

WAC 246-290-010 Definitions, abbreviations, and acronyms. The definitions in this section apply throughout this chapter unless the context clearly indicates otherwise.

(1) **"Acute"** means posing an immediate risk to human health.

(2) **"ADD"** means an average day demand.

(3) **"Adverse effect"** means a biological change, functional impairment, or pathologic lesion that may affect the performance of the whole organism, or reduce an organism's ability to respond to an additional environmental challenge.

(4) **"AG"** means an air gap.

~~((4))~~ (5) **"Alternative filtration technology"** means a filtration process for substantial removal of particulates (generally > 2-log *Giardia lamblia* cysts and \geq 2-log removal of *Cryptosporidium* oocysts) by other than conventional, direct, diatomaceous earth, or slow sand filtration processes.

~~((5))~~ (6) **"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.

~~((6))~~ (7) **"ANSI"** means the American National Standards Institute.

~~((7))~~ (8) **"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:

(a) 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

(b) 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.

~~((8))~~ (9) **"Approved atmospheric vacuum breaker (AVB)"** 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 authority having jurisdiction are considered approved by the department.

~~((9))~~ (10) **"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.

~~((10))~~ (11) **"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 ap-

proved 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.

((+11+)) (12) "**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.

((+12+)) (13) "**Assessment source water monitoring**" means an evaluation of groundwater sources that may be at risk for fecal contamination. Assessment source water monitoring involves the collection of source water samples at regular intervals and analysis of those samples for fecal indicators as directed by the department.

((+13+)) (14) "**Authority having jurisdiction**" (formerly known as 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.

((+14+)) (15) "**Authorized agent**" means any person who:

(a) 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;

(b) Makes decisions whether to improve, expand, purchase, or sell the system; or

(c) Has discretion over the finances of the system.

((+15+)) (16) "**Authorized consumption**" means the volume of metered and unmetered water used for municipal water supply purposes by consumers, the purveyor, and others authorized to do so by the purveyor, including, but not limited to, (~~fire-fighting~~) firefighting and training, flushing of mains and sewers, street cleaning, and watering of parks and landscapes. These volumes may be billed or unbilled.

((+16+)) (17) "**AVB**" means an atmospheric vacuum breaker.

((+17+)) (18) "**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 (gpd) per equivalent residential unit (ERU).

((+18+)) (19) "**AWWA**" means the American Water Works Association.

((+19+)) (20) "**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.

((+20+)) (21) "**Backflow assembly tester**" means a person holding a valid BAT certificate issued under chapter 246-292 WAC.

((+21+)) (22) "**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.

((+22+)) (23) "**Backsiphonage**" means backflow due to a reduction in system pressure in the purveyor's distribution system and/or consumer's water system.

((+23+)) (24) "**Bag filter**" means a pressure-driven separation device that removes particulate matter larger than 1 micrometer using an engineered porous filtration media. They are typically constructed of a nonrigid, fabric filtration media housed in a pressure vessel in which the direction of flow is from the inside of the bag to outside.

((+24+)) (25) "**Bank filtration**" means a water treatment process that uses a well to recover surface water that has naturally infiltrated into groundwater through a river bed or bank(s). Infiltration is

typically enhanced by the hydraulic gradient imposed by a nearby pumping water supply or other well(s).

~~((25))~~ (26) **"BAT"** means a backflow assembly tester.

~~((26))~~ (27) **"Best available technology"** 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.

~~((27))~~ (28) **"Bioaccumulative"** means a chemical that can accumulate in the body when regular exposure occurs through drinking water.

(29) **"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.

~~((28))~~ (30) **"C"** means the residual disinfectant concentration in mg/L at a point before or at the first consumer.

~~((29))~~ (31) **"Cartridge filter"** means a pressure-driven separation device that removes particulate matter larger than 1 micrometer using an engineered porous filtration media. They are typically constructed as rigid or semi-rigid, self-supporting filter elements housed in pressure vessels in which flow is from the outside of the cartridge to the inside.

~~((30))~~ (32) **"Category red operating permit"** means an operating permit identified under chapter 246-294 WAC. Placement in this category results in permit issuance with conditions and a determination that the system is inadequate.

~~((31))~~ (33) **"CCP"** means composite correction program.

~~((32))~~ (34) **"CCS"** means a cross-connection control specialist.

~~((33))~~ (35) **"C.F.R."** means the Code of Federal Regulations.

~~((34))~~ (36) **"Chemical contaminant treatment facility"** means a treatment facility specifically used for the purpose of removing chemical contaminants.

~~((35))~~ (37) **"Clarification"** means a treatment process that uses gravity (sedimentation) or dissolved air (flotation) to remove flocculated particles.

~~((36))~~ (38) **"Clean compliance history"** means a record of:

(a) No *E. coli* MCL violations;

(b) No monitoring violations under WAC 246-290-300(3); and

(c) No coliform treatment technique trigger exceedances or treatment technique violations under WAC 246-290-320(2) or 246-290-415.

~~((37))~~ (39) **"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.

~~((38))~~ (40) **"Coagulant"** means a chemical used in water treatment to destabilize particulates and accelerate the rate at which they aggregate into larger particles.

~~((39))~~ (41) **"Coagulation"** means a process using coagulant chemicals and rapid mixing to destabilize colloidal and suspended particles and agglomerate them into flocs.

~~((40))~~ (42) **"Combination fire protection system"** means a fire sprinkler system that:

(a) Is supplied only by the purveyor's water;

(b) Does not have a fire department pumper connection; and

(c) Is constructed of approved potable water piping and materials that serve both the fire sprinkler system and the consumer's potable water system.

~~((41))~~ (43) **"Combined distribution system"** means the interconnected distribution system consisting of the distribution systems of

wholesale systems and of the consecutive systems that receive finished water.

~~((42))~~ (44) "**Completely treated water**" means water from a surface water source, or a groundwater source under the direct influence of surface water (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.

~~((43))~~ (45) "**Composite correction program (CCP)**" means a program that consists of two elements - a comprehensive performance evaluation (CPE) and comprehensive technical assistance (CTA).

~~((44))~~ (46) "**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.

~~((45))~~ (47) "**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.

~~((46))~~ (48) "**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:

- (a) Assessment of plant performance;
- (b) Evaluation of major unit processes;
- (c) Identification and prioritization of performance limiting factors;
- (d) Assessment of the applicability of comprehensive technical assistance; and
- (e) Preparation of a CPE report.

~~((47))~~ (49) "**Comprehensive technical assistance (CTA)**" means the performance improvement phase that is implemented if the CPE results indicate improved performance potential. The system must identify and systematically address plant-specific factors. The CTA is a combination of using CPE results as a basis for follow-up, implementing process control priority-setting techniques, and maintaining long-term involvement to systematically train staff and administrators.

~~((48))~~ (50) "**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.

~~((49))~~ (51) "**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.

~~((50))~~ (52) "**Consecutive system**" means a public water system that receives some or all of its finished water from one or more wholesale systems. Delivery may be through a direct connection or through the distribution system of one or more consecutive systems.

~~((51))~~ (53) "**Construction completion report**" means a form provided by the department and completed for each specific construction project to document:

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

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

~~((52))~~ (54) "**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.

~~((53))~~ (55) "**Consumer's water system,**" as used in WAC 246-290-490, means any potable 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.

~~((54))~~ (56) "**Contaminant**" means a substance present in drinking water that may adversely affect the health of the consumer or the aesthetic qualities of the water.

~~((55))~~ (57) "**Contingency plan**" means that portion of the well-head 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 groundwater contamination.

~~((56))~~ (58) "**Continuous monitoring**" means determining water quality with automatic recording analyzers that operate without interruption twenty-four hours per day.

~~((57))~~ (59) "**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.

~~((58))~~ (60) "**Corrective action plan**" means specific written actions and deadlines developed by the water system or the department that the system must follow as a result of either the identification of significant deficiencies during a sanitary survey or the determination of a fecal indicator-positive sample in source water monitoring.

~~((59))~~ (61) "**Cost-effective**" means the benefits exceed the costs.

~~((60))~~ (62) "**Council**" means the Washington state building code council under WAC 51-04-015(2).

~~((61))~~ (63) "**CPE**" means a comprehensive performance evaluation.

~~((62))~~ (64) "**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 a manner that efficient and orderly development may best be achieved through coordinated planning by the water utilities in the area as set forth by the Public Water System Coordination Act, chapter 70.116 RCW and chapter 246-293 WAC.

~~((63))~~ (65) "**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.

((+64)) (66) "**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.

((+65)) (67) "**Cross-connection control specialist**" means a person holding a valid CCS certificate issued under chapter 246-292 WAC.

((+66)) (68) "**Cross-connection control summary report**" means the annual report that describes the status of the purveyor's cross-connection control program.

((+67)) (69) "**CT**" or "**CTcalc**" means the product of "residual disinfectant concentration" (C) and the corresponding "disinfectant contact time" (T) i.e., "C" x "T."

((+68)) (70) "**CT_{99.9}**" means the CT value required for 99.9 percent (3-log) inactivation of *Giardia lamblia* cysts.

((+69)) (71) "**CTA**" means comprehensive technical assistance.

((+70)) (72) "**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.

((+71)) (73) "**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.

((+72)) (74) "**CWSSA**" means a critical water supply service area.

((+73)) (75) "**DBPs**" means disinfection byproducts.

((+74)) (76) "**DCDA**" means a double check detector assembly.

((+75)) (77) "**DCVA**" means a double check valve assembly.

((+76)) (78) "**Dead storage**" means the volume of stored water not available to all consumers at the minimum design pressure under WAC 246-290-230 (5) and (6).

((+77)) (79) "**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 water use efficiency savings from implementation of a water use efficiency program, and other appropriate factors.

((+78)) (80) "**Department**" means the Washington state department of health or health officer as identified in a joint plan of responsibility under WAC 246-290-030(1).

((+79)) (81) "**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.

((+80)) (82) "**Detectable residual disinfectant concentration**" means 0.2 mg/L free chlorine, total chlorine, combined chlorine, or chlorine dioxide.

((+81)) (83) "**Diatomaceous earth filtration**" means a filtration process for substantial removal of particulates (> 2-log *Giardia lamblia* cysts) in which:

(a) A precoat cake of graded diatomaceous earth filter media is deposited on a support membrane (septum); and

(b) 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.

~~((82))~~ (84) "**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.

~~((83))~~ (85) "**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.

~~((84))~~ (86) "**Disinfectant contact time (T in CT)**" means:

(a) 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

(b) 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.

~~((85))~~ (87) "**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.

~~((86))~~ (88) "**Disinfection profile**" means a summary of *Giardia lamblia* inactivation through a surface water treatment plant.

~~((87))~~ (89) "**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.

~~((88))~~ (90) "**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.

~~((89))~~ (91) "**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.

~~((90))~~ (92) "**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.

~~((91))~~ (93) "**Dual sample set**" means a set of two samples collected at the same time and same location, with one sample analyzed for TTHM and the other sample analyzed for HAA5. Dual sample sets are collected for the purposes of conducting an IDSE under WAC 246-290-300 (6)(b)(i)(F) and determining compliance with the TTHM and HAA5 MCLs under WAC 246-290-310(4).

~~((92))~~ (94) "**Duplicate (verification) sample**" means a second sample collected at the same time and location as the first sample and used for verification.

~~((93))~~ (95) "**DVGW**" means Deutsche Vereinigung des Gas und Wasserfaches.

~~((94))~~ (96) "**Elected governing board**" means the elected officers with ultimate legal responsibility for operational, technical, managerial, and financial decisions for a public water system.

~~((95))~~ (97) "**Emergency**" means an unforeseen event that causes damage or disrupts normal operations and requires immediate action to protect public health and safety.

~~((96))~~ (98) "**Emergency source**" means any source that a purveyor intends to use for emergency purposes only and not used for routine or seasonal water demands.

~~((97))~~ (99) "**Engineering design review report**" means a form provided by the department and completed for a specific distribution-related project to document:

(a) Engineering review of a project report and/or construction documents under the submittal exception process in WAC 246-290-125(3); and

(b) Design in accordance with this chapter and general standards of engineering practice.

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

~~((98))~~ (100) "**EPA**" means the U.S. Environmental Protection Agency.

~~((99))~~ (101) "**Equalizing storage**" means the volume of storage needed to supplement supply to consumers when the peak hourly demand exceeds the total source pumping capacity.

~~((100))~~ (102) "**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.

~~((101))~~ (103) "**ERU**" means an equivalent residential unit.

~~((102))~~ (104) "**Expanding public water system**" means a public water system that increases the geographical area where direct service connections are available or increases the approved number of service connections.

~~((103))~~ (105) "**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.

~~((104))~~ (106) "**Filtration**" means a process for removal of particulate matter from water by passage through porous media.

~~((105))~~ (107) "**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.

~~((106))~~ (108) "**Finished water**" means water introduced into a public water system's distribution system and is intended for distribution and consumption without further treatment, except as treatment necessary to maintain water quality in the distribution system (e.g., booster disinfection, addition of corrosion control chemicals).

~~((107))~~ (109) "**Finished water storage facility**" 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.

~~((108))~~ (110) "**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.

~~((109))~~ (111) "**Fire suppression storage**" means the volume of stored water available during fire suppression activities to satisfy minimum pressure requirements per WAC 246-290-230.

~~((110))~~ (112) "**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).

