public water system must repeat the notice annually for as long as the violation, variance, exemption, or other situation persists. If the public notice is posted, the notice must remain in place for as long as the violation, variance, exemption, or other situation persists, but in no case less than seven days (even if the violation or situation is resolved).

(2) Instead of individual Tier 3 public notices, a public water system may use an annual report detailing all violations and situations that occurred during the previous twelve months, as long as the timing requirements of paragraph (b)(1) of this section are met.

(c) What is the form and manner of the Tier 3 public notice? Public water systems must provide the initial notice and any repeat notices in a form and manner that is reasonably calculated to reach persons served in the required time period. The form and manner of the public notice may vary based on the specific situation and type of water system, but it must at a minimum meet the following requirements:

(1) Unless directed otherwise by the primacy agency in writing, community water systems must provide notice by:

(i) Mail or other direct delivery to each customer receiving a bill and to other service connections to which water is delivered by the public water system; and

(ii) Any other method reasonably calculated to reach other persons regularly served by the system, if they would not normally be reached by the notice required in paragraph (c)(1)(i) of this section. Such persons may include those who do not pay water bills or do not have service connection addresses (e.g., house renters, apartment dwellers, university students, nursing home patients, prison inmates, etc.). Other methods may include: Publication in a local newspaper; delivery of multiple copies for distribution by customers that provide their drinking water to others (e.g., apartment building owners or large private employers); posting in public places or on the Internet; or delivery to community organizations.

(2) Unless directed otherwise by the primacy agency in writing, non-community water systems must provide notice by:

(i) Posting the notice in conspicuous locations throughout the distribution system frequented by persons served by the system, or by mail or direct delivery to each customer and service connection (where known); and

(ii) Any other method reasonably calculated to reach other persons served by the system, if they would not normally be reached by the notice required in paragraph (c)(2)(i) of this section. Such persons may include those who may not see a posted notice because the notice is not in a location they routinely pass by. Other methods may include: Publication in a local newspaper or newsletter distributed to customers; use of E-mail to notify employees or students; or, delivery of multiple copies in central locations (e.g., community centers).

(d) In what situations may the Consumer Confidence Report be used to meet the Tier 3 public notice requirements? For community water systems, the Consumer Confidence Report (CCR) required under Subpart O of this part may be used as a vehicle for the initial Tier 3 public notice and all required repeat notices, as long as:

(1) The CCR is provided to persons served no later than 12 months after the system learns of the violation or situation as required under Sec. 141.204(b);

(2) The Tier 3 notice contained in the CCR follows the content requirements under Sec. 141.205; and

(3) The CCR is distributed following the delivery requirements under Sec. 141.204(c).

[65 FR 26035, May 4, 2000; 65 FR 38629, June 21, 2000]

Sec. 141.205 Content of the public notice.

(a) What elements must be included in the public notice for violations of National Primary Drinking Water Regulations (NPDWR) or other situations requiring a public notice? When a public water system violates a NPDWR or has a situation requiring public notification, each public notice must include the following elements:

(1) A description of the violation or situation, including the contaminant(s) of concern, and (as applicable) the contaminant level(s);

(2) When the violation or situation occurred;

(3) Any potential adverse health effects from the violation or situation, including the standard language under paragraph (d)(1) or (d)(2) of this section, whichever is applicable;

(4) The population at risk, including subpopulations particularly vulnerable if exposed to the contaminant in their drinking water;

(5) Whether alternative water supplies should be used;

(6) What actions consumers should take, including when they should seek medical help, if known;

(7) What the system is doing to correct the violation or situation;

(8) When the water system expects to return to compliance or resolve the situation;

(9) The name, business address, and phone number of the water system owner, operator, or designee of the public water system as a source of additional information concerning the notice; and

(10) A statement to encourage the notice recipient to distribute the public notice to other persons served, using the standard language under paragraph (d)(3) of this section, where applicable.

(b) What elements must be included in the public notice for public water systems operating under a variance or exemption?

(1) If a public water system has been granted a variance or an exemption, the public notice must contain:

(i) An explanation of the reasons for the variance or exemption;

(ii) The date on which the variance or exemption was issued;

(iii) A brief status report on the steps the system is taking to install treatment, find alternative sources of water, or otherwise comply with the terms and schedules of the variance or exemption; and

(iv) A notice of any opportunity for public input in the review of the variance or exemption.

(2) If a public water system violates the conditions of a variance or exemption, the public notice must contain the ten elements listed in paragraph (a) of this section.

(c) How is the public notice to be presented?

(1) Each public notice required by this section:

(i) Must be displayed in a conspicuous way when printed or posted;

(ii) Must not contain overly technical language or very small print;

(iii) Must not be formatted in a way that defeats the purpose of the notice;

(iv) Must not contain language which nullifies the purpose of the notice.

(2) Each public notice required by this section must comply with multilingual requirements, as follows:

(i) For public water systems serving a large proportion of non-English speaking consumers, as determined by the primacy agency, the public notice must 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 notice or to request assistance in the appropriate language.

(ii) In cases where the primacy agency has not determined what constitutes a large proportion of non-English speaking consumers, the public water system must include in the public notice the same information as in paragraph (c)(2)(i) of this section, where appropriate to reach a large proportion of non-English speaking persons served by the water system.

(d) What standard language must public water systems include in their public notice? Public water systems are required to include the following standard language in their public notice:

(1) Standard health effects language for MCL or MRDL violations, treatment technique violations, and violations of the condition of a variance or exemption. Public water systems must include in each public notice the health effects language specified in Appendix B to this subpart corresponding to each MCL, MRDL, and treatment technique violation listed in Appendix A to this subpart, and for each violation of a condition of a variance or exemption.

(2) Standard language for monitoring and testing procedure violations. Public water systems must include the following language in their notice, including the language necessary to fill in the blanks, for all monitoring and testing procedure violations listed in Appendix A to this subpart:

We are required to monitor your drinking water for specific contaminants on a regular basis. Results of regular monitoring are an indicator of whether or not your drinking water meets health standards. During [compliance period], we "did not monitor or test" or "did not complete all monitoring or testing" for [contaminant(s)], and therefore cannot be sure of the quality of your drinking water during that time.

(3) Standard language to encourage the distribution of the public notice to all persons served. Public water systems must include in their notice the following language (where applicable):

Please share this information with all the other people who drink this water, especially those who may not have received this notice directly (for example, people in apartments, nursing homes, schools, and businesses). You can do this by posting this notice in a public place or distributing copies by hand or mail.

Sec. 141.206 Notice to new billing units or new customers.

(a) What is the requirement for community water systems? Community water systems must give a copy of the most recent public notice for any continuing violation, the existence of a variance or exemption, or other ongoing situations requiring a public notice to all new billing units or new customers prior to or at the time service begins.

(b) What is the requirement for non-community water systems? Non-community water systems must continuously post the public notice in conspicuous locations in order to inform new consumers of any continuing violation, variance or exemption, or other situation requiring a public notice for as long as the violation, variance, exemption, or other situation persists.

Sec. 141.207 Special notice of the availability of unregulated contaminant monitoring results.

(a) When is the special notice to be given? The owner or operator of a community water system or non-transient, non-community water system required to monitor under Sec. 141.40 must notify persons served by the system of the availability of the results of such sampling no later than 12 months after the monitoring results are known.

(b) What is the form and manner of the special notice? The form and manner of the public notice must follow the requirements for a Tier 3 public notice prescribed in Secs. 141.204(c), (d)(1), and (d)(3). The notice must also identify a person and provide the telephone number to contact for information on the monitoring results.

Sec. 141.208 Special notice for exceedance of the SMCL for fluoride.

(a) When is the special notice to be given? Community water systems that exceed the fluoride secondary maximum contaminant level (SMCL) of 2 mg/l as specified in Sec. 143.3 (determined by the last single sample taken in accordance with Sec. 141.23), but do not exceed the maximum contaminant level (MCL) of 4 mg/l for fluoride (as specified in Sec. 141.62), must provide the public notice in paragraph (c) of this section to persons served. Public notice must be provided as soon as practical but no later than 12 months from the day the water system learns of the exceedance. A copy of the notice must also be sent to all new billing units and new customers at the time service begins and to the State public health officer. The public water system must repeat the notice at least annually for as long as the SMCL is exceeded. If the public notice is posted, the notice must remain in place for as long as the SMCL is exceeded, but in no case less than seven days (even if the exceedance is eliminated). On a case-by-case basis, the primacy agency may require an initial notice sooner than 12 months and repeat notices more frequently than annually.

(b) What is the form and manner of the special notice? The form and manner of the public notice (including repeat notices) must follow the requirements for a Tier 3 public notice in Sec. 141.204(c) and (d)(1) and (d)(3).

(c) What mandatory language must be contained in the special notice? The notice must contain the following language, including the language necessary to fill in the blanks:

This is an alert about your drinking water and a cosmetic dental problem that might affect children under nine years of age. At low levels, fluoride can help prevent cavities, but children drinking water containing more than 2 milligrams per liter (mg/l) of fluoride may develop cosmetic discoloration of their permanent teeth (dental fluorosis). The drinking water provided by your community water system [name] has a fluoride concentration of [insert value] mg/l.

Dental fluorosis, in its moderate or severe forms, may result in a brown staining and/or pitting of the permanent teeth. This problem occurs only in developing teeth, before they

erupt from the gums. Children under nine should be provided with alternative sources of drinking water or water that has been treated to remove the fluoride to avoid the possibility of staining and pitting of their permanent teeth. You may also want to contact your dentist about proper use by young children of fluoride-containing products. Older children and adults may safely drink the water.