~~((111))~~ (113) "**Flocculation**" means a process enhancing agglomeration and collection of colloidal and suspended particles into larger, more easily settleable or filterable particles by gentle stirring.

~~((112))~~ (114) "**Flowing stream**" means a course of running water flowing in a definite channel.

~~((113))~~ (115) "**Flow-through fire protection system**" means a fire sprinkler system that:

(a) Is supplied only by the purveyor's water;

(b) Does not have a fire department pumper connection;

(c) Is constructed of approved potable water piping and materials to which sprinkler heads are attached; and

(d) Terminates at a connection to a toilet or other plumbing fixture to prevent stagnant water.

~~((114))~~ (116) "**Forecasted demand characteristics**" means the factors that may affect a public water system's projected water needs.

~~((115))~~ (117) "**Future service area**" means a specific area a water system in a CWSSA plans to provide water service as determined by a written agreement between purveyors under chapter 70.116 RCW and chapter 246-293 WAC.

~~((116))~~ (118) "**GAC**" means granular activated carbon.

~~((117))~~ (119) "**GAC10**" means granular activated carbon filter beds with an empty-bed contact time of ten minutes based on average daily flow and a carbon reactivation frequency of every one hundred eighty days, except that the reactivation frequency for GAC10 used as a best available technology for compliance with MCLs under WAC 246-290-310(4) shall be one hundred twenty days.

~~((118))~~ (120) "**GAC20**" means granular activated carbon filter beds with an empty-bed contact time of twenty minutes based on average daily flow and a carbon reactivation frequency of every two hundred forty days.

~~((119))~~ (121) "**Governing body**" means the individual or group of individuals with ultimate legal responsibility for operational, technical, managerial, and financial decisions for a public water system.

~~((120))~~ (122) "**gph**" means gallons per hour.

~~((121))~~ (123) "**gpm**" means gallons per minute.

~~((122))~~ (124) "**Grab sample**" means a water quality sample collected at a specific instant in time and analyzed as an individual sample.

~~((123))~~ (125) "**Groundwater system**" means all public water systems that use groundwater including:

(a) Consecutive systems receiving finished groundwater; or

(b) Surface water systems with groundwater sources except those systems that combine all sources prior to treatment.

~~((124))~~ (126) "**Groundwater 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:

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

(b) 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.

~~((125))~~ (127) "**Guideline**" means a department document assisting the purveyor in meeting a rule requirement.

((126)) (128) "**GWI**" means groundwater under the direct influence of surface water.

((127)) (129) "**GWR**" means groundwater rule.

((128)) (130) "**HAA5**" means haloacetic acids (five).

((129)) (131) "**Health officer**" means the health officer of the city, county, city-county health department or district, or an authorized representative.

((130)) (132) "**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.

((131)) (133) "**High health cross-connection hazard**" means a cross-connection involving any substance that could impair the quality of potable water and create an actual public health hazard through injury, poisoning, or spread of disease.

((132)) (134) "**HPC**" means heterotrophic plate count.

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

((134)) (136) "**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.

((135)) (137) "**IAPMO**" means the International Association of Plumbing and Mechanical Officials.

((136)) (138) "**IDSE**" means an initial distribution system evaluation.

((137)) (139) "**Inactivation**" means a process which renders pathogenic microorganisms incapable of producing disease.

((138)) (140) "**Inactivation ratio**" means the ratio obtained by dividing CT_{calc} by CT_{req}.

((139)) (141) "**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.

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

((141)) (143) "**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.

((142)) (144) "**Intertie**" means an interconnection between public water systems permitting the exchange or delivery of water between those systems.

((143)) (145) "**kPa**" means kilo pascal (SI units of pressure).

((144)) (146) "**Lake or reservoir**" means a natural or man-made basin or hollow on the earth's surface in which water collects or is stored that may or may not have a current or single direction of flow.

((145)) (147) "**Legionella**" means a genus of bacteria containing species which cause a type of pneumonia called Legionnaires' disease.

((146)) (148) "**Level 1 assessment**" means an evaluation to identify the possible presence of sanitary defects, defects in distribution system coliform monitoring practices, and when possible, the likely reason that the system triggered the assessment. The assessment is conducted by the system operator or the purveyor.

((147)) (149) "**Level 2 assessment**" means an evaluation to identify the possible presence of sanitary defects, defects in distribution system coliform monitoring practices, and when possible, the likely reason that the system triggered the assessment. A level 2 assessment is a more detailed examination of the system (including the system's monitoring and operational practices) than is a level 1 assessment through the use of a more comprehensive investigation and review of available information, additional internal and external resources, and other relevant practices. The level 2 assessment is conducted by a party approved by the department.

((148)) (150) "**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.

((149)) (151) "**Local plans and regulations**" means any comprehensive plan or development regulation adopted under chapter 36.70A RCW or any other applicable comprehensive plan, land use plan, or development regulation adopted by a city, town, or county for the applicable service area.

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

((151)) (153) "**Low cross-connection hazard**" means a cross-connection that could impair 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 potable waters for domestic use.

((152)) (154) "**LRAA**" means the locational running annual average.

((153)) (155) "**Major project**" means all construction projects subject to the State Environmental Policy Act (SEPA) under chapter 43.21C RCW, and meeting the requirements of WAC 246-03-030 (3) (a).

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

((155)) (157) "**Marginal costs**" means the costs incurred by producing the next increment of supply.

((156)) (158) "**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 246-290-310, Table 5.

((157)) (159) "**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.

((158)) (160) "**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).

((159)) (161) "**MCL**" means the maximum contaminant level.

((160)) (162) "**MDD**" means the maximum day demand.

~~((161))~~ (163) "**Membrane filtration**" means a pressure or vacuum driven separation process in which particulate matter larger than 1 micrometer is rejected by an engineered barrier, primarily through a size-exclusion mechanism, and which has a measurable removal efficiency of a target organism that can be verified through the application of a direct integrity test. This definition includes the common membrane technologies of microfiltration, ultrafiltration, nanofiltration, and reverse osmosis.

~~((162))~~ (164) "**Metabolite**" means a byproduct of a contaminant in drinking water formed during a natural biological process in the body.

(165) "**mg/L**" means milligrams per liter (1 mg/L = 1 ppm).

~~((163))~~ (166) "**mL**" means a milliliter.

~~((164))~~ (167) "**mm**" means a millimeter.

~~((165))~~ (168) "**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.

~~((166))~~ (169) "**MRDL**" means the maximum residual disinfectant level.

~~((167))~~ (170) "**MRDLG**" means the maximum residual disinfectant level goal.

~~((168))~~ (171) "**MTTP**" means maximum total trihalomethane potential.

~~((169))~~ (172) "**Municipal water supplier**" means an entity that supplies water for municipal water supply purposes.

~~((170))~~ (173) "**Municipal water supply purposes**" means a beneficial use of water:

(a) For residential purposes through fifteen or more residential service connections or for providing residential use of water for a nonresidential population that is, on average, at least twenty-five people for at least sixty days a year;

(b) For governmental or governmental proprietary purposes by a city, town, public utility district, county, sewer district, or water district; or

(c) Indirectly for the purposes in (a) or (b) of this definition through the delivery of treated or raw water to a public water system for such use.

(i) If water is beneficially used under a water right for the purposes listed in (a), (b), or (c) of this definition, any other beneficial use of water under the right generally associated with the use of water within a municipality is also for "municipal water supply purposes," including, but not limited to, beneficial use for commercial, industrial, irrigation of parks and open spaces, institutional, landscaping, fire flow, water system maintenance and repair, or related purposes.

(ii) If a governmental entity holds a water right that is for the purposes listed in (a), (b), or (c) of this definition, its use of water or its delivery of water for any other beneficial use generally associated with the use of water within a municipality is also for "municipal water supply purposes," including, but not limited to, beneficial use for commercial, industrial, irrigation of parks and open spaces, institutional, landscaping, fire flow, water system maintenance and repair, or related purposes.

~~((171))~~ (174) "**Nested storage**" means one component of storage is contained within the component of another.

~~((172))~~ (175) "**ng/L**" means nanograms per liter.

(176) "**Nonacute**" means posing a possible or less than immediate risk to human health.

~~((173))~~ (177) "**Nonresident**" means a person having access to drinking water from a public water system who lives elsewhere. Examples include travelers, transients, employees, students, etc.

~~((174))~~ (178) "**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.

~~((175))~~ (179) "**NSF**" means NSF International (formerly known as the National Sanitation Foundation (NSF)).

~~((176))~~ (180) "**NTNC**" means nontransient noncommunity.

~~((177))~~ (181) "**NTU**" means a nephelometric turbidity unit.

~~((178))~~ (182) "**ONORM**" means Osterreichisches Normungsinstitut.

~~((179))~~ (183) "**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.

~~((180))~~ (184) "**PAA**" means a project approval application.

~~((181))~~ (185) "**pCi/L**" means picocuries per liter.

~~((182))~~ (186) "**PFAS**" means per- and polyfluoroalkyl substances, a group of man-made chemicals found in products such as aqueous film-forming foam used to suppress petroleum-based fires, nonstick cookware, stain-resistant fabrics and many other products.

(187) "**PFBS**" means perfluorobutane sulfonic acid.

(188) "**PFHxS**" means perfluorohexane sulfonic acid.

(189) "**PFNA**" means perfluorononanoic acid.

(190) "**PFOA**" means perfluorooctanoic acid, also known as C8.

(191) "**PFOS**" means perfluorooctane sulfonic acid.

(192) "**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).

~~((183))~~ (193) "**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.

~~((184))~~ (194) "**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.

~~((185))~~ (195) "**Permanent residence**" means any dwelling that is, or could reasonably be expected to be, occupied on a continuous basis.

~~((186))~~ (196) "**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.

~~((187))~~ (197) "**PHD**" means peak hourly demand.

~~((188))~~ (198) "**Plant intake**" means the works or structures at the head of a conduit through which water is diverted from a source (e.g., river or lake) into the treatment plant.

((+189+)) (199) "**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.

((+190+)) (200) "**Population served**" means the number of persons, resident and nonresident, having immediate access to drinking water from a public water system, whether or not 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.

((+191+)) (201) "**Potable**" means water suitable for drinking by the public.

((+192+)) (202) "**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.

((+193+)) (203) "**ppm**" means parts per million (1 ppm = 1 mg/L).

((+194+)) (204) "**ppt**" means parts per trillion (1 ppt = 1 ng/L).

(205) "**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.

((+195+)) (206) "**Presedimentation**" means a preliminary treatment process used to remove gravel, sand, and other particulate material from the source water through settling before the water enters the primary clarification and filtration processes in a treatment plant.

((+196+)) (207) "**Pressure filter**" means an enclosed vessel containing properly sized and graded granular media through which water is forced under greater than atmospheric pressure.

((+197+)) (208) "**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.

((+198+)) (209) "**Primary standards**" means standards based on chronic, nonacute, or acute human health effects.

((+199+)) (210) "**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).

((+200+)) (211) "**Project approval application (PAA)**" means a department form documenting ownership of water system, design engineer for the project, and type of project.

((+201+)) (212) "**Protected groundwater source**" means a groundwater 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.

((+202+)) (213) "**psi**" means pounds per square inch.

((+203+)) (214) "**Public forum**" means a meeting open to the general public that allows for their participation.

((+204+)) (215) "**Public health concern**" means a concentration of a contaminant in drinking water that is above an existing health advisory level, SAL or MCL or a concentration in community drinking water

that would result in daily intake (exposure), including in sensitive groups, in excess of a health protective value such as a Reference Dose (RfD), Tolerable Daily Intake (TDI), Minimal Risk Levels (MRL), or very low cancer risk level.

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

~~((205))~~ (217) "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.

~~((206))~~ (218) "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 these entities.

~~((207))~~ (219) "PVBA" means a pressure vacuum breaker assembly.

~~((208))~~ (220) "RAA" means the running annual average.

~~((209))~~ (221) "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.

~~((210))~~ (222) "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.

~~((211))~~ (223) "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 in the covenants or on the recorded plat in order to be eligible for reduced design considerations.

~~((212))~~ (224) "Regional public water supplier" means a water system that provides drinking water to one, or more, other public water systems.

~~((213))~~ (225) "Regularly" means four hours or more per day for four days or more per week.

~~((214))~~ (226) "Removal credit" means the level (expressed as a percent or log) of *Giardia* and virus removal the department grants a system's filtration process.

~~((215))~~ (227) "Repeat sample" means a sample collected to confirm the results of a previous analysis.

~~((216))~~ (228) "Resident" means an individual living in a dwelling unit served by a public water system.

~~((217))~~ (229) "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.

~~((218))~~ (230) "Retail service area" means the specific area defined by the municipal water supplier where the municipal water supplier has a duty to provide service to all new service connections as set forth in RCW 43.20.260.

~~((219))~~ (231) "RPBA" means reduced pressure backflow assembly.

~~((220))~~ (232) "RPDA" means reduced pressure detector assembly.

~~((221))~~ (233) "Running annual average (RAA)" means the average of analytical results from compliance samples collected at the monitoring locations identified in WAC 246-290-300 during any consecutive four calendar quarters. If a system fails to collect the required number of samples, the RAA is based on the total number of samples col-

lected. If a sample result is less than the SDRL, zero is used to calculate the RAA.

~~((222))~~ (234) "**SAL**" means state (~~(advisory)~~) action level.

~~((222))~~ (235) "**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.

~~((223))~~ (236) "**Sanitary defect**" means a defect that could provide a pathway of entry for microbial contamination into the distribution system or that is indicative of a failure or imminent failure in a barrier that is already in place.

~~((224))~~ (237) "**Sanitary survey**" means a review, inspection, and assessment of a public water system, by the department or department designee, to determine the adequacy of the system and its operation for producing and distributing safe and reliable drinking water. Each survey includes, but is not limited to, an evaluation of the following components:

- (a) Source;
- (b) Treatment;
- (c) Distribution system;
- (d) Finished water storage;
- (e) Pump, pump facilities, and controls;
- (f) Monitoring, reporting, and data verification;
- (g) System management and operation; and
- (h) Operator compliance.

~~((225))~~ (238) "**Satellite system 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 the systems.

~~((226))~~ (239) "**SCA**" means a sanitary control area.

~~((227))~~ (240) "**SDRL**" means state detection reporting limit.

(241) "**SDWA**" means the Safe Drinking Water Act.

~~((228))~~ (242) "**Seasonal source**" means a public water system source used on a regular basis, that is not a permanent or emergency source.

~~((229))~~ (243) "**Seasonal system**" means a noncommunity water system defined and referenced under WAC 246-290-020 that is not operated as a public water system on a year-round basis and starts up and shuts down at the beginning and end of each operating season.

~~((230))~~ (244) "**Secondary standards**" means standards based on factors other than health effects.

~~((231))~~ (245) "**SEPA**" means the State Environmental Policy Act.

~~((232))~~ (246) "**Service area**" means the specific area a water system currently serves and areas where future water service is planned. A wholesale system may include areas where it provides wholesale water to other public water systems in its service area. A water system in a CWSSA includes its future service area in its service area as "future service area" as defined under chapters 70.116 RCW and 246-293 WAC.

~~((233))~~ (247) "**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:

(a) Divide the average population served each day by two and one-half; or

(b) Using actual water use data, calculate the total ERUs represented by the service connection in accordance with department design guidance.

(c) In no case shall the calculated number of services be less than one.

~~((234))~~ (248) "**Severe health cross-connection hazard**" means a cross-connection which could impair the quality of potable water and create an immediate, severe public health hazard through poisoning or spread of disease by contaminants from radioactive material processing plants, nuclear reactors, or wastewater treatment plants.

~~((235))~~ (249) "**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.

~~((236))~~ (250) "**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/ft²) that results in substantial particulate removal (> 2-log *Giardia lamblia* cysts) by physical and biological mechanisms.

~~((237))~~ (251) "**SMA**" means a satellite system management agency.

~~((238))~~ (252) "**SOC**" means a synthetic organic chemical.

~~((239))~~ (253) "**Societal perspective**" means:

A point of view that includes a broad spectrum of public benefits including, but not limited to:

(a) Enhanced system reliability;

(b) Savings that result from delaying, deferring, or minimizing capital costs; and

(c) Environmental benefits such as increased water in streams, improvements in aquifer recharge and other environmental factors.

~~((240))~~ (254) "**Source meter**" means a meter that measures total output of a water source over specific time periods.

~~((241))~~ (255) "**Source water**" means untreated water that is not subject to recontamination by surface runoff and:

(a) For unfiltered systems, enters the system immediately before the first point of disinfectant application; and

(b) For filtered systems, enters immediately before the first treatment unit of a water treatment facility.

~~((242))~~ (256) "**SPI**" means a special purpose investigation.

~~((243))~~ (257) "**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.

~~((244))~~ (258) "**Special purpose sample**" means a sample collected for reasons other than the monitoring compliance specified in this chapter.

~~((245))~~ (259) "**Spring**" means a source of water where an aquifer comes in contact with the ground surface.

~~((246))~~ (260) "**SRF**" means the state revolving fund.

~~((247))~~ (261) "**SSNC**" means state significant noncomplier.

~~((248))~~ (262) "**Standard methods**" means the book, titled *Standard Methods for the Examination of Water and Waste Water*, jointly pub-

lished 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. The edition to be used is that specified by EPA for the relevant drinking water parameter in 40 C.F.R. Part 141.

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

((250)) (264) "**State ((advisory)) action 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)) the concentration of a contaminant or group of contaminants, without an MCL, established to protect public health in accordance with WAC 246-290-315 and which, if exceeded, triggers actions a purveyor takes in accordance with WAC 246-290-320.

((251)) (265) "**State board of health**" and "**board**" means the board created by RCW 43.20.030.

((252)) (266) "**State building code**" means the codes adopted by and referenced in chapter 19.27 RCW; the state energy code; and any other codes so designated by the Washington state legislature as adopted and amended by the council.

((253)) (267) "**State detection reporting limit (SDRL)**" means the minimum reportable detection of an analyte established in WAC 246-390-075.

(268) "**State revolving fund (SRF)**" 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 under chapter 246-296 WAC.

((254)) (269) "**State significant noncomplier (SSNC)**" 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.

The violations include, but are not limited to:

- (a) Repeated violations of monitoring requirements;
- (b) Failure to address an exceedance of permissible levels of regulated contaminants;
- (c) Failure to comply with treatment technique standards or requirements;
- (d) Failure to comply with waterworks operator certification requirements; or
- (e) Failure to submit to a sanitary survey.

((255)) (270) "**Subpart H System**" see definition for "**surface water system.**"

((256)) (271) "**Surface water**" means a body of water open to the atmosphere and subject to surface runoff.

((257)) (272) "**Surface water system**" means a public water system that uses in whole, or in part, source water from a surface supply, or GWI supply. This includes systems that operate surface water treatment facilities, and systems that purchase "completely treated water". 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.

((+258+)) (273) "**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.

((+259+)) (274) "**SUVA**" means specific ultraviolet absorption.

((+260+)) (275) "**SVBA**" means spill resistant vacuum breaker assembly.

((+261+)) (276) "**SWTR**" means the surface water treatment rule.

((+262+)) (277) "**Synthetic organic chemical (SOC)**" means a manufactured carbon-based chemical.

((+263+)) (278) "**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.

((+264+)) (279) "**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.

((+265+)) (280) "**T**" means disinfectant contact time in minutes.

((+266+)) (281) "**Time-of-travel**" means the time required for groundwater to move through the water bearing zone from a specific point to a well.

((+267+)) (282) "**TNC**" means transient noncommunity.

((+268+)) (283) "**TNTC**" means too numerous to count.

((+269+)) (284) "**TOC**" means total organic carbon.

((+270+)) (285) "**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.

((+271+)) (286) "**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.

((+272+)) (287) "**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 on the plans and no service connections are allowed along the transmission main.

((+273+)) (288) "**Treatment technique (TT) 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"~~) TT requirement(=) is established in lieu of a primary MCL when monitoring for the contaminant is not economically or technologically feasible.

((+274+)) (289) "**Triggered source water monitoring**" means collection of groundwater source samples as a result of a total coliform-positive routine sample in the distribution system under WAC 246-290-300(3).

((+275+)) (290) "**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 byproducts.

~~((276))~~ (291) "**TTHM**" means total trihalomethane.

~~((277))~~ (292) "**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.

~~((278))~~ (293) "**Two-stage lime softening**" means a process in which chemical addition and hardness precipitation occur in each of two distinct unit clarification processes in series prior to filtration.

~~((279))~~ (294) "**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.

~~((280))~~ (295) "**ug/L**" means micrograms per liter.

~~((281))~~ (296) "**UL**" means the Underwriters Laboratories, Inc.

~~((282))~~ (297) "**umhos/cm**" means micromhos per centimeter.

~~((283))~~ (298) "**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.

~~((284))~~ (299) "**Uncovered finished water storage facility**" means a tank, reservoir, or other facility used to store water, which will undergo no further treatment to reduce microbial pathogens except residual disinfection and is directly open to the atmosphere without a suitable water-tight roof or cover.

~~((285))~~ (300) "**Uniform Plumbing Code (UPC)**" means the code adopted under RCW 19.27.031(4) and implemented under chapter 51-56 WAC. This code establishes statewide minimum plumbing standards applicable within the property lines of the consumer's premises.

~~((286))~~ (301) "**UPC**" means the Uniform Plumbing Code.

~~((287))~~ (302) "**Used water**" means water which has left the control of the purveyor.

~~((288))~~ (303) "**UTC**" means the utilities and transportation commission.

~~((289))~~ (304) "**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.

~~((290))~~ (305) "**Virus**" means a virus of fecal origin which is infectious to humans and transmitted through water.

~~((291))~~ (306) "**VOC**" means a volatile organic chemical.

~~((292))~~ (307) "**Volatile organic chemical (VOC)**" means a manufactured carbon-based chemical that vaporizes quickly at standard pressure and temperature.

~~((293))~~ (308) "**Voluntary curtailment**" means a curtailment of water use requested, but not required of consumers.

~~((294))~~ (309) "**WAC**" means the Washington Administrative Code.

~~((295))~~ (310) "**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.

~~((296))~~ (311) **"Water demand efficiency"** means minimizing water use by the public water system's consumers through purveyor sponsored activities that may include, but are not limited to, distributing water saving devices, providing rebates or incentives to promote water efficient technologies or by providing water audits to homes, businesses, or landscapes.

~~((297))~~ (312) **"Water facilities inventory (WFI) form"** means the department form summarizing each public water system's characteristics.

~~((298))~~ (313) **"Water right"** means a certificated water right, water right permit, valid 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.

~~((299))~~ (314) **"Water right self-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. The assessment may be done by a water system, a purveyor, the department of ecology, or any combination thereof.

~~((300))~~ (315) **"Watershed"** means the region or area that:

(a) Ultimately drains into a surface water source diverted for drinking water supply; and

(b) Affects the physical, chemical, microbiological, and radiological quality of the source.

~~((301))~~ (316) **"Water shortage"** means a situation during which the water supplies of a system cannot meet normal water demands for the system, including peak periods.

~~((302))~~ (317) **"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.

~~((303))~~ (318) **"Water supply characteristics"** means the factors related to a public water system's source of water supply that may affect its availability and suitability to provide for both short-term and long-term needs.

Factors include, but are not limited to:

(a) Source location;

(b) Name of any body of water and water resource inventory area from which water is diverted or withdrawn;

(c) Production capacity;

(d) The source's natural variability;

(e) The system's water rights for the source;

(f) Other legal demands on the source such as water rights for other uses;

(g) Conditions established to protect species listed under the Endangered Species Act in 50 C.F.R. 17.11;

(h) Instream flow restrictions established under Title 173 WAC; and

(i) Any conditions established by watershed plans approved under chapter 90.82 RCW and RCW 90.54.040(1) or salmon recovery plans under chapter 77.85 RCW.

~~((304))~~ (319) **"Water supply efficiency"** means increasing a public water system's transmission, storage and delivery potential through activities that may include, but are not limited to:

(a) System-wide water audits;

(b) Documenting authorized uses;

(c) Conducting leak surveys; and

(d) Repairs on:

(i) Meters;

- (ii) Lines;
- (iii) Storage facilities; and
- (iv) Valves.

~~((305))~~ (320) "**Water use efficiency (WUE)**" means increasing water supply efficiency and water demand efficiency to minimize water withdrawals and water use.

~~((306))~~ (321) "**Water use efficiency program**" means policies and activities focusing on increasing water supply efficiency and water demand efficiency to minimize water withdrawals and water use.

~~((307))~~ (322) "**Well field**" means a group of wells one purveyor owns or controls that:

(a) 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

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

~~((308))~~ (323) "**Wellhead protection area (WHPA)**" means the portion of a well's, wellfield's or spring's zone of contribution defined using WHPA criteria established by the department.

~~((309))~~ (324) "**WFI**" means a water facilities inventory form.

~~((310))~~ (325) "**Wholesale system**" means a public water system that treats source water as necessary to produce finished water and then delivers some or all of that finished water to another public water system. Delivery may be through a direct connection or through the distribution system of one or more consecutive systems.

~~((311))~~ (326) "**WHPA**" means a wellhead protection area.

~~((312))~~ (327) "**WUE**" means water use efficiency.

~~((313))~~ (328) "**Zone of contribution**" means the area surrounding a pumping well or spring that encompasses all areas or features that supply groundwater recharge to the well or spring.

AMENDATORY SECTION (Amending WSR 17-01-062, filed 12/14/16, effective 1/14/17)

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 groundwater 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 groundwater 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 and 246-290-315, as shown in an initial water quality analysis that includes, at a minimum, the following:
 - (i) Bacteriological, in addition to water quality standards under WAC 246-290-310, the raw water coliform source sample must be satisfactory;
 - (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 246-290-300; ((and))
 - (vi) Contaminants with a SAL, except where waived or not applicable under WAC 246-290-300(10); and
 - (vii) Any other information required by the department relevant to the circumstances of the particular source.
- (h) 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 water right self-assessment;
 - (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 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 the documentation and information to the department, provided that the 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 may request 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.

(9) 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 the 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.

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 groundwater 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 department 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 using EPA-approved methods or other department-approved methods. 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, turbidity, calcium, conductivity, orthophosphate, and silica as required by this chapter, provided, these measurements are made according to EPA approved methods.

(d) Compliance samples required by this chapter shall be taken at locations listed in Table 4 of this section.