Drinking water containing more than 4 mg/L of fluoride (the U.S. Environmental Protection Agency's drinking water standard) can increase your risk of developing bone disease. Your drinking water does not contain more than 4 mg/l of fluoride, but we're required to notify you when we discover that the fluoride levels in your drinking water exceed 2 mg/l because of this cosmetic dental problem.

For more information, please call [name of water system contact] of [name of community water system] at [phone number]. Some home water treatment units are also available to remove fluoride from drinking water. To learn more about available home water treatment units, you may call NSF International at 1-877-8-NSF-HELP.

Appendix A to Subpart Q of Part 141 – NPDWR Violations and Other Situations Requiring Public Notice [1]

Contaminant	MCL/MRDL/TT violations [2]		Monitoring & testing procedure violations	
	Tier of public notice required	Citation	Tier of public notice required	Citation
I. Violations of National Primary Drinking Water Regulations (NPDWR): [3]				
A. Microbiological Contaminants				
1. Total coliform	2	141.63(a)	3	141.21(a)-(e)
2. Fecal coliform/E. coli	1	141.63(b)	[4] 1, 3	141.21(e)
3. Turbidity MCL	2	141.13(a)	3	141.22
4. Turbidity MCL (average of 2 days' samples 5 NTU)	[5] 2, 1	141.13(b)	3	141.22
5. Turbidity (for TT violations resulting from a single exceedance of maximum allowable turbidity level)	[6] 2, 1	141.71(a)(2), 141.71(c)(2)(i), 141.73(a)(2), 141.73 (b)(2), 141.73 (c)(2), 141.73(d), 141.173(a)(2), 141.173(b), 141.551(b)	3	141.74(a)(1), 141.74(b)(2), 141.74(c)(1), 141.174, 141.560(a)-(c), 141.561.
6. Surface Water Treatment Rule violations, other than violations resulting from single exceedance of max. allowable turbidity level (TT)	2	141.70-141.73	3	141.74
7. Interim Enhanced Surface Water Treatment Rule violations, other than violations resulting from single exceedance of max. turbidity level (TT)	[7] 2	141.170-141.173 141.500-141.553	3	141.172, 141.174, 141.530-141.544, 141.560-141.564.
8. Filter Backwash Recycling Rule violations	2	141.76	3	141.76
9. Long Term 1 Enhanced Surface Water Treatment Rule violations	2	141.500-141.553	3	141.530-141.544, 141.560-141.564.
B. Inorganic Chemicals (IOCs)				
1. Antimony	2	141.62(b)	3	141.23(a), (c)

Contaminant	MCL/MRDL/TT violations [2]		Monitoring & testing procedure violations	
	Tier of public notice required	Citation	Tier of public notice required	Citation
2. Arsenic	2	[8] 141.62(b)	3	[9] 141.23(a), (c)
3. Asbestos (fibers > 10 liter μm)	2	141.62(b)	3	141.23(a)-(b)
4. Barium	2	141.62(b)	3	141.23(a), (c)
5. Beryllium	2	141.62(b)	3	141.23(a), (c)
6. Cadmium	2	141.62(b)	3	141.23(a), (c)
7. Chromium (total).	2	141.62(b)	3	141.23(a), (c)
8. Cyanide	2	141.62(b)	3	141.23(a), (c)
9. Fluoride	2	141.62(b)	3	141.23(a), (c)
10. Mercury (inorganic)	2	141.62(b)	3	141.23(a), (c)
11. Nitrate	1	141.62(b)	[10] 1, 3	141.23(a), (d), 141.23(f)(2)
12. Nitrite	1	141.62(b)	[10] 1, 3	141.23(a), (e), 141.23(f)(2)
13. Total Nitrate and Nitrite	1	141.62(b)	3	141.23(a)
14. Selenium	2	141.62(b)	3	141.23(a), (c)
15. Thallium	2	141.62(b)	3	141.23(a), (c)
C. Lead and Copper Rule (Action Level for lead is 0.015 mg/L, for copper is 1.3 mg/L)				
1. Lead and Copper Rule (TT)	2	141.80-141.85	3	141.86-141.89
D. Synthetic Organic Chemicals (SOCs)				
1. 2,4-D	2	141.61(c)	3	141.24(h)
2. 2,4,5-TP (Silvex)	2	141.61(c)	3	141.24(h)
3. Alachlor	2	141.61(c)	3	141.24(h)
4. Atrazine	2	141.61(c)	3	141.24(h)
5. Benzo(a)pyrene (PAHs)	2	141.61(c)	3	141.24(h)
6. Carbofuran	2	141.61(c)	3	141.24(h)
7. Chlordane	2	141.61(c)	3	141.24(h)
8. Dalapon	2	141.61(c)	3	141.24(h)

Contaminant	MCL/MRDL/TT violations [2]		Monitoring & testing procedure violations	
	Tier of public notice required	Citation	Tier of public notice required	Citation
9. Di (2-ethylhexyl) adipate	2	141.61(c)	3	141.24(h)
10. Di (2-ethylhexyl) phthalate	2	141.61(c)	3	141.24(h)
11. Dibromochloropropane	2	141.61(c)	3	141.24(h)
12. Dinoseb	2	141.61(c)	3	141.24(h)
13. Dioxin (2,3,7,8-TCDD)	2	141.61(c)	3	141.24(h)
14. Diquat	2	141.61(c)	3	141.24(h)
15. Endothall	2	141.61(c)	3	141.24(h)
16. Endrin	2	141.61(c)	3	141.24(h)
17. Ethylene dibromide	2	141.61(c)	3	141.24(h)
18. Glyphosate	2	141.61(c)	3	141.24(h)
19. Heptachlor	2	141.61(c)	3	141.24(h)
20. Heptachlor epoxide	2	141.61(c)	3	141.24(h)
21. Hexachlorobenzene	2	141.61(c)	3	141.24(h)
22. Hexachlorocyclo-pentadiene	2	141.61(c)	3	141.24(h)
23. Lindane	2	141.61(c)	3	141.24(h)
24. Methoxychlor	2	141.61(c)	3	141.24(h)
25. Oxamyl (Vydate)	2	141.61(c)	3	141.24(h)
26. Pentachlorophenol	2	141.61(c)	3	141.24(h)
27. Picloram	2	141.61(c)	3	141.24(h)
28. Polychlorinated biphenyls (PCBs)	2	141.61(c)	3	141.24(h)
29. Simazine	2	141.61(c)	3	141.24(h)
30. Toxaphene	2	141.61(c)	3	141.24(h)
E. Volatile Organic Chemicals (VOCs)				
1. Benzene	2	141.61(a)	3	141.24(f)
2. Carbon tetrachloride	2	141.61(a)	3	141.24(f)
3. Chlorobenzene (monochlorobenzene)	2	141.61(a)	3	141.24(f)
4. o-Dichlorobenzene	2	141.61(a)	3	141.24(f)
5. p-Dichlorobenzene	2	141.61(a)	3	141.24(f)

Contaminant	MCL/MRDL/TT violations [2]		Monitoring & testing procedure violations	
	Tier of public notice required	Citation	Tier of public notice required	Citation
6. 1,2-Dichloroethane	2	141.61(a)	3	141.24(f)
7. 1,1-Dichloroethylene	2	141.61(a)	3	141.24(f)
8. cis-1,2-Dichloroethylene	2	141.61(a)	3	141.24(f)
9. trans-1,2-Dichloroethylene	2	141.61(a)	3	141.24(f)
10. Dichloromethane	2	141.61(a)	3	141.24(f)
11. 1,2-Dichloropropane	2	141.61(a)	3	141.24(f)
12. Ethylbenzene	2	141.61(a)	3	141.24(f)
13. Styrene	2	141.61(a)	3	141.24(f)
14. Tetrachloroethylene	2	141.61(a)	3	141.24(f)
15. Toluene	2	141.61(a)	3	141.24(f)
16. 1,2,4-Trichlorobenzene	2	141.61(a)	3	141.24(f)
17. 1,1,1-Trichloroethane	2	141.61(a)	3	141.24(f)
18. 1,1,2-Trichloroethane	2	141.61(a)	3	141.24(f)
19. Trichloroethylene	2	141.61(a)	3	141.24(f)
20. Vinyl chloride	2	141.61(a)	3	141.24(f)
21. Xylenes (total)	2	141.61(a)	3	141.24(f)
F. Radioactive Contaminants				
1. Beta/photon emitters	2	141.16	3	141.25(a), 141.26(b)
2. Alpha emitters	2	141.15(b)	3	141.25(a), 141.26(a)
3. Combined radium (226 & 228)	2	141.15(a)	3	141.25(a), 141.26(a)
G. Disinfection Byproducts (DBPs), Byproduct Precursors, Disinfectant Residuals. Where disinfection is used in the treatment of drinking water, disinfectants combine with organic and inorganic matter present in water to form chemicals called disinfection byproducts (DBPs). EPA sets standards for controlling the levels of disinfectants and DBPs in drinking water, including trihalomethanes (THMs) and haloacetic acids (HAAs). [11]				