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

- (i) The department under WAC 246-290-480; and
- (ii) The owner or operator of any consecutive system served and the appropriate water system users under 40 C.F.R. 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 under 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 under subsection (3) of this section;
- (ii) Collect disinfection byproduct samples as required by subsection (6) of this section;

(iii) Perform the distribution system residual disinfectant concentration monitoring under subsection (6) of this section, and as required under WAC 246-290-451, 246-290-664, or 246-290-694. Systems with fewer than one hundred connections shall measure residual disinfectant concentration at the same time and location that a routine or repeat coliform sample is collected, unless the department determines that more frequent monitoring is necessary to protect public health;

(iv) Perform lead and copper monitoring required under 40 C.F.R. 141.86, 141.87, and 141.88;

(v) Perform the distribution system monitoring under 40 C.F.R. 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 byproduct (including THMs and HAA5) 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;

(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; and

(iii) Has at least one compliance monitoring location for disinfection byproducts, if applicable.

(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 measure the residual disinfectant concentration within the distribution system at the same time and location of routine and repeat samples.

(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) Systems shall develop a written coliform monitoring plan that identifies sampling sites and a sample collection schedule that are representative of water throughout the distribution system. The plan is subject to department review and approval. Systems shall collect total coliform samples according to the plan. Monitoring may take place at a customer's premises, dedicated sampling station, or other designated compliance sampling location. Routine and repeat sample

sites and any sampling points necessary to meet the requirements of Part 6 of this chapter and WAC 246-290-300 (3)(h) must be identified in the plan.

(ii) Systems shall collect samples at regular time intervals throughout the month, except for systems that use groundwater and serve four thousand nine hundred or fewer people may collect all required samples on a single day if the samples are taken from different sites.

(iii) Systems shall take at least the minimum number of required samples even if the system has had an *E. coli* MCL violation or has exceeded the coliform treatment technique triggers in WAC 246-290-320(2).

(iv) Systems may conduct more compliance monitoring than is required under subsection (3)(b) of this section to investigate potential problems in the distribution system and use monitoring as a tool to assist in identifying problems. Systems may take more than the minimum number of required routine samples and must include the results in calculating whether or not the coliform treatment technique triggers in WAC 246-290-320(2) have been exceeded only if the samples are taken in accordance with the plan and are representative of water throughout the distribution system.

(v) Systems shall identify repeat monitoring locations in the plan. Unless the provisions of subsection (3)(b)(i) through (iv) of this section are met, the system shall collect at least one repeat sample from the sample 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 sample site. If a total coliform-positive sample is at the end of the distribution system, or one service connection away from the end of the distribution system, the system shall still take all required repeat samples. The department may allow an alternative sampling location in lieu of the requirement to collect at least one repeat sample upstream or downstream of the original sampling site. Systems may propose repeat monitoring locations to the department that the system believes to be representative of a pathway for contamination of the distribution system. A system may elect to specify either alternative fixed locations or criteria for selecting repeat sampling sites on a situational basis in a standard operating procedure (SOP) in its plan. The system shall design its SOP to focus the repeat samples at locations that best verify and determine the extent of potential contamination of the distribution system area based on specific situations. The department may modify the SOP or require alternative monitoring locations as needed.

(vi) 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) Special purpose coliform samples. Special purpose coliform samples, such as those taken to determine whether disinfection practices are sufficient following pipe placement, replacement, or repair, must not be used to determine whether or not the coliform treatment

technique trigger has been exceeded. Repeat samples taken in accordance with subsection (3) of this section are not considered special purpose coliform samples, and must be used to determine whether or not the coliform treatment technique trigger has been exceeded.

(d) Invalidation of total coliform samples. A total coliform-positive sample invalidated under subsection (3) of this section does not count toward meeting the minimum monitoring requirements of this section.

(i) The department may invalidate a total coliform-positive sample if one or more of the following conditions are met:

(A) The laboratory establishes that improper sample analysis caused the total coliform-positive result;

(B) The department, on the basis of the results of repeat samples collected as required under subsection (3) of this section, determines that the total coliform-positive samples resulted from a domestic or other nondistribution system plumbing problem. The department may not invalidate a sample on the basis of repeat sample results unless all repeat samples collected at the same tap as the original total coliform-positive sample are also total coliform-positive, and all repeat samples collected at a location other than the original tap are total coliform-negative. For example, the department may not invalidate a total coliform-positive sample on the basis of repeat samples if all the repeat samples are total coliform-negative, or if the system has only one service connection; or

(C) The department has substantial grounds to believe that a total coliform-positive result is due to a circumstance or condition that does not reflect water quality in the distribution system. In this case, the system shall still collect all repeat samples required under subsection (3) of this section, and use the samples to determine whether a coliform treatment technique trigger under WAC 246-290-320(2) has been exceeded.

(ii) Unless total coliforms are detected, a laboratory shall invalidate a total coliform sample if the sample produces a turbid culture in the absence of gas production using an analytical method where gas formation is examined such as the multiple-tube fermentation technique, produces a turbid culture in the absence of an acid reaction in the presence-absence coliform test, or exhibits confluent growth or produces colonies TNTC with an analytical method using a membrane filter such as a membrane filter technique. If a laboratory invalidates a sample because of such interference, the system shall collect another sample from the same location as the original sample within twenty-four hours of notification of the interference problem, and have it analyzed for the presence of total coliforms. The system shall continue to resample within twenty-four hours and have the samples analyzed until it obtains a valid result. The department may waive the twenty-four hour time limit on a case-by-case basis.

(e) 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 of this section 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 of this section. 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 groundwater sources;

(B) The system has a clean compliance history for a minimum of twelve months;

(C) The system has no sanitary defects or significant deficiencies;

(D) The system has detected no total coliform-positive routine or repeat samples in the previous month; and

(E) The system has collected and submitted for analysis one routine sample during one of the previous two months.

(iii) Purveyors of NTNC and TNC systems are not required to collect routine samples in months when the population served is zero.

(iv) 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 of this section.

(v) Seasonal systems.

(A) In accordance with WAC 246-290-480 (2)(f)(ii), seasonal systems shall certify that a department-approved start-up procedure, which may include a requirement for start-up sampling, was completed prior to serving water to the public.

(B) Seasonal systems shall monitor every month that it is in operation unless it meets the criteria in subsection (3)(e)(ii) of this section.

(C) The department may exempt a seasonal system from some or all of the requirements in subsection (3)(e)(v)(A) of this section if the entire distribution system remains pressurized during the entire period that the system is not operating, except that systems that monitor less frequently than monthly shall still monitor during the vulnerable period designated by the department.

Table 2
Total Coliform Monitoring Frequency

Population served	Minimum number of samples per month
1 to 1,000*	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

Population served	Minimum number of samples per month
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
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

*Noncommunity systems using only protected groundwater sources and serving less than twenty-five individuals, may collect and submit for analysis, one sample every three months per WAC 246-290-300 (3)(e)(ii).

(f) Repeat monitoring.

(i) If a routine sample taken under subsection (3) of this section is total coliform-positive, the system shall collect a set of repeat samples within twenty-four hours of being notified of the positive result. Additional treatment, such as batch or shock chlorination must not be started prior to the collection of repeat samples unless the department gives prior authorization. The purveyor shall contact the department to determine the best interim approach in this situation. The system shall collect no fewer than three repeat samples for each total coliform-positive sample found. The department may extend the twenty-four hour limit on a case-by-case basis if the system has a logistical problem in collecting the repeat samples within twenty-four hours that is beyond its control. Following the collection of repeat samples, and before the analytical results are known, the system may provide interim precautionary treatment or other means to protect public health.

(ii) The system shall collect all repeat samples on the same day, except the department may allow a system with a single connection to collect the required set of repeat samples over a three-day period or to collect a larger volume of repeat samples in one or more sample containers of any size, as long as the total volume collected is at least 300 ml.

(iii) The system shall collect an additional set of repeat samples in the manner specified in subsection (3)(f)(i) through (iii) of this section if one or more repeat samples in the current set of repeat samples is total coliform-positive. The system shall collect the additional set of repeat samples within twenty-four hours of being notified of the positive result, unless the department extends the time

limit as provided in subsection (3)(f)(i) of this section. The system shall continue to collect additional sets of repeat samples until either total coliforms are not detected in one complete set of repeat samples or the system determines that a coliform treatment technique trigger specified in WAC 246-290-320 (2)(a) has been exceeded as a result of a repeat sample being total coliform-positive and notifies the department. If a treatment technique trigger identified in WAC 246-290-320 (2)(a) is exceeded as a result of a routine sample being total coliform-positive, the system is required to conduct only one round of repeat monitoring for each total coliform-positive routine sample.

(iv) After a system collects a routine sample and before it gets the results of the analysis of that sample, if it collects subsequent routine samples 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 samples as a repeat sample instead of as a routine sample.

(v) Results of all routine and repeat samples taken under subsection (3)(e) and (f) of this section not invalidated by the department under subsection (3)(d) of this section must be used to determine whether a coliform treatment technique trigger specified in WAC 246-290-320 (2)(a) has been exceeded.

(g) *E. coli* testing.

(i) If any routine or repeat sample is total coliform-positive, the system shall analyze that total coliform-positive culture medium to determine if *E. coli* are present. If *E. coli* are present, the system shall notify the department by the end of the day when the system is notified of the test result.

(ii) The department may allow a system, on a case-by-case basis, to forgo *E. coli* testing on a total coliform-positive sample if the system assumes that the total coliform-positive sample is *E. coli*-positive. Accordingly, the system shall notify the department as specified in WAC 246-290-320 (1)(a).

(h) Triggered source water monitoring.

(i) All groundwater systems with their own groundwater sources must conduct triggered source water monitoring unless the following conditions exist:

(A) The system has submitted a project report and received department approval that it provides at least 4-log treatment of viruses using inactivation, removal, or a department-approved combination of 4-log virus inactivation and removal before or at the first customer for each groundwater source; and

(B) The system is conducting compliance monitoring under WAC 246-290-453(2).

(ii) Any groundwater source sample required under this subsection (3) must be collected at the source prior to any treatment unless otherwise approved by the department.

(iii) Any groundwater source sample collected under this subsection (3) must be at least 100 mL in size and must be analyzed for *E. coli* using one of the analytical methods under 40 C.F.R. 141.402(c).

(iv) Groundwater systems shall collect at least one sample from each groundwater source in use at the time a routine sample collected under subsection (3) of this section is total coliform-positive and not invalidated under subsection (3)(d) of this section. These source samples must be collected within twenty-four hours of notification of the total coliform-positive sample. The following exceptions apply:

(A) The twenty-four hour time limit may be extended if granted by the department and will be determined on a case-by-case basis. If an extension is granted, the system shall sample by the deadline set by the department.

(B) Systems with more than one groundwater source may meet the requirements of subsection (3)(h)(iv) of this section by sampling a representative groundwater source or sources. The system shall have a department-approved triggered source water monitoring plan that identifies one or more groundwater sources that are representative of each monitoring site in the system's coliform monitoring plan under subsection (3)(b) of this section. The plan must be approved by the department before representative sampling will be allowed.

(v) Groundwater systems with an *E. coli* positive source water sample that is not invalidated under subsection (3)(h)(vii) of this section, shall:

(A) Notify the department by the end of the day when the system is notified of the test result.

(B) Provide Tier 1 public notice as required under Part 7, Subpart A of this chapter and special notification under WAC 246-290-71005 (4) and (5);

(C) If directed by the department, take corrective action as required under WAC 246-290-453(1); and

(D) Systems that are not directed by the department to take corrective action shall collect five additional samples from the same source within twenty-four hours of being notified of the *E. coli* positive source water sample. If any of the five additional samples are *E. coli* positive, the system shall take corrective action under WAC 246-290-453(1).

(vi) Any consecutive groundwater system that has a total coliform-positive routine sample collected under this subsection and not invalidated under subsection (3)(d) of this section shall notify each wholesale system it receives water from within twenty-four hours of being notified of the total coliform-positive sample and comply with subsection (3)(h) of this section.

(A) A wholesale groundwater system that receives notice from a consecutive system under subsection (3)(h)(vi) of this section shall conduct triggered source water monitoring under subsection (3)(h) of this section unless the department determines and documents in writing that the total coliform-positive sample collected was caused by a distribution system deficiency in the consecutive system.

(B) If the wholesale groundwater system source sample is *E. coli* positive, the wholesale system shall notify all consecutive systems served by that groundwater source within twenty-four hours of being notified of the results and shall meet the requirements of subsection (3)(h)(v) of this section.

(C) Any consecutive groundwater system receiving water from a source with an *E. coli* positive sample shall notify water system users as required under subsection (3)(h)(v)(B) of this section.

(vii) An *E. coli* positive groundwater source sample may be invalidated only if one of the following conditions apply:

(A) The system provides the department with written notice from the laboratory that improper sample analysis occurred; or

(B) The department determines and documents in writing that there is substantial evidence that the *E. coli* positive groundwater sample is not related to source water quality.

(viii) If the department invalidates an *E. coli* positive groundwater source sample, the system shall collect another source water

sample within twenty-four hours of being notified by the department of its invalidation decision and have the sample analyzed using the same analytical method. The department may extend the twenty-four hour time limit as allowed under subsection (3)(h)(iv)(A) of this section.

(ix) Groundwater systems that fail to meet any of the monitoring requirements of subsection (3)(h) of this section shall conduct Tier 2 public notification under Part 7, Subpart A of this chapter.

(i) Assessment source water monitoring. If directed by the department, a groundwater system shall conduct assessment source water monitoring which may include, but is not limited to, the collection of at least one representative groundwater source sample each month the source provides groundwater to the public, for a minimum of twelve months.