Contaminant	MCL/MRDL/TT violations [2]		Monitoring & testing procedure violations	
	Tier of public notice required	Citation	Tier of public notice required	Citation
1. Total trihalomethanes (TTHMs)	2	[12] 141.12, 141.64(a)	3	141.30, 141.132(a)-(b)
2. Haloacetic Acids (HAA5)	2	141.64(a)	3	141.132(a)-(b)
3. Bromate	2	141.64(a)	3	141.132(a)-(b)
4. Chlorite	2	141.64(a)	3	141.132(a)-(b)
5. Chlorine (MRDL)	2	141.65(a)	3	141.132(a), (c)
6. Chloramine (MRDL)	2	141.65(a)	3	141.132(a), (c)
7. Chlorine dioxide (MRDL), where any 2 consecutive daily samples at entrance to distribution system only are above MRDL	2	141.65(a), 141.133(c)(3)	2 [13], 3	141.132(a), (c), 141.133(c)(2)
8. Chlorine dioxide (MRDL), where sample(s) in distribution system the next day are also above MRDL	[14] 1	141.65(a), 141.133(c)(3)	1	141.132(a), (c), 141.133(c)(2)
9. Control of DBP precursors--TOC (TT)	2	141.135(a)-(b)	3	141.132(a), (d)
10. Bench marking and disinfection profiling	N/A	N/A	3	141.172 141.530-141.544.
11. Development of monitoring plan	N/A	N/A	3	141.132(f)
H. Other Treatment Techniques				
1. Acrylamide (TT)	2	141.111	N/A	N/A
2. Epichlorohydrin (TT)	2	141.111	N/A	N/A
II. Unregulated Contaminant Monitoring: [15]				
A. Unregulated contaminants	N/A	N/A	3	141.40
B. Nickel	N/A	N/A	3	141.23(c), (k)
III. Public Notification for Variances and Exemptions:				
A. Operation under a variance or exemption	3	[16] 1415, 1416,	N/A	N/A
B. Violation of conditions of a variance or exemption	2	1415, 1416, [17] 142.307	N/A	N/A
IV. Other Situations Requiring Public Notification:				
A. Fluoride secondary maximum contaminant level (SMCL) exceedance	3	143.3	N/A	N/A

Contaminant	MCL/MRDL/TT violations [2]		Monitoring & testing procedure violations	
	Tier of public notice required	Citation	Tier of public notice required	Citation
B. Exceedance of nitrate MCL for non-community systems, as allowed by primacy agency	1	141.11(d)	N/A	N/A
C. Availability of unregulated contaminant monitoring data	3	141.40	N/A	N/A
D. Waterborne disease outbreak	1	141.2, 141.71(c)(2)(ii)	N/A	N/A
E. Other waterborne emergency [18]	1	N/A	N/A	N/A
F. Other situations as determined by primacy agency	[19] 1, 2, 3	N/A	N/A	N/A

Appendix A – Endnotes

[1] Violations and other situations not listed in this table (e.g., reporting violations and failure to prepare Consumer Confidence Reports), do not require notice, unless otherwise determined by the primary agency. Primacy agencies may, at their option, also require a more stringent public notice tier (e.g., Tier 1 instead of Tier 2 or Tier 2 instead of Tier 3) for specific violations and situations listed in this Appendix, as authorized under Sec. 141.202(a) and Sec. 141.203(a).

[2] MCL--Maximum contaminant level, MRDL--Maximum residual disinfectant level, TT--Treatment technique

[3] The term Violations of National Primary Drinking Water Regulations (NPDWR) is used here to include violations of MCL, MRDL, treatment technique, monitoring, and testing procedure requirements.

[4] Failure to test for fecal coliform or E. coli is a Tier 1 violation if testing is not done after any repeat sample tests positive for coliform. All other total coliform monitoring and testing procedure violations are Tier 3.

5 Systems that violate the turbidity MCL of 5 NTU based on an average of measurements over two consecutive days must consult with the primacy agency within 24 hours after learning of the violation. Based on this consultation, the primacy agency may subsequently decide to elevate the violation to Tier 1. If a system is unable to make contact with the primacy agency in the 24-hour period, the violation is automatically elevated to Tier 1.

[6] Systems with treatment technique violations involving a single exceedance of a maximum turbidity limit under the Surface Water Treatment Rule (SWTR), the Interim Enhanced Surface Water Treatment Rule (IESWTR), or the Long Term 1 Enhanced Surface Water Treatment Rule (LT1ESWTR) are required to consult with the primacy agency within 24 hours after learning of the violation. Based on this consultation, the primacy agency may subsequently decide to elevate the violation to Tier 1. If a system is unable to make contact with the primacy agency in the 24-hour period, the violation is automatically elevated to Tier 1.

[7] Most of the requirements of the Interim Enhanced Surface Water Treatment Rule (63 FR 69477) (Sec. 141.170-141.171, 141.173-141.174) become effective January 1, 2002 for Subpart H systems (surface water systems and ground water systems under the direct influence of surface water) serving at least 10,000 persons. However, Sec. 141.172 has some

requirements that become effective as early as April 16, 1999. The Surface Water Treatment Rule remains in effect for systems serving at least 10,000 persons even after 2002; the Interim Enhanced Surface Water Treatment Rule adds additional requirements and does not in many cases supercede the SWTR.

[8] The arsenic MCL citations are effective January 23, 2006. Until then, the citations are Sec. 141.11(b) and Sec. 141.23(n).

[9] The arsenic Tier 3 violation MCL citations are effective January 23, 2006. Until then, the citations are Sec. 41.23(a), (l).

[10] Failure to take a confirmation sample within 24 hours for nitrate or nitrite after an initial sample exceeds the MCL is a Tier 1 violation. Other monitoring violations for nitrate are Tier 3.

[11] Subpart H community and non-transient non-community systems serving $\geq$ 10,000 must comply with new DBP MCLs, disinfectant MRDLs, and related monitoring requirements beginning January 1, 2002. All other community and non-transient non-community systems must meet the MCLs and MRDLs beginning January 1, 2004. Subpart H transient non-community systems serving 10,000 or more persons and using chlorine dioxide as a disinfectant or oxidant must comply with the chlorine dioxide MRDL beginning January 1, 2002. Subpart H transient non- community systems serving fewer than 10,000 persons and using only ground water not under the direct influence of surface water and using chlorine dioxide as a disinfectant or oxidant must comply with the chlorine dioxide MRDL beginning January 1, 2004.

[12] Sec. 141.12 will no longer apply after January 1, 2004.

[13] Failure to monitor for chlorine dioxide at the entrance to the distribution system the day after exceeding the MRDL at the entrance to the distribution system is a Tier 2 violation.

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

[15] Some water systems must monitor for certain unregulated contaminants listed in Sec. 141.40.

[16] This citation refers to Sec. 1415 and 1416 of the Safe Drinking Water Act. Sec. 1415 and 1416 require that "a schedule prescribed. for a public water system granted a variance [or exemption] shall require compliance by the system. . ."

[17] In addition to Sec. 1415 and 1416 of the Safe Drinking Water Act, 40 CFR 142.307 specifies the items and schedule milestones that must be included in a variance for small systems.

[18] Other waterborne emergencies require a Tier 1 public notice under Sec. 141.202(a) for situations that do not meet the definition of a waterborne disease outbreak given in 40 CFR 141.2 but that still have the potential to have serious adverse effects on health as a result of short-term exposure. These could include outbreaks not related to treatment deficiencies, as well as situations that have the potential to cause outbreaks, such as failures or significant interruption in water treatment processes, natural disasters that disrupt the water supply or distribution system, chemical spills, or unexpected loading of possible pathogens into the source water.

[19] Primacy agencies may place other situations in any tier they believe appropriate, based on threat to public health.

[65 FR 26035, May 4, 2000, as amended at 66 FR 7065, Jan. 22, 2001; 66 FR 31104, June 8, 2001; 67 FR 1836, Jan. 14, 2002]

Effective Date Note: At 65 FR 76750, Dec. 7, 2000, the table in appendix A to subpart Q was amended under I.F. "Radioactive contaminants" by revising entries 1, 2, and 3, and by adding entry 4; by redesignating table endnotes 9 through 17 as 11 through 19; and by adding new endnotes 9 and 10, effective Dec. 8, 2003. For the convenience of the user, the revised and added text is set forth as follows:

Appendix A to Subpart Q of Part 141 – NPDWR Violations and Other Situations Requiring Public Notice [1]

Contaminant	MCL/MCDL/TT Violations [2]		Monitoring and testing procedure violations	
	Tier of public notice required	Citation	Tier of public notice required	Citation
I. Violations of National Primary Drinking Water Regulations (NPDWR) [3]				
* * * *	*	*	*	
F. Radioactive contaminants				
1. Beta/photon emitters	2	141.66(d)	3	141.25(a) 141.26(b)
2. Alpha emitters	2	141.66(c)	3	141.25(a) 141.26(a)
3. Combined radium (226 and 228)	2	141.66(b)	3	141.25(a) 141.26(a)
4. Uranium	[9] 2	141.66(e)	[10] 3	141.25(a) 141.26(a)
* * * *	*	*	*	

Appendix A -- Endnotes

[1] Violations and other situations not listed in this table (e.g., reporting violations and failure to prepare Consumer Confidence Reports), do not require notice, unless otherwise determined by the primary agency. Primacy agencies may, at their option, also require a more stringent public notice tier (e.g., Tier 1 instead of Tier 2 or Tier 2 instead of Tier 3) for specific violations and situations listed in this Appendix, as authorized under Sec. 141.202(a) and Sec. 141.203(a).

[2] MCL--Maximum contaminant level, MRDL--Maximum residual disinfectant level, TT--Treatment technique.

[3] The term Violations of National Primary Drinking Water Regulations (NPDWR) is used here to include violations of MCL, MRDL, treatment technique, monitoring, and testing procedure requirements.

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[9] The uranium MCL Tier 2 violation citations are effective December 8, 2003 for all community water systems.

[10] The uranium Tier 3 violation citations are effective December 8, 2000 for all community water systems.

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Appendix B to Subpart Q of Part 141 – Standard Health Effects Language for Public Notification

Contaminant	MCLG [1] mg/L	MCL [2] mg/L	Standard health effects language for public notification
National Primary Drinking Water Regulations (NPDWR) A. Microbiological Contaminants			
1a. Total coliform	Zero	See footnote [3]	Coliforms are bacteria that are naturally present in the environment and are used as an indicator that other, potentially- harmful, bacteria may be present. Coliforms were found in more samples than allowed and this was a warning of potential problems.
1b. Fecal coliform/E. coli	Zero	Zero	Fecal coliforms and E. coli are bacteria whose presence indicates that the water may be contaminated with human or animal wastes. Microbes in these wastes can cause short-term effects, such as diarrhea, cramps, nausea, headaches, or other symptoms. They may pose a special health risk for infants, young children, some of the elderly, and people with severely compromised immune systems.
2a. Turbidity (MCL) [4]	None	1 NTU [5]/5 NTU	Turbidity has no health effects. However, turbidity can interfere with disinfection and provide a medium for microbial growth. Turbidity may indicate the presence of disease-causing organisms. These organisms include bacteria, viruses, and parasites that can cause symptoms such as nausea, cramps, diarrhea and associated headaches.
2b. Turbidity (SWTR TT) [6]	None	TT [7]	Turbidity has no health effects. However, turbidity can interfere with disinfection and provide a medium for microbial growth. Turbidity may indicate the presence of disease-causing organisms. These organisms include bacteria, viruses, and parasites that can cause symptoms such as nausea, cramps, diarrhea and associated headaches.
2c. Turbidity (IESWTR TT and LT1ESWTR TT) [8]	None	TT	Turbidity has no health effects. However, turbidity can interfere with disinfection and provide a medium for microbial growth. Turbidity may indicate the presence of disease-causing organisms. These organisms include bacteria, viruses, and parasites that can cause symptoms such as nausea, cramps, diarrhea and associated headaches.

Contaminant	MCLG [1] mg/L	MCL [2] mg/L	Standard health effects language for public notification
B. Surface Water Treatment Rule (SWTR), Interim Enhanced Surface Water Treatment Rule (IESWTR), Long Term 1 Enhanced Surface Water Treatment Rule (LT1ESWTR) and the Filter Backwash Recycling Rule (FBRR) violations			
3. *Giardia lamblia* (SWTR/IESWTR/LT1ESWTR).	Zero	TT [10]	Inadequately treated water may contain disease-causing organisms. These organisms include bacteria, viruses, and parasites which can cause symptoms such as nausea, cramps, diarrhea, and associated headaches.
4. Viruses (SWTR/IESWTR/LT1ESWTR).			
5. Heterotrophic plate count (HPC) bacteria [9] (SWTR/IESWTR/LT1ESWTR).			
6. Legionella (SWTR/IESWTR/LT1ESWTR).			
7. Cryptosporidium (IESWTR/FBRR/LT1ESWTR).			
C. Inorganic Chemicals (IOCs)			
8. Antimony	0.006	0.006	Some people who drink water containing antimony well in excess of the MCL over many years could experience increases in blood cholesterol and decreases in blood sugar.
9. Arsenic [11]	0	0.010	Some people who drink water containing arsenic in excess of the MCL over many years could experience skin damage or problems with their circulatory system, and may have an increased risk of getting cancer.
10. Asbestos (10 µm)	7 MFL [12]	7 MFL	Some people who drink water containing asbestos in excess of the MCL over many years may have an increased risk of developing benign intestinal polyps.
11. Barium	2	2	Some people who drink water containing barium in excess of the MCL over many years could experience an increase in their blood pressure.
12. Beryllium	0.004	0.004	Some people who drink water containing beryllium well in excess of the MCL over many years could develop intestinal lesions.
13. Cadmium	0.005	0.005	Some people who drink water containing cadmium in excess of the MCL over many years could experience kidney damage.
14. Chromium (total)	0.1	0.1	Some people who use water containing chromium well in excess of the MCL over many years could experience allergic dermatitis.

Contaminant	MCLG [1] mg/L	MCL [2] mg/L	Standard health effects language for public notification
15. Cyanide	0.2	0.2	Some people who drink water containing cyanide well in excess of the MCL over many years could experience nerve damage or problems with their thyroid.
16. Fluoride	4.0	4.0	Some people who drink water containing fluoride in excess of the MCL over many years could get bone disease, including pain and tenderness of the bones. Fluoride in drinking water at half the MCL or more may cause mottling of children's teeth, usually in children less than nine years old. Mottling, also known as dental fluorosis, may include brown staining and/or pitting of the teeth, and occurs only in developing teeth before they erupt from the gums.
17. Mercury (inorganic)	0.002	0.002	Some people who drink water containing inorganic mercury well in excess of the MCL over many years could experience kidney damage.
18. Nitrate	10	10	Infants below the age of six months who drink water containing nitrate in excess of the MCL could become seriously ill and, if untreated, may die. Symptoms include shortness of breath and blue baby syndrome.
19. Nitrite	1	1	Infants below the age of six months who drink water containing nitrite in excess of the MCL could become seriously ill and, if untreated, may die. Symptoms include shortness of breath and blue baby syndrome.
20. Total Nitrate and Nitrite	10	10	Infants below the age of six months who drink water containing nitrate and nitrite in excess of the MCL could become seriously ill and, if untreated, may die. Symptoms include shortness of breath and blue baby syndrome.
21. Selenium	0.05	0.05	Selenium is an essential nutrient. However, some people who drink water containing selenium in excess of the MCL over many years could experience hair or fingernail losses, numbness in fingers or toes, or problems with their circulation.
22. Thallium	0.0005	0.002	Some people who drink water containing thallium in excess of the MCL over many years could experience hair loss, changes in their blood, or problems with their kidneys, intestines, or liver.
D. Lead and Copper Rule			
23. Lead	Zero	TT [13]	Infants and children who drink water containing lead in excess of the action level could experience delays in their physical or mental development.

Contaminant	MCLG [1] mg/L	MCL [2] mg/L	Standard health effects language for public notification
			Children could show slight deficits in attention span and learning abilities. Adults who drink this water over many years could develop kidney problems or high blood pressure.
24. Copper	1.3	TT [14]	Copper is an essential nutrient, but some people who drink water containing copper in excess of the action level over a relatively short amount of time could experience gastrointestinal distress. Some people who drink water containing copper in excess of the action level over many years could suffer liver or kidney damage. People with Wilson's Disease should consult their personal doctor.
E. Synthetic Organic Chemicals (SOCs)			
25. 2,4-D	0.07	0.07	Some people who drink water containing the weed killer 2,4-D well in excess of the MCL over many years could experience problems with their kidneys, liver, or adrenal glands.
26. 2,4,5-TP (Silvex)	0.05	0.05	Some people who drink water containing silvex in excess of the MCL over many years could experience liver problems.
27. Alachlor	Zero	0.002	Some people who drink water containing alachlor in excess of the MCL over many years could have problems with their eyes, liver, kidneys, or spleen, or experience anemia, and may have an increased risk of getting cancer.
28. Atrazine	0.003	0.003	Some people who drink water containing atrazine well in excess of the MCL over many years could experience problems with their cardiovascular system or reproductive difficulties.
29. Benzo(a)pyrene (PAHs)	Zero	0.0002	Some people who drink water containing benzo(a)pyrene in excess of the MCL over many years may experience reproductive difficulties and may have an increased risk of getting cancer.
30. Carbofuran	0.04	0.04	Some people who drink water containing carbofuran in excess of the MCL over many years could experience problems with their blood, or nervous or reproductive systems.
31. Chlordane	Zero	0.002	Some people who drink water containing chlordane in excess of the MCL over many years could experience problems with their liver or nervous system, and may have an increased risk of getting cancer.

Contaminant	MCLG [1] mg/L	MCL [2] mg/L	Standard health effects language for public notification
32. Dalapon	0.2	0.2	Some people who drink water containing dalapon well in excess of the MCL over many years could experience minor kidney changes.
33. Di(2-ethylhexyl) adipate	0.4	0.4	Some people who drink water containing di(2-ethylhexyl) adipate well in excess of the MCL over many years could experience toxic effects such as weight loss, liver enlargement or possible reproductive difficulties.
34. Di(2-ethylhexyl) phthalate	Zero	0.006	Some people who drink water containing di(2-ethylhexyl) phthalate well in excess of the MCL over many years may have problems with their liver, or experience reproductive difficulties, and may have an increased risk of getting cancer.
35. Dibromochloropropane (DBCP)	Zero	0.0002	Some people who drink water containing DBCP in excess of the MCL over many years could experience reproductive difficulties and may have an increased risk of getting cancer.
36. Dinoseb	0.007	0.007	Some people who drink water containing dinoseb well in excess of the MCL over many years could experience reproductive difficulties.
37. Dioxin (2,3,7,8-TCDD)	Zero	$3x10^{-8}$	Some people who drink water containing dioxin in excess of the MCL over many years could experience reproductive difficulties and may have an increased risk of getting cancer.
38. Diquat	0.02	0.02	Some people who drink water containing diquat in excess of the MCL over many years could get cataracts.
39. Endothall	0.1	0.1	Some people who drink water containing endothall in excess of the MCL over many years could experience problems with their stomach or intestines.
40. Endrin	0.002	0.002	Some people who drink water containing endrin in excess of the MCL over many years could experience liver problems.
41. Ethylene dibromide	Zero	0.00005	Some people who drink water containing ethylene dibromide in excess of the MCL over many years could experience problems with their liver, stomach, reproductive system, or kidneys, and may have an increased risk of getting cancer.
42. Glyphosate	0.7	0.7	Some people who drink water containing glyphosate in excess of the MCL over many years could experience problems with their kidneys or reproductive difficulties.