(i) Sampling must be conducted as follows:

(A) Source samples must be collected at a location prior to any treatment. If the water system's configuration does not allow sampling at the source itself, the department may approve an alternative source sampling location representative of the source water quality.

(B) Source samples must be at least 100 mL in size and must be analyzed for *E. coli* using one of the analytical methods under 40 C.F.R. 141.402(c).

(ii) A groundwater system may use a triggered source water sample collected under subsection (3)(h) of this section to meet the requirements for assessment source water monitoring.

(iii) A groundwater system with an *E. coli* positive assessment source water sample that is not invalidated under subsection (3)(h)(vii) of this section, and consecutive systems receiving water from this source shall:

(A) Provide Tier 1 public notice under Part 7, Subpart A of this chapter and special notification under WAC 246-290-71005 (4) and (5); and

(B) Take corrective action as required under WAC 246-290-453(1).

(iv) A groundwater system that fails to conduct assessment source water monitoring as directed by the department shall provide Tier 2 public notice under Part 7, Subpart A of this chapter.

(4) Inorganic chemical and physical.

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

(i) Primary chemical and physical (~~substances~~) contaminants 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~~) contaminants are chloride, color, hardness, iron, manganese, specific conductivity, silver, sulfate, total dissolved solids(~~*~~), and zinc. Total dissolved solids are required only when specific conductivity exceeds seven hundred micromhos/centimeter.

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

(b) Purveyors shall monitor for all primary and secondary chemical and physical (~~substances~~) contaminants identified in WAC 246-290-310, Table 5 and Table 6. Samples shall be collected in accordance with the monitoring requirements referenced in 40 C.F.R. 141.23 introductory text, 141.23(a) through 141.23(j), and 40 C.F.R.

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 under 40 C.F.R. 141.23(a) through 141.23(j), and 40 C.F.R. 143.4, and Table 4 (~~herein~~) of this section.

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

(ii) Under 40 C.F.R. 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) Under 40 C.F.R. 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 C.F.R. 141.23 (b)(3), and 141.23 (c)(3).

(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 C.F.R. 141.86 (a) - (f), 141.87, and 141.88. All systems that have fewer than five drinking water taps used for human consumption shall collect at least one sample from each tap and then collect additional samples from those taps on different days during the monitoring period to meet the required number of samples as described in 40 C.F.R. 141.86(c).

(6) Disinfection byproducts (DBP), disinfectant residuals, and disinfection byproduct 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 C.F.R. 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 C.F.R. 141.132(f) or 40 C.F.R. 141.622, as applicable.

(A) Community and NTNC surface water and GWI systems that deliver water that has been treated with a disinfectant other than ultraviolet light and serve more than three thousand three hundred people shall submit a monitoring plan to the department.

(B) The department may require submittal of a monitoring plan from systems not specified in subsection (6)(a)~~((iv))~~ (iii)(A) of this section, and may require revision of any monitoring plan.

(C) Failure to monitor for TTHM, HAA5, or bromate will be treated as a violation for the entire period covered by the annual average where compliance is based on a locational running annual average or running annual average of monthly or quarterly samples or averages, as applicable.

(D) Failure to monitor for chlorine and chloramine residuals 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 the MRDLs.

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

(i) TTHMs and HAA5.

(A) Systems shall monitor for TTHM and HAA5 in accordance with 40 C.F.R. ~~((141.132 (b) (1) (i) until the dates set in Table 3. On and after the dates set in Table 3, the systems shall monitor in accordance with 40 C.F.R.))~~ 141.620, 141.621, and 141.622.

((Table 3

Population Served	Routine Monitoring Start Date ¹
100,000 or more	April 1, 2012
50,000–99,999	October 1, 2012
10,000–49,999	October 1, 2013
Less than 10,000	October 1, 2013 ² October 1, 2014 ³

¹Systems that have nonemergency interties with other systems must comply with the dates associated with the largest system in their combined distribution system.

²Surface water and GWI systems that did not have to do *Cryptosporidium* monitoring under 40 C.F.R. 141.701 (a)(4).

³Surface water and GWI systems that also did *Cryptosporidium* monitoring under 40 C.F.R. 141.701 (a)(4).))

(B) With department approval, systems may reduce monitoring in accordance with ((40 C.F.R. 141.132 (b) (1) (ii) and (iii), or) 40 C.F.R. 141.623(, as applicable)).

(C) Systems on department-approved reduced monitoring schedules may be required to return to routine monitoring, or initiate increased monitoring in accordance with ((40 C.F.R. 141.132 (b) (1) (iv),) 40 C.F.R. 141.625(,) or 40 C.F.R. 141.627, as applicable.

(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. After the dates set in Table 3,) Systems must meet requirements of 40 C.F.R. 141.628 and 40 C.F.R. 141.625(c) to return to routine monitoring.

(E) ((After the dates set in Table 3,) Systems must calculate operational evaluation levels each calendar quarter and take action, as needed, in accordance with 40 C.F.R. 141.626.

(F) NTNC systems serving ten thousand or more people and community systems must comply with the provisions of 40 C.F.R. Subpart U - Initial Distribution System Evaluation under:

- 40 C.F.R. 141.600 General requirements.
- 40 C.F.R. 141.601 Standard monitoring.
- 40 C.F.R. 141.602 System specific studies.
- 40 C.F.R. 141.603 40/30 certification.
- 40 C.F.R. 141.604 Very small system waivers.
- 40 C.F.R. 141.605 Subpart V compliance monitoring location recommendations.

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

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

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

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

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

(B) With department approval, monthly bromate monitoring may be reduced to once per quarter in accordance with 40 C.F.R. 141.132 (b) (3) (ii) (B).

(c) Disinfectant residuals.

(i) Chlorine and chloramines. Systems that deliver water continuously treated with chlorine or chloramines, including consecutive systems, shall monitor and record the residual disinfectant level in the distribution system under WAC 246-290-300 (2) (b), 246-290-451, 246-290-664(6), or 246-290-694(8).

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

(d) Disinfection byproducts precursors.

Community and NTNC surface water or GWI systems that use conventional filtration with sedimentation as defined in WAC 246-290-660(3) shall monitor under 40 C.F.R. 141.132(d), and meet the requirements of 40 C.F.R. 141.135.

(7) Organic chemicals.

(a) Purveyors of community and NTNC water systems shall comply with monitoring requirements under 40 C.F.R. 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), and 141.24 (h) (14) - (17).

(b) Sampling locations shall be as defined in 40 C.F.R. 141.24(f) (~~((, 141.24(g),))~~) and 141.24(h).

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

(ii) Under 40 C.F.R. 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 C.F.R. 141.24 (f)(7), 141.24 (f)(10), 141.24 (h)(6), and 141.24 (h)(7);

(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.

(8) Radionuclides. Monitoring for radionuclides shall be conducted under 40 C.F.R. 141.26.

(9) *Cryptosporidium* and *E. coli* source monitoring. Purveyors with surface water or GWI sources shall monitor the sources in accordance with 40 C.F.R. 141.701 and 702.

(10) (~~Other substances.~~

~~On the basis of public health concerns, the department may require the purveyor to monitor for additional substances.)~~ Contaminants with a SAL under WAC 246-290-315, Table 9.

(a) Purveyors shall monitor for contaminants with a SAL in accordance with Tables 3 and 4 of this section. Source sample locations, and blended samples, are allowed as consistent with subsection (7)(b) of this section.

TABLE 3
SAL MONITORING

Contaminant or Group of Contaminants	Applicable Water System Classification	Initial Sampling	Routine Sampling Frequency	Sampling Location
Organic Contaminants				
<u>Bromomethane</u>	<u>Community and NTNC</u>	<u>Performed as part of initial VOC analysis</u>	<u>Performed as part of routine VOC analysis</u>	<u>Per the locations described in WAC 246-290-300 (7)(b) and Table 4 of this section</u>
<u>DCPA Acid Metabolites</u>	<u>Community and NTNC</u>	<u>Performed as part of initial herbicide analysis</u>	<u>Performed as part of routine herbicide analysis</u>	<u>Per the locations described in WAC 246-290-300 (7)(b) and Table 4 of this section</u>
<u>Dichlorodifluoromethane</u>	<u>Community and NTNC</u>	<u>Performed as part of initial VOC analysis</u>	<u>Performed as part of routine VOC analysis</u>	<u>Per the locations described in WAC 246-290-300 (7)(b) and Table 4 of this section</u>

<u>Contaminant or Group of Contaminants</u>	<u>Applicable Water System Classification</u>	<u>Initial Sampling</u>	<u>Routine Sampling Frequency</u>	<u>Sampling Location</u>
<u>Trichlorofluoromethane</u>	<u>Community and NTNC</u>	<u>Performed as part of initial VOC analysis</u>	<u>Performed as part of routine VOC analysis</u>	<u>Per the locations described in WAC 246-290-300 (7)(b) and Table 4 of this section</u>
<u>Naphthalene</u>	<u>Community and NTNC</u>	<u>Performed as part of initial VOC analysis</u>	<u>Performed as part of routine VOC analysis</u>	<u>Per the locations described in WAC 246-290-300 (7)(b) and Table 4 of this section</u>
<u>1,2,3-Trichloropropane</u>	<u>Community and NTNC</u>	<u>Performed as part of initial VOC analysis</u>	<u>Performed as part of routine VOC analysis</u>	<u>Per the locations described in WAC 246-290-300 (7)(b) and Table 4 of this section</u>
<u>Per- and polyfluoroalkyl substances (PFAS)</u>	<u>Community and NTNC, and if applicable, TNC</u>	<u>One sample on or before December 31, 2025</u>	<u>Once every three years</u>	<u>Per the locations described in WAC 246-290-300 (7)(b) and Table 4 of this section</u>

(b) Purveyors shall monitor for bromomethane, dichlorofluoromethane, trichlorofluoromethane, naphthalene, and 1,2,3-trichloropropane at the same frequencies as described in subsection (7) (b) of this section concurrent with analytes listed on the VOC test panel under WAC 246-390-075.

(c) Purveyors shall monitor for DCPA acid metabolites at the same frequencies as described in subsection (7) (b) of this section concurrent with analytes listed on the herbicide test panel under WAC 246-390-075.

(d) Purveyors shall monitor for the PFAS analytes listed on the PFAS test panels under WAC 246-390-075.

(i) Purveyors shall complete initial sampling representing each source from a sample location listed in Table 4 of this section, for PFAS on a schedule determined by the department but no later than December 31, 2025.

(ii) Because some PFAS are bioaccumulative chronic contaminants, purveyors of TNC systems determined by the department to be at risk of PFAS contamination due to proximity of the system's water source to known PFAS contamination shall collect a sample for analysis as directed by the department and, if detected, comply with the follow-up requirements under WAC 246-290-320(8).

(iii) When scheduling initial PFAS sampling, the department shall consider:

(A) Susceptibility of the source water to contamination by surface activities due to physical attributes of the source;

(B) Vulnerability of the source water to PFAS contamination; and

(C) Population served.

(e) Analytical results for contaminants or groups of contaminants listed in Table 3 of this section that meet the SDRL and requirements under chapter 246-390 WAC and are reported within nine years prior to the effective date of this section may be applied to the initial monitoring requirement.

(f) For sources that become active after January 1, 2021, purveyors shall perform monitoring required as part of the source approval process under WAC 246-290-130.

(g) The department may require a confirmation sample for positive or negative results. If a confirmation sample is required by the department, the result will be averaged with the first sampling result and the average is used as the final result. The department has the discretion to delete results of obvious sampling errors from this calculation.

(h) After completing initial sampling as described in Table 3 of this section, each source shall be monitored as follows:

(i) For sources with organic results less than the SDRL, purveyors shall begin routine monitoring as described in Table 3 of this section, unless a monitoring waiver is granted by the department under (h) of this subsection.

(ii) For sources with organic detections equal to or greater than the SDRL, purveyors shall conduct follow-up monitoring under WAC 246-290-320(8).

(iii) For sources with inorganic detections below the SAL, purveyors shall monitor as identified in subsection (4) of this section.

(iv) For sources with inorganic detections above the SAL, purveyors shall conduct follow-up monitoring under WAC 246-290-320(9).

(i) Monitoring waivers for contaminants with a SAL.

(i) The department may grant a waiver for SAL monitoring requirements identified in this chapter.

(ii) As a condition of the waiver, the department may require a purveyor take a minimum of one sample per source while the waiver is effective.

(11) Other contaminants. On the basis of public health concerns, the department may require a purveyor to monitor for additional contaminants.

TABLE 4
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.
<i>Cryptosporidium</i> and <i>E. coli</i> (Source Water) - WAC 246-290-630(16)	Under 40 C.F.R. 141.703.
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.
Disinfection Byproducts - TTHMs and HAA5 - WAC 246-290-300(6)	Under 40 C.F.R. 141.132 (b)(1) (Subpart L of the C.F.R.).
Disinfection Byproducts - TTHMs and HAA5 - WAC 246-290-300(6)	Under 40 C.F.R. 141.600 - 629 (IDSE and LRAA in Subparts U and V of the C.F.R.).