Contaminant	MCLG [1] mg/L	MCL [2] mg/L	Standard health effects language for public notification
43. Heptachlor	Zero	0.0004	Some people who drink water containing heptachlor in excess of the MCL over many years could experience liver damage and may have an increased risk of getting cancer.
44. Heptachlor epoxide	Zero	0.0002	Some people who drink water containing heptachlor epoxide in excess of the MCL over many years could experience liver damage, and may have an increased risk of getting cancer.
45. Hexachlorobenzene	Zero	0.001	Some people who drink water containing hexachlorobenzene in excess of the MCL over many years could experience problems with their liver or kidneys, or adverse reproductive effects, and may have an increased risk of getting cancer.
46. Hexachlorocyclo-pentadiene	0.05	0.05	Some people who drink water containing hexachlorocyclopentadiene well in excess of the MCL over many years could experience problems with their kidneys or stomach.
47. Lindane	0.0002	0.0002	Some people who drink water containing lindane in excess of the MCL over many years could experience problems with their kidneys or liver.
48. Methoxychlor	0.04	0.04	Some people who drink water containing methoxychlor in excess of the MCL over many years could experience reproductive difficulties.
49. Oxamyl (Vydate)	0.2	0.2	Some people who drink water containing years could experience slight nervous system effects.
50. Pentachlorophenol	Zero	0.001	Some people who drink water containing pentachlorophenol in excess of the MCL over many years could experience problems with their liver or kidneys, and may have an increased risk of getting cancer.
51. Picloram	0.5	0.5	Some people who drink water containing picloram in excess of the MCL over many years could experience problems with their liver.
52. Polychlorinated biphenyls (PCBs)	Zero	0.0005	Some people who drink water containing PCBs in excess of the MCL over many years could experience changes in their skin, problems with their thymus gland, immune deficiencies, or reproductive or nervous system difficulties, and may have an increased risk of getting cancer.
53. Simazine	0.004	0.004	Some people who drink water containing simazine in excess of the MCL over many years could experience problems with their blood.
54. Toxaphene	Zero	0.003	Some people who drink water containing toxaphene in excess of the MCL

Contaminant	MCLG [1] mg/L	MCL [2] mg/L	Standard health effects language for public notification
			over many years could have problems with their kidneys, liver, or thyroid, and may have an increased risk of getting cancer.
F. Volatile Organic Chemicals (VOCs)			
55. Benzene	Zero	0.005	Some people who drink water containing benzene in excess of the MCL over many years could experience anemia or a decrease in blood platelets, and may have an increased risk of getting cancer.
56. Carbon tetrachloride	Zero	0.005	Some people who drink water containing carbon tetrachloride in excess of the MCL over many years could experience problems with their liver and may have an increased risk of getting cancer.
57. Chlorobenzene (monochloro-benzene)	0.1	0.1	Some people who drink water containing chlorobenzene in excess of the MCL over many years could experience problems with their liver or kidneys.
58. o-Dichlorobenzene	0.6	0.6	Some people who drink water containing o-dichlorobenzene well in excess of the MCL over many years could experience problems with their liver, kidneys, or circulatory systems.
59. p-Dichlorobenzene	0.075	0.075	Some people who drink water containing p-dichlorobenzene in excess of the MCL over many years could experience anemia, damage to their liver, kidneys, or spleen, or changes in their blood.
60. 1,2-Dichloroethane	Zero	0.005	Some people who drink water containing1,2-dichloroethane in excess of the MCL over many years may have an increased risk of getting cancer.
61. 1,1-Dichloroethylene	0.007	0.007	Some people who drink water containing1,1-dichloroethylene in excess of the MCL over many years could experience problems with their liver.
62. cis-1,2-Dichloroethylene	0.07	0.07	Some people who drink water containing cis-1,2-dichloroethylene in excess of the MCL over many years could experience problems with their liver.
63. trans-1,2-Dichloroethylene	0.1	0.1	Some people who drink water containing trans-1,2-dichloroethylene well in excess of the MCL over many years could experience problems with their liver.
64. Dichloromethane	Zero	0.005	Some people who drink water containing dichloromethane in excess of the MCL over many years could have liver problems and may have an increased risk of getting cancer.

Contaminant	MCLG [1] mg/L	MCL [2] mg/L	Standard health effects language for public notification
65. 1,2-Dichloropropane	Zero	0.005	Some people who drink water containing 1,2-dichloropropane in excess of the MCL over many years may have an increased risk of getting cancer.
66. Ethylbenzene	0.7	0.7	Some people who drink water containing ethylbenzene well in excess of the MCL over many years could experience problems with their liver or kidneys.
67. Styrene	0.1	0.1	Some people who drink water containing styrene well in excess of the MCL over many years could have problems with their liver, kidneys, or circulatory system.
68. Tetrachloroethylene	Zero	0.005	Some people who drink water containing tetrachloroethylene in excess of the MCL over many years could have problems with their liver, and may have an increased risk of getting cancer.
69. Toluene	1	1	Some people who drink water containing toluene well in excess of the MCL over many years could have problems with their nervous system, kidneys, or liver.
70. 1,2,4-Trichlorobenzene	0.07	0.07	Some people who drink water containing1,2,4-trichlorobenzene well in excess of the MCL over many years could experience changes in their adrenal glands.
71. 1,1,1-Trichloroethane	0.2	0.2	Some people who drink water containing1,1,1-trichloroethane in excess of the MCL over many years could experience problems with their liver, nervous system, or circulatory system.
72. 1,1,2-Trichloroethane	0.003	0.005	Some people who drink water containing1,1,2-trichloroethane well in excess of the MCL over many years could have problems with their liver, kidneys, or immune systems.
73. Trichloroethylene	Zero	0.005	Some people who drink water containing trichloroethylene in excess of the MCL over many years could experience problems with their liver and may have an increased risk of getting cancer.
74. Vinyl chloride	Zero	0.002	Some people who drink water containing vinyl chloride in excess of the MCL over many years may have an increased risk of getting cancer.
75. Xylenes (total)	10	10	Some people who drink water containing xylenes in excess of the MCL over many years could experience damage to their nervous system.

Contaminant	MCLG [1] mg/L	MCL [2] mg/L	Standard health effects language for public notification
G. Radioactive Contaminants			
76. Beta/photon emitters	Zero	4 mrem/yr [15]	Certain minerals are radioactive and may emit forms of radiation known as photons and beta radiation. Some people who drink water containing beta and photon emitters in excess of the MCL over many years may have an increased risk of getting cancer.
77. Alpha emitters	Zero	15 pCi/L [16]	Certain minerals are radioactive and may emit a form of radiation known as alpha radiation. Some people who drink water containing alpha emitters in excess of the MCL over many years may have an increased risk of getting cancer.
78. Combined radium (226 & 228)	Zero	5 pCi/L	Some people who drink water containing radium 226 or 228 in excess of the MCL over many years may have an increased risk of getting cancer.
H. Disinfection Byproducts (DBPs), Byproduct Precursors, and Disinfectant Residuals: Where disinfection is used in the treatment of drinking water, disinfectants combine with organic and inorganic matter present in water to form chemicals called disinfection byproducts (DBPs). EPA sets standards for controlling the levels of disinfectants and DBPs in drinking water, including trihalomethanes (THMs) and haloacetic acids (HAAs) [17]			
79. Total trihalomethanes (TTHMs)	N/A	0.10/0.080[18] [19]	Some people who drink water containing trihalomethanes in excess of the MCL over many years may experience problems with their liver, kidneys, or central nervous system, and may have an increased risk of getting cancer.
80. Haloacetic Acids (HAA)	N/A	0.060 [20]	Some people who drink water containing haloacetic acids in excess of the MCL over many years may have an increased risk of getting cancer.
81. Bromate	Zero	0.010	Some people who drink water containing bromate in excess of the MCL over many years may have an increased risk of getting cancer.
82. Chlorite	0.08	1.0	Some infants and young children who drink water containing chlorite in excess of the MCL could experience nervous system effects. Similar effects may occur in fetuses of pregnant women who drink water containing chlorite in excess of the MCL. Some people may experience anemia.
83. Chlorine	4 (MRDLG)[21]	4.0 (MRDL)[22]	Some people who use water containing chlorine well in excess of the MRDL could experience irritating effects to their eyes and nose. Some people who drink water containing chlorine well in excess of the MRDL could experience stomach discomfort.
84. Chloramines	4 (MRDLG)	4.0 (MRDL)	Some people who use water containing chloramines well in excess of the MRDL could experience irritating effects to their eyes and nose. Some