Sample Type	Sample Location
Disinfection Byproducts - Chlorite (Systems adding chlorine dioxide)	Under 40 C.F.R. 141.132 (b)(2).
Disinfection Byproducts - Bromate (Systems adding ozone)	Under 40 C.F.R. 141.132 (b)(3).
Disinfectant Residuals - Chlorine and Chloramines	Under 40 C.F.R. 141.132 (c)(1).
Disinfectant Residuals - Chlorine dioxide	Under 40 C.F.R. 141.132 (c)(2).
Disinfection Precursors - Total Organic Carbon (TOC)	Under 40 C.F.R. 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))) <u>Contaminants with a SAL</u>	From a point representative of the source, after treatment, and prior to entry to the distribution system((or as directed by the department)).
<u>Other contaminants without a MCL, MRDL, TT or SAL</u>	<u>As directed by the department.</u>

AMENDATORY SECTION (Amending WSR 17-01-062, filed 12/14/16, effective 1/14/17)

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 (~~sub-~~~~stance~~) contaminant exceeds its MCL or its maximum residual disinfectant level (MRDL), the purveyor shall take follow-up action under 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) An *E. coli* MCL under this subsection is considered a primary standard.

(b) *E. coli* MCL. For the purposes of the public notification requirements in Part 7, Subpart A of this chapter, an *E. coli* MCL violation requires Tier 1 public notification. An *E. coli* MCL violation occurs each month in which a system is required to monitor for total coliforms when there is:

(i) *E. coli* presence in a repeat sample following a total coliform presence routine sample;

- (ii) Total coliform presence in any repeat samples collected as a follow-up to a sample with *E. coli* presence;
- (iii) The system fails to take all required repeat samples following an *E. coli* presence routine sample; or
- (iv) The system fails to test for *E. coli* when any repeat samples test positive for total coliform.

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

(3) Inorganic chemical and physical.

(a) The primary and secondary ((MCLs)) standards are listed in 40 C.F.R. Sec. 141.62 (primary) and 40 C.F.R. Sec. 143.3 (secondary) and in Tables 5 and 6 of this section:

TABLE 5
INORGANIC CHEMICAL CHARACTERISTICS

<u>((Substance)) Contaminant</u>	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)) (CN)	0.2
Fluoride (F)	4.0***
Lead (Pb)	**
Mercury (Hg)	0.002
((Nickel (Ni)) (Ni))	0.1)
Nitrate (as N)	10.0
Nitrite (as N)	1.0
Selenium (Se)	0.05
Sodium (Na)	**
Thallium (Tl)	0.002
<u>((Substance)) Contaminant</u>	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.

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.

Note*** If a water system provides community fluoridation, the level of fluoride and associated requirements are set under WAC 246-290-460.

TABLE 6
PHYSICAL CHARACTERISTICS

<u>((Substance)) Contaminant</u>	<u>Secondary MCLs</u>
Color	15 Color Units
Specific Conductivity	700 umhos/cm
Total Dissolved Solids (TDS)	500 mg/L

(b) Compliance with the MCLs, except for nitrate and nitrite, 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.

(c) Compliance with the MCLs for nitrate and nitrite is determined based on one sample if the levels of these contaminants are below the MCLs as determined under Table 5 of this section. If the levels of nitrate or nitrite exceed the MCLs in the initial sample, a confirmation sample is required under 40 C.F.R. 141.23 (f)(2), and compliance shall be determined based on the average of the initial and confirmation samples.

(4) Disinfection byproducts.

(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(6) and 40 C.F.R. 141.620 - 629.

(b) The MCLs for disinfection byproducts are as follows:

TABLE 7
DISINFECTION BYPRODUCTS

<u>Disinfection Byproduct</u>	<u>MCL (mg/L)</u>
Total Trihalomethanes (TTHMs)	0.080
Haloacetic acids (five) (HAA5)	0.060
Bromate	0.010
Chlorite	1.0

(c) Whether a system has exceeded the disinfection byproduct MCLs shall be determined in accordance with 40 C.F.R. 141.133. Beginning on the dates specified for compliance in 40 C.F.R. 141.620(c), compliance

with the TTHMs and HAA5 MCLs shall be based on the LRAAs as required by 40 C.F.R. 141.64 (b)(2) and 40 C.F.R. 141.620(d). Compliance with the Bromate and Chlorite MCL will continue to be determined in accordance with 40 C.F.R. 141.133.

(5) 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(6).

(b) The MRDL for disinfectants is as follows:

TABLE 8
DISINFECTANT RESIDUAL MRDLs

Disinfectant Residual	MRDL (mg/L)
Chlorine	4.0 (as Cl ₂)
Chloramines	4.0 (as Cl ₂)
Chlorine Dioxide	0.8 (as ClO ₂)

(c) Whether a system has exceeded MRDLs shall be determined in accordance with 40 C.F.R. 141.133.

(6) 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 C.F.R. 141.66.

(7) 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 C.F.R. 141.61(a)-)~~ are as follows:

<u>Contaminant</u>	<u>Chemical Abstract Service (CAS) Number</u>	<u>MCL (ppb)</u>
Vinyl chloride	<u>75-01-4</u>	<u>2</u>
Benzene	<u>71-43-2</u>	<u>5</u>
Carbon tetrachloride	<u>56-23-5</u>	<u>5</u>
1,2-Dichloroethane	<u>107-06-2</u>	<u>5</u>
Trichloroethylene	<u>79-01-6</u>	<u>5</u>
para-Dichlorobenzene	<u>106-46-7</u>	<u>75</u>
1,1-Dichloroethylene	<u>75-35-4</u>	<u>7</u>
1,1,1-Trichloroethane	<u>71-55-6</u>	<u>200</u>
cis-1,2-Dichloroethylene	<u>156-59-2</u>	<u>70</u>
1,2-Dichloropropane	<u>78-87-5</u>	<u>5</u>
Ethylbenzene	<u>100-41-4</u>	<u>700</u>
Monochlorobenzene	<u>108-90-7</u>	<u>100</u>
o-Dichlorobenzene	<u>95-50-1</u>	<u>600</u>
Styrene	<u>100-42-5</u>	<u>100</u>
Tetrachloroethylene	<u>127-18-4</u>	<u>5</u>
Toluene	<u>108-88-3</u>	<u>1,000</u>
trans-1,2-Dichloroethylene	<u>156-60-5</u>	<u>100</u>
Xylenes (total)	<u>1330-20-7</u>	<u>10,000</u>
Dichloromethane	<u>75-09-2</u>	<u>5</u>

<u>Contaminant</u>	<u>Chemical Abstract Service (CAS) Number</u>	<u>MCL (ppb)</u>
<u>1,2,4-Trichlorobenzene</u>	<u>120-82-1</u>	<u>70</u>
<u>1,1,2-Trichloroethane</u>	<u>79-00-5</u>	<u>5</u>

(ii) The department shall determine compliance with this subsection based on compliance with 40 C.F.R. 141.24(f).

(c) SOCs.

(i) MCLs for SOCs shall be as listed in 40 C.F.R. 141.61(c).

(ii) The department shall determine compliance with this subsection based on compliance with 40 C.F.R. 141.24(h).

(8) Other ~~((chemicals))~~ contaminants.

~~((a))~~ The state board of health shall determine ~~((maximum contaminant levels))~~ state MCLs 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)) contaminants as described in WAC 246-290-315 (5) through (8).

NEW SECTION

WAC 246-290-315 State action levels (SALs) and state maximum contaminant levels (MCLs). (1) The department shall consider the following criteria to select a contaminant for developing a SAL:

(a) Drinking water contributes to human exposure to the contaminant.

(b) The contaminant is known or likely to occur in public water systems at levels of public health concern. Sources of occurrence information include, but are not limited to:

(i) Washington state department of agriculture;

(ii) Washington state department of ecology; and

(iii) Monitoring results reported in accordance with 40 C.F.R. 141.35.

(c) The contaminant has a possible adverse effect on the health of persons exposed based on peer-reviewed scientific literature or government publications, such as:

(i) An EPA health assessment such as an Integrated Risk Information System assessment;

(ii) Agency for Toxic Substances and Disease Registry toxicological profiles;

(iii) State government science assessment; and

(iv) EPA guidelines for exposure assessment such as the EPA exposure factors handbook.

(d) A certified drinking water lab can accurately and precisely measure the concentration of the contaminant in drinking water at and

below the level of public health concern using EPA-approved analytical methods.

(2) After consideration of the criteria in subsection (1) of this section, the department may develop a SAL based on the following:

(a) Evaluation of available peer-reviewed scientific literature and government publications on fate, transport, exposure, toxicity and health impacts of the contaminant and relevant metabolites;

(b) An assessment based on the most sensitive adverse effect deemed relevant to humans and considering susceptibility and unique exposures of the most sensitive subgroup such as pregnant women, fetuses, young children, or overburdened and underserved communities; and

(c) Technical limitations to achieving the SAL such as insufficient analytical detection limit achievable at certified drinking water laboratories.

(3) The state board of health shall consider the department's findings under subsections (1) and (2) of this section when considering adopting a SAL under this chapter.

(4) Contaminants with a SAL.

(a) If a SAL under Table 9 of this section is exceeded, the purveyor shall take follow-up action as required under WAC 246-290-320. For contaminants where the SAL exceedance is determined based upon an RAA, the RAA will be calculated consistent with other organic contaminants per WAC 246-290-320(6) or other inorganic contaminants per WAC 246-290-320(3).

TABLE 9
STATE ACTION LEVELS

Contaminant or Group of Contaminants	SAL	SAL Exceedance Based On:
Bromomethane	5 µg/L	RAA
DCPA acid metabolites	85 µg/L	RAA
Dichlorodifluoromethane	530 µg/L	RAA
Trichlorofluoromethane	1,300 µg/L	RAA
Naphthalene	14 µg/L	RAA
1,2,3-Trichloropropane	21 µg/L	RAA
Per- and polyfluoroalkyl substances (PFAS)		
PFOA	10 ng/L	Confirmed detection
PFOS	15 ng/L	Confirmed detection
PFHxS	70 ng/L	Confirmed detection
PFNA	14 ng/L	Confirmed detection
PFBS	860 ng/L	Confirmed detection

(b) If a system fails to collect and submit a confirmation sample to a certified lab within ten business days of notification of the sample results, or as required by the department, the results of the original sample will be used to determine compliance with the SAL.

(5) The department shall consider the following when developing a state MCL:

(a) The criteria in subsection (1) of this section;

(b) Whether regulating the contaminant presents a meaningful opportunity to reduce exposures of public health concern for persons served by public water systems;

(c) The need for an enforceable limit to achieve uniform public health protection in Group A public water systems; and

(d) The need for an enforceable limit to support source water investigation and clean-up of a contaminant in drinking water supplies by responsible parties.

(6) In addition to the requirements in subsection (5) of this section, the department shall:

(a) Meet the requirements of subsection (2) of this section;

(b) Comply with the requirements in RCW 70A.142.010 to establish standards for chemical contaminants in drinking water;

(c) Consider the best available treatment technologies and affordability taking into consideration the costs to small water systems; and

(d) Determine that the probable benefits of the rule are greater than its probable costs, taking into account both the qualitative and quantitative benefits and costs.

(7) The state board of health shall consider the department's findings under subsections (5) and (6) of this section and follow the requirements under chapters 34.05 and 19.85 RCW when adopting a state MCL under this chapter.

(8) If EPA adopts a federal MCL for which the board has adopted a SAL or state MCL, the department will evaluate the federal MCL to determine if the standard is more or less protective of human health than the SAL or state MCL. A federal MCL supercedes a SAL. A federal MCL supercedes a state MCL if it is more stringent than the state MCL.

Upon the department's determination that the federal MCL is less protective of public health, the board may take one of the following actions:

(a) Retain the state MCL; or

(b) Replace the state SAL with a state MCL using the process in subsection (6) of this section.

AMENDATORY SECTION (Amending WSR 17-01-062, filed 12/14/16, effective 1/14/17)

WAC 246-290-320 Follow-up action. (1) General.

(a) When an MCL or MRDL violation or SAL exceedance occurs, the purveyor shall take follow-up action as described in this section.

(b) When a primary (~~standard~~) MCL or MRDL violation occurs, the purveyor shall:

(i) Notify the department under 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 C.F.R. 141.201 through 208, and Part 7, Subpart A of this chapter;

(iii) (~~Determine~~) Investigate the cause of the contamination, within the purveyor's control; 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) When a SAL exceedance under WAC 246-290-315 occurs, the purveyor shall:

(i) Notify the department in accordance with WAC 246-290-480;

(ii) Notify water system users and the owner or operator of any consecutive system served water in exceedance of the SAL in accordance with WAC 246-290-71006;

(iii) Continue monitoring in accordance with subsection (8) or (9) of this section as applicable;

(iv) Investigate the cause of the contamination, within the purveyor's control; and

(v) Take action as directed by the department.

(e) The department may require additional sampling for confirmation of results.

(2) Bacteriological. Coliform treatment technique triggers and assessment requirements for protection against potential fecal contamination.

(a) Treatment technique triggers. Systems shall conduct assessments in accordance with (b) of this subsection after exceeding treatment technique triggers as follows:

(i) Level 1 treatment technique triggers.

(A) For systems taking forty or more routine samples per month, the system exceeds 5.0 percent total coliform-positive samples for the month.

(B) For systems taking fewer than forty routine samples per month, the system has two or more total coliform-positive samples in the same month.

(C) The system fails to take every required repeat sample after any single total coliform-positive routine sample.

(ii) Level 2 treatment technique triggers.

(A) An *E. coli* MCL violation, as specified in WAC 246-290-310 (2) (b).

(B) A second level 1 treatment technique trigger as defined in (a) (i) of this subsection within a rolling twelve-month period, unless the department has determined a likely reason that the samples that caused the first level 1 treatment technique trigger were total coliform-positive and has established that the system has corrected the problem.

(b) Requirements for assessments.

(i) Systems shall conduct level 1 and 2 assessments to identify the possible presence of sanitary defects and defects in distribution system coliform monitoring practices. Level 1 assessments must be conducted by the system operator or purveyor. Level 2 assessments must be conducted by the department or a party approved by the department which may include the system operator.

(ii) When conducting assessments, systems shall direct the assessor to evaluate minimum elements that include:

(A) Review and identification of atypical events that could affect distributed water quality or indicate that distributed water quality was impaired;

(B) Changes in distribution operation and maintenance that could affect distributed water quality, including water storage;

(C) Source and treatment considerations that bear on distributed water quality, where appropriate. For example, whether or not a groundwater system is disinfected;

(D) Existing water quality monitoring data;

(E) Inadequacies in sample sites, sampling protocol, and sample processing; and

(F) The system shall conduct the assessment consistent with any department directives that tailor specific assessment elements with respect to the size and type of the system and the size, type, and characteristics of the distribution system.

(iii) Level 1 assessments. A system shall conduct a level 1 assessment consistent with the requirements in subsection (2)(b) of this section if the system exceeds one of the treatment technique triggers in (a)(i) of this subsection.

(A) The system shall complete a level 1 assessment as soon as practical after any treatment technique trigger is met in (a)(i) of this subsection. The completed assessment must describe sanitary defects detected, corrective actions completed, and a proposed timetable for any corrective actions not already completed. The assessment may also note that no sanitary defects were identified. The system shall submit the completed level 1 assessment to the department within thirty days after the system learns that it has exceeded a treatment technique trigger.

(B) Upon completion and submission of the level 1 assessment by the system, the department shall determine if the system has identified a likely cause for the level 1 treatment technique trigger and has corrected the problem. If the system has not corrected the problem, the department shall determine if the proposed timetable for corrective action is sufficient.

(C) If after reviewing the completed level 1 assessment, the department determines the assessment is not sufficient, including any proposed timetable for any corrective actions not already completed, the department may require the system to submit a revised assessment to the department within thirty days from the date of department notification.

(iv) Level 2 assessments. A system shall conduct a level 2 assessment consistent with requirements in subsection (2)(b) of this section if the system exceeds one of the treatment technique triggers in (a)(ii) of this subsection. The system shall comply with any expedited actions or additional actions required by the department in the case of an *E. coli* MCL violation.

(A) A level 2 assessment must be conducted as soon as practical after any treatment technique trigger in (a)(ii) of this subsection and shall be conducted by either a water distribution manager 2, 3, or 4 certified in accordance with chapter 246-292 WAC, a licensed professional engineer that meets the requirements of WAC 246-290-040(1), a local health jurisdiction, or the department. The system shall submit a completed level 2 assessment to the department within thirty days after the system learns that it has exceeded a treatment technique trigger. The completed assessment must describe sanitary defects detected, corrective actions completed, and a proposed timetable for any corrective actions not already completed in accordance with (d) of this subsection. The assessment may also note that no sanitary defects were identified.

(B) Upon completion and submission of the level 2 assessment by the system, the department shall determine if the system has identified a likely cause for the level 2 treatment technique trigger and has corrected the problem. If the system has not corrected the problem, the department shall determine if the proposed timetable for corrective action is sufficient.

(C) If after reviewing the submitted level 2 assessment, the department determines the assessment is not sufficient, including any proposed timetable for any corrective actions not already completed in accordance with (d) of this subsection, the department may require the system to submit a revised assessment within thirty days from the date of department notification.

(c) To achieve compliance with the MCL for *E. coli* under WAC 246-290-310 (2)(b), the following are identified as the best technology, treatment techniques, or other means available:

(i) Protection of wells from fecal contamination by appropriate placement and construction;

(ii) Maintenance of a disinfectant residual throughout the distribution system;

(iii) Proper maintenance of the distribution system including appropriate pipe replacement and repair procedures, main flushing programs, proper operation and maintenance of storage tanks and reservoirs, cross-connection control, and continual maintenance of positive water pressure in all parts of the distribution system;

(iv) Filtration, disinfection, or both, of surface water, using the proper strength of oxidants such as chlorine, chlorine dioxide, or ozone; and

(v) For systems using groundwater, compliance with a wellhead protection program developed and implemented under WAC 246-290-135(3).

(d) Corrective action. Systems shall correct sanitary defects found through either a level 1 or level 2 assessment conducted under (b) of this subsection. For corrections not completed by the time of submission of the assessment to the department, the system shall complete the corrective actions in compliance with a timetable approved by the department in consultation with the system under (e) of this subsection. The system shall notify the department when each scheduled corrective action is completed.

(e) Consultation. At any time during the assessment or corrective action phase, the water system may request a consultation with the department to determine the appropriate actions to be taken. The system may consult with the department on all relevant information that may impact the system's ability to comply with the requirements of subsection (2) of this section, including the method of accomplishment, an appropriate time frame, and other relevant information.

(f) A treatment technique violation occurs when a system exceeds a treatment technique trigger specified in subsection (2)(a) of this section and then fails to conduct the required assessment or complete corrective actions within the time frame specified in subsection (2)(b) and (d) of this section.

(3) Inorganic chemical and physical follow-up monitoring shall be conducted in accordance with the following:

(a) For nonnitrate/nitrite primary inorganic chemicals, 40 C.F.R. 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 C.F.R. 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 C.F.R. 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 C.F.R. 141.85(c), 141.86 (d)(2), 141.86 (d)(3), 141.87(c), 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 under WAC 246-290-634.

(6) Organic chemicals. Follow-up monitoring shall be conducted in accordance with the following:

(a) For VOCs, 40 C.F.R. 141.24 (f)(11) through 141.24 (f)(15), and 141.24 (f)(22); or

(b) For SOCs, 40 C.F.R. 141.24(b), 141.24(c) and 141.24 (h)(7) through 141.24 (h)(11), and 141.24 (h)(20).

(7) Radionuclide follow-up monitoring shall be conducted under 40 C.F.R. 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).

(8) Organic contaminants with a SAL.

(a) All increased monitoring for organic contaminants will be for the test panel on which the contaminant is listed in WAC 246-390-075.

(b) The purveyor shall sample quarterly as shown in Table 10 of this section at each sampling point beginning in the calendar quarter following the first detection from each sampling point which is equal to or greater than the SDRL under chapter 246-390 WAC. The number of samples required in the three quarters after the first detection will be determined based on the highest detection in the year.

TABLE 10
MONITORING REQUIREMENTS FOLLOWING THE FIRST DETECTION
OF AN ORGANIC CONTAMINANT WITH A SAL

<u>If the highest detection in the first year is:</u>	<u>Total number of additional consecutive quarters.</u>
<u>≤ 20% of the SAL.</u>	<u>1</u>
<u>> 20% but < 80% of the SAL.</u>	<u>2</u>
<u>≥ 80% of the SAL.</u>	<u>3</u>

(c) Ongoing monitoring is specified in Table 11 of this section, or as directed by the department. Ongoing monitoring is based upon the results of samples collected in the most recent year of monitoring, or the most recent result for samples collected less frequently than annually.

TABLE 11
ONGOING MONITORING REQUIREMENTS FOR SOURCES WITH OR-
GANIC CONTAMINANTS WITH A SAL

<u>If highest detection being considered is:</u>	<u>Monitoring frequency:</u>
<u>≤ 20% of the SAL.</u>	<u>1 sample every 3 years</u>
<u>> 20% but < 80% of the SAL.</u>	<u>Annually</u>
<u>≥ 80% of the SAL.</u>	<u>1. Quarterly, if contaminant is Tier 1, or Tier 2 and bioaccumulative per Table 17 in WAC 246-290-71006.</u>

<u>If highest detection being considered is:</u>	<u>Monitoring frequency:</u>
	<u>2. Annually if the contaminant is Tier 2 and not bioaccumulative per Table 17 in WAC 246-290-71006.</u>

(d) When the monitoring frequency is less often than quarterly, the purveyor shall collect samples during the quarter assigned by the department.

(e) The department may reduce the annual monitoring frequency to one sample every three years after three consecutive years of results that demonstrate the levels are less than eighty percent of the SAL.

(f) The department may increase the monitoring frequency from once every year or once every three years to once every quarter if results of reduced monitoring are equal to or greater than eighty percent of the SAL.

(9) Inorganic contaminants with a SAL.

(a) The purveyor shall collect quarterly samples at each sampling point beginning in the quarter following a detection greater than the SAL under Table 9 of this section. Increased monitoring for inorganic contaminants will be for a specific contaminant which is detected above the SAL.

(b) The department may reduce the quarterly monitoring frequency when results are reliably and consistently below the SAL. When the monitoring frequency is less often than quarterly, the purveyor shall collect samples during the quarter assigned by the department.

(10) If a contaminant has no MCL, MRDL, TT, or SAL, the department may use an EPA health advisory level to determine subsequent monitoring per this section.

(11) The department shall determine the purveyor's follow-up action when a ((substance)) contaminant not included in this chapter is detected.

AMENDATORY SECTION (Amending WSR 99-07-021, 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))~~ (a) 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))~~ (i) 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))~~ (ii) 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 ana-

lyzed for the specific contaminant(s) of concern by the purveyor through department-approved on-site methods.

~~((e))~~ (iii) Additional finished drinking water monitoring may be required by the department based on the complexity or size of the water system.

~~((3))~~ (b) 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))~~ (c) 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).

(2) Purveyors using treatment to remove a contaminant with a SAL shall:

(a) Collect finished drinking water samples at a point downstream of the treatment system prior to the first consumer on a quarterly basis; and

(b) Submit the samples to a certified lab for analysis or analyze the samples using department-approved on-site methods.

AMENDATORY SECTION (Amending WSR 17-01-062, filed 12/14/16, effective 1/14/17)

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 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) The purveyor shall maintain documentation of any level 1 or level 2 assessment regardless of who conducts the assessment, and documentation of corrective actions completed as a result of the assessments, or other summary documentation of the sanitary defects and corrective actions taken under WAC 246-290-320(2) for department review.

The documentation must be maintained by the purveyor for a period of not less than five years after completion of the assessment or corrective action.

(c) For consecutive systems, documentation of notification to the wholesale systems of total coliform-positive samples that are not invalidated under WAC 246-290-300 (3)(d) must be kept for a period of not less than five years.

(d) Records of action taken by the system to correct violations of primary drinking water standards and exceedances of SALs. For each violation of a primary drinking water standard or SAL exceedance, records of actions taken to correct the violations or SAL exceedance, and copies of public notifications (~~shall~~) must be kept for a period of no less than ten years after the last corrective action taken.

(e) 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.

(f) Copies of project reports, construction documents and related drawings, inspection reports and approvals shall be kept for the life of the facility.

(g) Where applicable, 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;
- (C) Results of analyses; and
- (iv) Other information as specified by the department.

(h) The purveyor shall retain copies of public notices made under Part 7, Subpart A of this chapter and certifications made to the department under 40 C.F.R. 141.33(e) for a period of at least three years after issuance.

(i) 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 under 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.

(j) Purveyors required to conduct disinfection profiling and benchmarking under 40 C.F.R. 141.530 through 141.544 shall retain the results on file indefinitely.

(k) Copies of monitoring plans developed under this chapter shall be kept for the same period of time as the records of analyses taken under the plan are required to be kept under (a) of this subsection.

(1) Purveyors using surface water or GWI sources must keep the records required by 40 C.F.R. 141.722.

(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 or a SAL (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 or in Table 17, the department must be notified as soon as possible, but no later than twenty-four hours after the violation or SAL exceedance 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.

(f) Bacteriological.

(i) The purveyor shall notify the department of the presence of total coliform in a sample within ten days of notification by the laboratory;

(ii) Prior to serving water to the public, a seasonal system shall submit a certification to the department demonstrating that the system has complied with the department-approved start-up procedure; and

(iii) The system shall report treatment technique violations identified under WAC 246-290-320 (2)(f) to the department no later than the end of the next business day after the violation is known.

(g) Systems monitoring for disinfection byproducts under WAC 246-290-300(6) shall report information to the department as specified in (a) and (b) of this subsection, and 40 C.F.R. 141.134(b).

(h) Systems monitoring for disinfectant residuals under WAC 246-290-300(6) shall report information to the department as specified in (a) and (b) of this subsection, and 40 C.F.R. 141.134(c).

(i) Systems required to monitor for disinfection byproduct precursor removal under WAC 246-290-300(6) shall report information to the department as specified in (a) and (b) of this subsection, and 40 C.F.R. 141.134(d).

(j) Systems required to monitor for disinfection byproducts under WAC 246-290-300(6) shall report information to the department as specified in (a) and (b) of this subsection, and 40 C.F.R. 141.600 - 629.

(k) Systems subject to the enhanced treatment requirements for *Cryptosporidium* under WAC 246-290-630(4) shall report information to the department as specified in 40 C.F.R. 141.706 and 141.721.

(l) Systems that use acrylamide and epichlorohydrin in the treatment of drinking water, must certify annually in writing to the department that the combination (or product) of dose and monomer level does not exceed the levels specified in (l)(i) and (ii) of this subsection. Certifications shall reference maximum use levels established by an ANSI-accredited listing organization approved by the department.