Contaminant	MCLG [1] mg/L	MCL [2] mg/L	Standard health effects language for public notification
			people who drink water containing chloramines well in excess of the MRDL could experience stomach discomfort or anemia.
85a. Chlorine dioxide, where any 2 consecutive daily samples taken at the entrance to the distribution system are above the MRDL.	0.8 (MRDLG)	0.8 (MRDL)	Some infants and young children who drink water containing chlorine dioxide in excess of the MRDL could experience nervous system effects. Similar effects may occur in fetuses of pregnant women who drink water containing chlorine dioxide in excess of the MRDL. Some people may experience anemia. Add for public notification only: The chlorine dioxide violations reported today are the result of exceedances at the treatment facility only, not within the distribution system which delivers water to consumers. Continued compliance with chlorine dioxide levels within the distribution system minimizes the potential risk of these violations to consumers.
85b. Chlorine dioxide, where one or more distribution system samples are above the MRDL.	0.8 (MRDLG)	0.8 (MRDL)	Some infants and young children who drink water containing chlorine dioxide in excess of the MRDL could experience nervous system effects. Similar effects may occur in fetuses of pregnant women who drink water containing chlorine dioxide in excess of the MRDL. Some people may experience anemia. Add for public notification only: The chlorine dioxide violations reported today include exceedances of the EPA standard within the distribution system which delivers water to consumers. Violations of the chlorine dioxide standard within the distribution system may harm human health based on short- term exposures. Certain groups, including fetuses, infants, and young children, may be especially susceptible to nervous system effects from excessive chlorine dioxide exposure.
86. Control of DBP precursors (TOC).	None	TT	Total organic carbon (TOC) has no health effects. However, total organic carbon provides a medium for the formation of disinfection byproducts. These byproducts include trihalomethanes(THMs) and haloacetic acids (HAAs). Drinking water containing these byproducts in excess of the MCL may lead to adverse health effects, liver or kidney problems, or nervous system effects, and may lead to an increased risk of getting cancer.

Contaminant	MCLG [1] mg/L	MCL [2] mg/L	Standard health effects language for public notification
I. Other Treatment Techniques			
87. Acrylamide	Zero	TT	Some people who drink water containing high levels of acrylamide over a long period of time could have problems with their nervous system or blood, and may have an increased risk of getting cancer.
88. Epichlorohydrin	Zero	TT	Some people who drink water containing high levels of epichlorohydrin over a long period of time could experience stomach problems, and may have an increased risk of getting cancer.

Appendix B – Endnotes

[1] MCLG--Maximum contaminant level goal

[2] MCL--Maximum contaminant level

[3] For water systems analyzing at least 40 samples per month, no more than 5.0 percent of the monthly samples may be positive for total coliforms. For systems analyzing fewer than 40 samples per month, no more than one sample per month may be positive for total coliforms.

[4] There are various regulations that set turbidity standards for different types of systems, including 40 CFR 141.13, and the 1989 Surface Water Treatment Rule, the 1998 Interim Enhanced Surface Water Treatment Rule and the 2001 Long Term 1 Enhanced Surface Water Treatment Rule. The MCL for the monthly turbidity average is 1 NTU; the MCL for the 2-day average is 5 NTU for systems that are required to filter but have not yet installed filtration (40 CFR 141.13).

[5] NTU--Nephelometric turbidity unit

[6] There are various regulations that set turbidity standards for different types of systems, including 40 CFR 141.13, and the 1989 Surface Water Treatment Rule, the 1998 Interim Enhanced Surface Water Treatment Rule and the 2001 Long Term 1 Enhanced Surface Water Treatment Rule. Systems subject to the Surface Water Treatment Rule (both filtered and unfiltered) may not exceed 5 NTU. In addition, in filtered systems, 95 percent of samples each month must not exceed 0.5 NTU in systems using conventional or direct filtration and must not exceed 1 NTU in systems using slow sand or diatomaceous earth filtration or other filtration technologies approved by the primacy agency.

[7] TT--Treatment technique

[8] There are various regulations that set turbidity standards for different types of systems, including 40 CFR 141.13, the 1989 Surface Water Treatment Rule (SWTR), the 1998 Interim Enhanced Surface Water Treatment Rule (IESWTR) and the 2001 Long Term 1 Enhanced Surface Water Treatment Rule (LT1ESWTR). For systems subject to the IESWTR (systems serving at least 10,000 people, using surface water or ground water under the direct influence of surface water), that use conventional filtration or direct filtration, after January 1, 2002, the turbidity level of a system's combined filter effluent may not exceed 0.3 NTU in at least 95 percent of monthly measurements, and the turbidity level of a system's combined filter effluent must not exceed 1 NTU at any time. Systems subject to the IESWTR using technologies other than conventional, direct, slow sand, or diatomaceous earth filtration must meet turbidity limits set by the primacy agency. For systems subject to the LT1ESWTR (systems serving fewer than 10,000 people, using surface water or ground water under the direct influence of surface water) that use conventional filtration or direct filtration, after January 14, 2005 the turbidity level of a system's combined filter

effluent may not exceed 0.3 NTU in at least 95 percent of monthly measurements, and the turbidity level of a system's combined filter effluent must not exceed 1 NTU at any time. Systems subject to the LT1ESWTR using technologies other than conventional, direct, slow sand, or diatomaceous earth filtration must meet turbidity limits set by the primacy agency.

[9] The bacteria detected by heterotrophic plate count (HPC) are not necessarily harmful. HPC is simply an alternative method of determining disinfectant residual levels. The number of such bacteria is an indicator of whether there is enough disinfectant in the distribution system.

[10] SWTR, IESWTR, and LT1ESWTR treatment technique violations that involve turbidity exceedances may use the health effects language for turbidity instead.

[11] These arsenic values are effective January 23, 2006. Until then, the MCL is 0.05 mg/L and there is no MCLG.

[12] Millions fibers per liter.

[13] Action Level = 0.015 mg/L

[14] Action Level = 1.3 mg/L

[15] Millirems per years

[16] Picocuries per liter

[17] Surface water systems and ground water systems under the direct influence of surface water are regulated under Subpart H of 40 CFR 141. Subpart H community and non-transient non-community systems serving = 10,000 must comply with DBP MCLs and disinfectant maximum residual disinfectant levels (MRDLs) beginning January 1, 2002. All other community and non-transient noncommunity systems must meet the MCLs and MRDLs beginning January 1, 2004. Subpart H transient non- community systems serving 10,000 or more persons and using chlorine dioxide as a disinfectant or oxidant must comply with the chlorine dioxide MRDL beginning January 1, 2002. Subpart H transient non- community systems serving fewer than 10,000 persons and systems using only ground water not under the direct influence of surface water and using chlorine dioxide as a disinfectant or oxidant must comply with the chlorine dioxide MRDL beginning January 1, 2004.

[18] The MCL of 0.10 mg/l for TTHMs is in effect until January 1, 2002 for Subpart H community water systems serving 10,000 or more. This MCL is in effect until January 1, 2004 for community water systems with a population of 10,000 or more using only ground water not under the direct influence of surface water. After these deadlines, the MCL will be 0.080 mg/l. On January 1, 2004, all systems serving less than 10,000 will have to comply with the new MCL as well.

[19] The MCL for total trihalomethanes is the sum of the concentrations of the individual trihalomethanes.

[20] The MCL for haloacetic acids is the sum of the concentrations of the individual haloacetic acids.

[21] MRDLG--Maximum residual disinfectant level goal.

[22] MRDL--Maximum residual disinfectant level.

[65 FR 26043, May 4, 2000; 65 FR 38629, June 21, 2000; 65 FR 40521, 40522, June 30, 2000, as amended at 66 FR 7065, Jan. 22, 2001; 66 FR 31104, June 8, 2001; 67 FR 1838, Jan. 14, 2002; 67 FR 70857, Nov. 27, 2002; 68 FR 14507, Mar. 25, 2003]

Effective Date Note: At 65 FR 76751, Dec. 7, 2000, appendix B to subpart Q of part 141 was amended by redesignating table entries 79 through 84 and 86 through 88 as 80 through 85 and 87 through 89, respectively, and entries 85a and 85b as 86a and 86b, respectively; by adding a new entry 79 for uranium under "G. Radioactive contaminants"; by redesignating table endnote entries 16 through 21 as 17 through 22; and by adding a new endnote 16, effective Dec. 8, 2003. For the convenience of the user, the added text is set forth as follows:

Appendix B to Subpart Q of Part 141 – Standard Health Effects Language for Public Notification

Contaminant	MCLG[1] mg/L	MCLG[2] mg/L	Standard health effects language for public notification
National Primary Drinking Water Regulations (NPDWR)			
* * *			* * * *
G. Radioactive contaminants			
* * *			* * * *
79. Uranium [16]	Zero	30 µg/L	Some people who drink water containing uranium in excess of the MCL over many years may have an increased risk of getting cancer and kidney toxicity.
			* * * *

Appendix B – Endnotes

[1] MCLG-Maximum contaminant level goal.

[2] MCL-Maximum contaminant level.

[16] The uranium MCL is effective December 8, 2003 for all community water systems.

Appendix C to Subpart Q of Part 141 – List of Acronyms Used in Public Notification Regulation

CCR Consumer Confidence Report
CWS Community Water System
DBP Disinfection Byproduct
EPA Environmental Protection Agency
HPC Heterotrophic Plate Count
IESWTR Interim Enhanced Surface Water Treatment Rule
IOC Inorganic Chemical
LCR Lead and Copper Rule
MCL Maximum Contaminant Level
MCLG Maximum Contaminant Level Goal
MRDL Maximum Residual Disinfectant Level
MRDLG Maximum Residual Disinfectant Level Goal

NCWS Non-Community Water System
NPDWR National Primary Drinking Water Regulation
NTNCWS Non-Transient Non-Community Water System
NTU Nephelometric Turbidity Unit
OGWDW Office of Ground Water and Drinking Water
OW Office of Water
PN Public Notification
PWS Public Water System
SDWA Safe Drinking Water Act
SMCL Secondary Maximum Contaminant Level
SOC Synthetic Organic Chemical
SWTR Surface Water Treatment Rule
TCR Total Coliform Rule
TT Treatment Technique
TWS Transient Non-Community Water System
VOC Volatile Organic Chemical

Subparts R-S [Reserved]

Subpart T – Enhanced Filtration and Disinfection – Systems Serving Fewer Than 10,000 People

Sec. 141.530 What is a disinfection profile and who must develop one?

A disinfection profile is a graphical representation of your system's level of *Giardia lamblia* or virus inactivation measured during the course of a year. If you are a subpart H community or non-transient non-community water systems which serves fewer than 10,000 persons, your system must develop a disinfection profile unless your State determines that your system's profile is unnecessary. Your State may approve the use of a more representative data set for disinfection profiling than the data set required under Sec. 141.532-141.536.

Sec. 141.531 What criteria must a State use to determine that a profile is unnecessary?

States may only determine that a system's profile is unnecessary if a system's TTHM and HAA5 levels are below 0.064 mg/L and 0.048 mg/L, respectively. To determine these levels, TTHM and HAA5 samples must be collected after January 1, 1998, during the month with the warmest water temperature, and at the point of maximum residence time in your distribution system.

Sec. 141.532 How does my system develop a disinfection profile and when must it begin?

A disinfection profile consists of three steps:

(a) First, your system must collect data for several parameters from the plant as discussed in Sec. 141.533 over the course of 12 months. If your system serves between 500 and 9,999 persons you must begin to collect data no later than July 1, 2003. If your system serves fewer than 500 persons you must begin to collect data no later than January 1, 2004.

(b) Second, your system must use this data to calculate weekly log inactivation as discussed in Sec. 141.534 and 141.535; and

(c) Third, your system must use these weekly log inactivations to develop a disinfection profile as specified in Sec. 141.536.

Sec. 141.533 What data must my system collect to calculate a disinfection profile?

Your system must monitor the following parameters to determine the total log inactivation using the analytical methods in Sec. 141.74 (a), once per week on the same calendar day, over 12 consecutive months:

(a) The temperature of the disinfected water at each residual disinfectant concentration sampling point during peak hourly flow;

(b) If your system uses chlorine, the pH of the disinfected water at each residual disinfectant concentration sampling point during peak hourly flow;

(c) The disinfectant contact time(s) ("T") during peak hourly flow; and

(d) The residual disinfectant concentration(s) ("C") of the water before or at the first customer and prior to each additional point of disinfection during peak hourly flow.

Sec. 141.534 How does my system use this data to calculate an inactivation ration?

Calculate the total inactivation ratio as follows, and multiply the value by 3.0 to determine log inactivation of *Giardia lamblia*:

If your system * * *	Your system must determine * * *
(a) Uses only one point of disinfectant application.	(1) One inactivation ratio (CTcalc/CT $_{99.9}$) before or at the first customer during peak hourly flow or
	(2) Successive CTcalc/CT $_{99.9}$ values, representing sequential inactivation ratios, between the point of disinfectant application and a point before or at the first customer during peak hourly flow. Under this alternative, your system must calculate the total inactivation ratio by determining (CTcalc/CT $_{99.9}$) for each sequence and then adding the (CTcalc/CT $_{99.9}$) values together to determine (3CTcalc/CT $_{99.9}$).
(b) Uses more than one point of disinfectant application before the first customer.	The (CTcalc/CT $_{99.9}$) value of each disinfection segment immediately prior to the next point of disinfectant application, or for the final segment, before or at the first customer, during peak hourly flow using the procedure specified in paragraph (a)(2) of this section.

Sec. 141.535 What if my system uses chloramines, ozone, or chlorine dioxide for primary disinfection?

If your system uses chloramines, ozone, or chlorine dioxide for primary disinfection, you must also calculate the logs of inactivation for viruses and develop an additional disinfection profile for viruses using methods approved by the State.

Sec. 141.536 My system has developed an inactivation ratio; what must we do now?

Each log inactivation serves as a data point in your disinfection profile. Your system will have obtained 52 measurements (one for every week of the year). This will allow your system and the State the opportunity to evaluate how microbial inactivation varied over the course of the year by

looking at all 52 measurements (your Disinfection Profile). Your system must retain the Disinfection Profile data in graphic form, such as a spreadsheet, which must be available for review by the State as part of a sanitary survey. Your system must use this data to calculate a benchmark if you are considering changes to disinfection practices.

Disinfection Benchmark

Sec. 141.540 Who has to develop a disinfection benchmark?

If you are a subpart H system required to develop a disinfection profile under Sec. 141.530 through 141.536, your system must develop a Disinfection Benchmark if you decide to make a significant change to your disinfection practice. Your system must consult with the State for approval before you can implement a significant disinfection practice change.

Sec. 141.541 What are significant changes to disinfection practice?

Significant changes to disinfection practice include:

(a) Changes to the point of disinfection;

(b) Changes to the disinfectant(s) used in the treatment plant;

(c) Changes to the disinfection process; or

(d) Any other modification identified by the State.

Sec. 141.542 What must my system do if we are considering a significant change to disinfection practices?

If your system is considering a significant change to its disinfection practice, your system must calculate a disinfection benchmark(s) as described in Sec. 141.543 and 141.544 and provide the benchmark(s) to your State. Your system may only make a significant disinfection practice change after consulting with the State for approval. Your system must submit the following information to the State as part of the consultation and approval process:

(a) A description of the proposed change;

(b) The disinfection profile for *Giardia lamblia* (and, if necessary, viruses) and disinfection benchmark;

(c) An analysis of how the proposed change will affect the current levels of disinfection; and

(d) Any additional information requested by the State.

Sec. 141.543 How is the disinfection benchmark calculated?

If your system is making a significant change to its disinfection practice, it must calculate a disinfection benchmark using the procedure specified in the following table.

To calculate a disinfection benchmark your system must perform the following steps
Step 1: Using the data your system collected to develop the Disinfection Profile, determine the average *Giardia lamblia* inactivation for each calendar month by dividing the sum of all *Giardia lamblia* inactivations for that month by the number of values calculated for that month.
Step 2: Determine the lowest monthly average value out of the twelve values. This value becomes the disinfection benchmark.

Sec. 141.544 What if my system uses chloramines, ozone, or chlorine dioxide for primary disinfection?

If your system uses chloramines, ozone or chlorine dioxide for primary disinfection your system must calculate the disinfection benchmark from the data your system collected for viruses to develop the disinfection profile in addition to the *Giardia lamblia* disinfection benchmark calculated under Sec. 141.543. This viral benchmark must be calculated in the same manner used to calculate the *Giardia lamblia* disinfection benchmark in Sec. 141.543.

Individual Filter Turbidity Requirements

Sec. 141.563 What follow-up action is my system required to take based on continuous turbidity monitoring?

Follow-up action is required according to the following tables:

If * * *	Your system must * * *
(a) The turbidity of an individual filter (or the turbidity of combined filter effluent (CFE) for systems with 2 filters that monitor CFE in lieu of individuals filters) exceeds 1.0 NTU in two consecutive recordings 15 minutes apart.	Report to the State by the 10th of the following month and include the filter number(s), corresponding date(s), turbidity value(s) which exceeded 1.0 NTU, and the cause (if known) for the exceedance(s).

If a system was required to report to the State * * *	Your system must * * *
(b) For three months in a row and turbidity exceeded 1.0 NTU in two consecutive recordings 15 minutes apart at the same filter (or CFE for systems with 2 filters that monitor CFE in lieu of individual filters).	Conduct a self-assessment of the filter(s) within 14 days of the day the filter exceeded 1.0 NTU in two consecutive measurements for the third straight month unless a CPE as specified in paragraph (c) of this section was required. Systems with 2 filters that monitor CFE in lieu of individual filters must conduct a self assessment on both filters. The self-assessment must consist of at least the following components: assessment of filter performance; development of a filter profile; identification and prioritization of factors limiting filter performance; assessment of the applicability of corrections; and preparation of a filter self-assessment report. If a self-assessment is required, the date that it was triggered and the date that it was completed.
(c) For two months in a row and turbidity exceeded 2.0 NTU in 2 consecutive recordings 15 minutes apart at the same filter (or CFE for systems with 2 filters that monitor CFE in lieu of individual filters).	Arrange to have a comprehensive performance evaluation (CPE) conducted by the State or a third party approved by the State not later than 60 days following the day the filter exceeded 2.0 NTU in two consecutive measurements for the second straight month. If a CPE has been completed by the State or a third party approved by the State within the 12 prior months or the system and State are jointly participating in an ongoing Comprehensive Technical Assistance (CTA) project at the system, a new CPE is not required. If conducted, a CPE must be completed and submitted to the State no later than 120 days following the day the filter exceeded 2.0 NTU in two consecutive measurements for the second straight month.

Sec. 141.570 What does subpart T require that my system report to the State?

This subpart T requires your system to report several items to the State. The following table describes the items which must be reported and the frequency of reporting. Your system is required to report the information described in the following table, if it is subject to the specific requirement shown in the first column.

Corresponding requirements	Description of information to report	Frequency
(a) Combined Filter Effluent Requirements. (§§ 141.550-141.553).	(1) The total number of filtered water turbidity measurements taken during the month.	By the 10th of the following month.
	(2) The number and percentage of filtered water turbidity measurements taken during the month which are less than or equal to your system's required 95th percentile limit.	By the 10th of the following month.
	(3) The date and value of any turbidity measurements taken during the month which exceed the maximum turbidity value for your filtration system.	By the 10th of the following month.
(b) Individual Turbidity Requirements. (§§ 141.560-141.564)	(1) That your system conducted individual filter turbidity monitoring during the month.	By the 10th of the following month.
	(2) The filter number(s), corresponding date(s), and the turbidity value(s) which exceeded 1.0 NTU during the month, but only if 2 consecutive measurements exceeded 1.0 NTU.	By the 10th of the following month.
	(3) If a self-assessment is required, the date that it was triggered and the date that it was completed.	By the 10th of the following month (or 14 days after the self-assessment was triggered only if the self- assessment was triggered during the last four days of the month).
	(4) If a CPE is required, that the CPE is required and the date that it was triggered.	By the 10th of the following month.
	(5) Copy of completed CPE report.	Within 120 days after the CPE was triggered.
(c) Disinfection Profiling (§§ 141.530-141.536)	(1) Results of optional monitoring which show TTHM levels <0.064 mg/l and HAA5 levels < 0.048 mg/l (Only if your system wishes to forgo profiling) or that your system has begun disinfection profiling.	(i) For systems serving 500-9,999 by July 1, 2003; (ii) For systems serving fewer than 500 by January 1, 2004.
(d) Disinfection Benchmarking. (§§ 141.540-141.544).	(1) A description of the proposed change in disinfection, your system's disinfection profile for *Giardia lamblia* (and, if necessary, viruses) and disinfection benchmark, and an analysis of how the proposed change will affect the current levels of disinfection.	Anytime your system is considering a significant change to its disinfection practice.

Sec. 143.1 Purpose.

This part establishes National Secondary Drinking Water Regulations pursuant to section 1412 of the Safe Drinking Water Act, as amended (42 U.S.C. 300g-1). These regulations control contaminants in drinking water that primarily affect the aesthetic qualities relating to the public acceptance of drinking water. At considerably higher concentrations of these contaminants, health implications may also exist as well as aesthetic degradation. The regulations are not Federally enforceable but are intended as guidelines for the States.

Sec. 143.2 Definitions.

(a) **Act** means the Safe Drinking Water Act as amended (42 U.S.C. 300f et seq.).

(b) **Contaminant** means any physical, chemical, biological, or radiological substance or matter in water.

(c) **Public water system** means a system for the provision to the public of piped water for human consumption, if such a system has at least fifteen service connections or regularly serves an average of at least twenty-five individuals daily at least 60 days out of the year. Such term includes (1) any collection, treatment, storage, and distribution facilities under control of the operator of such system and used primarily in connection with such system, and (2) any collection or pretreatment storage facilities not under such control which are used primarily in connection with such system. A public water system is either a “community water system” or a “non-community water system.”

(d) **State** means the agency of the State or Tribal government which has jurisdiction over public water systems. During any period when a State does not have responsibi1ity pursuant to section 1443 of the Act, the term “State” means the Regional Administrator, U.S. Environmental Protection Agency.

(e) **Supplier of water** means any person who owns or operates a public water system.

(f) **Secondary maximum contaminant levels** means SMCLs which apply to public water systems and which, in the judgment of the Administrator, are requisite to protect the public welfare. The SMCL means the maximum permissible level of a contaminant in water which is delivered to the free flowing outlet of the ultimate user of public water system. Contaminants added to the water under circumstances controlled by the user, except those resulting from corrosion of piping and plumbing caused by water quality, are excluded from this definition.

[44 FR 42198, July 19, 1979, as amended at 53 FR 37412, Sept. 26, 1988]

Sec. 143.3 Secondary maximum contaminant levels.

The secondary maximum contaminant levels for public water systems are as follows:

Contaminant	Level
Aluminum	0.05 to 0.2 mg/l
Chloride	250 mg/l
Color	15 color units
Copper	1.0 mg/l
Corrosivity	Non-corrosive
Fluoride	2.0 mg/l
Foaming agents	0.5 mg/l
Iron	0.3 mg/l
Manganese	0.05 mg/l
Odor	3 threshold odor number
PH	6.5-8.5
Silver	0.1 mg/l
Sulfate	250 mg/l
Total dissolved solids (TDS)	500 mg/l
Zinc	5 mg/l

These levels represent reasonable goals for drinking water quality. The States may establish higher or lower levels which may be appropriate dependent upon local conditions such as unavailability of alternate source waters or other compelling factors, provided that public health and welfare are not adversely affected.

[44 FR 42198, July 19, 1979, as amended at 51 FR 11412, Apr. 2, 1986; 56 FR 3597, Jan. 30, 1991]

Sec. 143.4 Monitoring.

(a) It is recommended that the parameters in these regulations should be monitored at intervals no less frequent than the monitoring performed for inorganic chemical contaminants listed in the National Interim Primary Drinking Water Regulations as applicable to community water systems. More frequent monitoring would be appropriate for specific parameters such as pH, color, odor or others under certain circumstances as directed by the State.

(b) Measurement of pH, copper and fluoride to determine compliance under Sec. 143.3 may be conducted with one of the methods in Sec. 141.23(k)(1). Analyses of aluminum, chloride, foaming agents, iron, manganese, odor, silver, sulfate, total dissolved solids (TDS) and zinc to determine compliance under Sec. 143.3 may be conducted with the methods in the following table. Criteria for analyzing aluminum, copper, iron, manganese, silver and zinc samples with digestion or directly without digestion, and other analytical test procedures are contained in Technical Notes on Drinking Water Methods, EPA-600/R-94-173, October 1994, which is available at NTIS PB95-104766.

Contaminant	EPA	ASTM [3]	SM [4]	Other
Aluminum	[2] 200.7		3120 B	
	[2] 200.8		3113 B	
	[2] 200.9		3111 D	
Chloride	[1] 300.0	D4327-91	4110 B	
			4500-Cl^- D	
		D512-89B	4500-Cl^- B	
Color			2120 B	
Foaming Agents			5540 C	
Iron	[2] 200.7		3120 B	
	[2] 200.9		3111 B	
			3113 B	
Manganese	[2] 200.7		3120 B	
	[2] 200.8		3111 B	
	[2] 200.9		3113 B	
Odor			2150 B	
Silver	[2] 200.7		3120 B	[5] I-3720-85
	[2] 200.8		3111 B	
	[2] 200.9		3113 B	
Sulfate	[1] 300.0	D4327-91	4110 B	
	[1] 375.2		4500-SO_4^{2-} F	
			4500-SO_4^{2-} C, D	
		D516-90	4500-SO_4^{2-} E	
TDS			2540 C	
Zinc	[2] 200.7		3120 B	
	[2] 200.8		3111 B	

The procedures shall be done in accordance with the documents listed below. The incorporation by reference of the following documents was approved by the Director of the Federal Register in accordance with 5 U.S.C. 552(a) and 1 CFR part 51. Copies of the documents may be obtained from the sources listed below. Information regarding obtaining these documents can be obtained from the Safe Drinking Water Hotline at 800-426-4791. Documents may be inspected at EPA's Drinking Water Docket, 401 M St., SW., Washington, DC 20460 (Telephone: 202-260-3027); or at the Office of Federal Register, 800 North Capitol St. N.W., Suite 700, Washington, DC 20408.

[1] "Methods for the Determination of Inorganic Substances in Environmental Samples", EPA/600/R-93-100, August 1993. Available at NTIS, PB94-120821.

[2] "Methods for the Determination of Metals in Environmental Samples--Supplement I", EPA/600/R-94-111, May 1994. Available at NTIS, PB 95-125472.

[3] Annual Book of ASTM Standards, 1994 and 1996, Vols. 11.01 and 11.02, American Society for Testing and Materials. Copies may be obtained from the American Society for Testing and Materials, 100 Barr Harbor Drive, West Conshohocken, PA 19428.

[4] 18th and 19th editions of Standard Methods for the Examination of Water and Wastewater, 1992 and 1995, American Public Health Association; either edition may be used. Copies may be obtained from the American Public Health Association, 1015 Fifteenth Street NW, Washington, DC 20005.

[5] Method I-3720-85, Techniques of Water Resources Investigation of the U.S. Geological Survey, Book 5, Chapter A-1, 3rd ed., 1989; Available from Information Services, U.S. Geological Survey, Federal Center, Box 25286, Denver, CO 80225-0425.

[44 FR 42198, July 19, 1979, as amended at 53 FR 5147, Feb. 19, 1988; 56 FR 30281, July 1, 1991; 59 FR 62470, Dec. 5, 1994; 64 FR 67466, Dec. 1, 1999]

Notes