(i) Acrylamide = 0.05 percent dosed at 1 ppm (or equivalent); and

(ii) Epichlorohydrin = 0.01 percent dosed at 20 ppm (or equivalent).

(m) Use of products that exceed the specified levels constitutes a treatment technique violation and the public must be notified under the public notice requirements under Part 7, Subpart A of this chapter.

(n) Systems shall submit to the department, in accordance with 40 C.F.R. 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.

AMENDATORY SECTION (Amending WSR 08-03-061, filed 1/14/08, effective 2/14/08)

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 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-connec-

tion control within the consumer's water system, i.e., within the property lines of the consumer's premises, lies with the authority having jurisdiction.

(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);

(ii) *Cross-Connection Control Manual, Accepted Procedure and Practice* published by the Pacific Northwest Section of the American Water Works Association (PNWS-AWWA Manual); or

(iii) Guidance document: *Cross-Connection Control for Small Water Systems* published by the department.

(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 authority having jurisdiction in all matters concerning cross-connection control. The purveyor shall document and describe the 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 addressed in subsection (4)(b) of this section, only if the following conditions are met:

(A) The in-premises backflow preventers provide a level of protection commensurate with the purveyor's assessed degree of hazard;

(B) Backflow preventers which provide the in-premises backflow protection meet the definition of approved backflow preventers as described in WAC 246-290-010;

(C) The approved backflow preventers are installed, inspected, tested (if applicable), maintained, and repaired in accordance with subsections (6) and (7) of this section;

(D) Records of the backflow preventers are maintained in accordance with subsections (3)(j) and (8) of this section; and

(E) 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.

(h) The purveyor shall take appropriate corrective action as authorized by the legal instrument required by subsection (3)(b) of this section, when:

(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.

(i) 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.

(j) Except in the event of an emergency, purveyors shall notify the authority having jurisdiction prior to denying or discontinuing water service to a consumer's premises for one or more of the reasons listed in (h) of this subsection.

(k) The purveyor shall prohibit the intentional return of used water to the purveyor's distribution system. Used water includes, 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 connections made on or after April 9, 1999, procedures shall ensure that an initial evaluation is conducted before water service is provided;

(ii) For all other connections, 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 relied upon to protect the public water system are inspected and/or tested (as applicable) under 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 BAT 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. The public education 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 backflow preventers that protect the public water system including:

(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 in a permit issued under 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 as described in Table ((8)) 12 of this section.

**TABLE ((8)) 12
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 cross-connection hazard	Backsiphonage or backpressure backflow	AG, RPBA, RPDA, DCVA, or DCDA

(b) Premises isolation requirements.

(i) The purveyor shall ensure that an approved air gap, RPBA, or RPDA is installed for premises isolation for service connections to premises posing a high health cross-connection hazard including, but not limited to, those premises listed in Table ((9)) 13 of this section, except those premises identified as severe in (b)(ii) of this subsection.

(ii) For service connections to premises posing a severe health cross-connection hazard including wastewater treatment plants, radioactive material processing plants, and nuclear reactors, the purveyor shall ensure that either an:

(A) Approved air gap is installed for premises isolation; or

(B) Approved RPBA or RPDA is installed for premises isolation in combination with an in-plant approved air gap.

(iii) If the purveyor's CCS determines that no hazard exists for a connection serving premises of the type listed in Table ((9)) 13 of this section, the purveyor may grant an exception to the premises isolation requirements of (b)(i) of this subsection.

(iv) The purveyor shall document, on a case-by-case basis, the reasons for granting an exception under (b)(i) of this subsection and include the documentation in the cross-connection control program annual summary report required in subsection (8) of this section.

**TABLE ((9)) 13 (formally codified as TABLE 9)
SEVERE* AND 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.

* RPBA's 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 premises isolation 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)(g)(ii) 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 under 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 connections made on or after April 9, 1999, 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 code official administering the State Building Code as defined in chapter 51-04 WAC.

(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 approved backflow preventers commensurate with the degree of hazard as 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, in-line testing (as applicable), and repair 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 the 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 connections made on or after April 9, 1999, 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 the requirements of 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 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) For backflow preventers that protect the public water system, 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 that protect the public water system are conducted:

(i) When any of the following occur:

(A) Upon installation, repair, reinstallation, or relocation of an assembly;

(B) Upon installation or replumbing of an air gap;

(C) After a backflow incident involving the assembly or air gap; and

(ii) Annually thereafter, unless the purveyor requires more frequent testing for high hazard premises or for assemblies that repeatedly fail.

(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, authority having jurisdiction, 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 contaminating the public water system on a backflow incident report form available from the department; 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.

AMENDATORY SECTION (Amending WSR 19-07-063, filed 3/19/19, effective 4/19/19)

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 means:

(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;

(c) A state or local health jurisdiction professional experienced in conducting these measurements; or

(d) For the purpose of monitoring distribution system residual disinfectant concentration only, a person designated by and under the direct supervision of a waterworks operator certified under chapter 246-292 WAC.

(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," approved methods under 40 C.F.R. 141.74 (a)(1), or alternative testing methods under Appendix A to Subpart C of 40 C.F.R. Part 141; 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)~~) using a primary standard (~~(in the expected range of measurements)~~) on at least a quarterly basis for instruments using an incandescent light source and on at least an annual basis for instruments using an LED or laser light source; and

(ii) Verify continuous turbidimeter performance on a weekly basis, not on consecutive days, with grab sample measurements made using either a properly calibrated bench model turbidimeter or a secondary standard as specified by the manufacturer.

(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 online within five working days of failure.

(5) Purveyors shall verify instruments used for continuous monitoring of free and total chlorine residual with a grab sample measurement at least every five days, or with a protocol approved by the department as required under 40 C.F.R. 141.74 (a)(2).

(6) Purveyors monitoring for *Cryptosporidium* or *E. coli* as required under 40 C.F.R. 141.701 shall collect samples and have them analyzed under 40 C.F.R. 141.704 and 141.705.

AMENDATORY SECTION (Amending WSR 17-01-062, filed 12/14/16, effective 1/14/17)

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))~~ 14 of this section. 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))~~ 15.

**Table ~~((10))~~ 14
FILTRATION OPERATION CRITERIA**

FILTRATION TECHNOLOGY/ MEDIA	MAXIMUM FILTRATION RATE (gpm/ft ²)
Conventional, Direct and In-Line	
Gravity Filters with Single Media	3

FILTRATION TECHNOLOGY/ MEDIA	MAXIMUM FILTRATION RATE (gpm/ft ²)
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.

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)) 15 of this section;

(ii) Never exceeds 5.0 NTU for any system using slow sand, diatomaceous earth;

(iii) Never exceeds 1.0 NTU for any system using conventional, direct, or in-line filtration; and

(iv) Never exceeds the maximum allowable turbidity determined by the department on a case-by-case basis for any system using an alternative filtration technology approved under WAC 246-290-676 (2) (b).

**Table ((11)) 15
TURBIDITY PERFORMANCE STANDARDS**

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
Alternative Technology	As determined by the department through case-by-case approval of technology, under 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:

Filtration Technology	Percent Removal Credit (log)					
	<i>Giardia</i>		Virus		<i>Cryptosporidium</i>	
	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 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) Alternative filtration technology.

The department shall grant, on a case-by-case basis, *Giardia lamblia* cyst, *Cryptosporidium* oocyst, and virus removal credit for systems using alternative 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 under 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.

(g) Higher level removal credit.

(i) The department may grant a higher level of *Giardia lamblia*, *Cryptosporidium*, and virus removal credit than listed under (b) through (e) of this subsection, if the purveyor demonstrates to the department's satisfaction that the higher level can be consistently achieved.

(ii) 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.

(3) Disinfection byproduct precursor removal requirements.

(a) Conventional systems using sedimentation shall meet the treatment technique requirements for control of disinfection byproduct precursors specified in 40 C.F.R. 141.135.

(i) Applicability of this requirement shall be determined in accordance with 40 C.F.R. 141.135(a).

(ii) Enhanced coagulation and enhanced softening shall be provided in accordance with 40 C.F.R. 141.135(b), if applicable.

(iii) Compliance with the treatment technique requirements for control of disinfection byproduct precursors shall be determined in accordance with 40 C.F.R. 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 text-book 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) 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. Purveyors that **do** recycle spent filter backwash water, thickener supernatant, or liquids from dewatering processes must also report the following information:

(i) 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.

(ii) 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) 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.

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)) 16 of this section.

**Table ((12)) 16
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 C.F.R. 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 groundwater source; or

(ii) Purchasing completely treated water from a department-approved public water system.

AMENDATORY SECTION (Amending WSR 03-08-037, 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 C.F.R. 141.205 (d)(1) and other standard language in accordance with 40 C.F.R. 141.205 (d)(2) and (3), except that notification of the availability of (~~unregulated contaminant~~) results required per 40 C.F.R. Sec. 141.40 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.

AMENDATORY SECTION (Amending WSR 03-08-037, filed 3/27/03, effective 4/27/03)

WAC 246-290-71006 (~~Consumer information~~) Public notice for contaminants with a SAL and other unregulated contaminants. (1) The purveyor shall provide (~~consumer information~~) public notice 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.)) contaminant exceeds a SAL listed in WAC 246-290-315, Table 9.~~

(2) The public notice must be in conformance with the requirements under WAC 246-290-71001 through 246-290-71004 and based upon the public notice tier designation of the contaminant or group of contaminants in Table 17 of this section.

TABLE 17
PUBLIC NOTICE TIER DESIGNATION FOR CONTAMINANTS WITH A
SAL

<u>Contaminant or Group of Contaminants</u>	<u>Public Notice Tier</u>	<u>Bioaccumulative</u>
<u>Bromomethane</u>	<u>Tier 2</u>	<u>No</u>
<u>DCPA acid metabolites</u>	<u>Tier 2</u>	<u>No</u>
<u>Dichlorodifluoro methane</u>	<u>Tier 2</u>	<u>No</u>
<u>Trichlorofluoro methane</u>	<u>Tier 2</u>	<u>No</u>
<u>Naphthalene</u>	<u>Tier 2</u>	<u>No</u>
<u>1, 2, 3-Trichloropropane</u>	<u>Tier 2</u>	<u>No</u>
<u>PFOA</u>	<u>Tier 2</u>	<u>Yes</u>
<u>PFOS</u>	<u>Tier 2</u>	<u>Yes</u>
<u>PFHxS</u>	<u>Tier 2</u>	<u>Yes</u>
<u>PFNA</u>	<u>Tier 2</u>	<u>Yes</u>
<u>PFBS</u>	<u>Tier 2</u>	<u>Yes</u>

(a) The purveyor shall complete public notification for an initial exceedance of a Tier 1 designated SAL within twenty-four hours of confirmation, and for every subsequent quarter in which analytical results exceed a SAL.

(b) The purveyor shall complete public notification for an initial exceedance of a Tier 2 designated SAL as soon as practical, but no less than within thirty days of exceeding the SAL per Table 9 in WAC 246-290-315, and every three months thereafter as long as the results continue to exceed the SAL per Table 9 in WAC 246-290-315, or as directed by the department.

(3) The department may require public notice for other unregulated contaminants that are reported per requirements in WAC 246-390-075.

AMENDATORY SECTION (Amending WSR 17-01-062, filed 12/14/16, effective 1/14/17)

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. WAC 246-290-72013 establishes additional requirements for the content of annual reports that community water systems using groundwater 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) This section applies only to community water systems.

(2) For the purpose of WAC 246-290-72001 through 246-290-72013:

(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(7) for organic contaminants, at or above the levels prescribed by 40 C.F.R. 141.131 (b)(2)(iv) for disinfection byproducts, and at or above the levels prescribed by 40 C.F.R. 141.25(e) for radioactive contaminants)) SDRLs under chapter 246-390 WAC.

AMENDATORY SECTION (Amending WSR 17-01-062, filed 12/14/16, effective 1/14/17)

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.

(4) A report that contains level 1 or level 2 assessment information must include the applicable definitions:

(a) Level 1 assessment: A level 1 assessment is a study of the water system to identify potential problems and determine, if possible, why total coliform bacteria have been found in our water system.

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

(5) A report that contains information regarding a detection of a contaminant with a SAL must include the following definition: State action level (SAL) means the concentration of a contaminant in drinking water established to protect public health and which, if exceeded, triggers actions a water system must take. SALs are established for contaminants without an MCL, federal action level, or TT.

AMENDATORY SECTION (Amending WSR 17-01-062, filed 12/14/16, effective 1/14/17)

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, federal action level, ~~((maximum residual disinfectant level or treatment technique))~~ SAL, TT, or MRDL (regulated contaminants);

(b) Detected ~~((unregulated))~~ contaminants without an MCL, federal action level, SAL, TT, or MRDL for which monitoring is required ~~((under WAC 246-290-300(10) and 40 C.F.R. 140.40))~~; and

(c) Disinfection byproducts for which monitoring is required ~~((by))~~ under WAC 246-290-300(6) ~~((and 40 C.F.R. 141.142))~~ or microbial contaminants for which monitoring is required by WAC 246-290-300(3) ~~((and 40 C.F.R. 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 EPA 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 C.F.R. 141.142 and 40 C.F.R. 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 or SAL 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 or SAL 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)~~) with a SAL, or contaminants with an established MCL, except turbidity, total coliform, and *E. coli*, the highest contaminant level used to determine compliance with a SAL or a National Primary Drinking Water Regulation and the range of results, as follows:
 - (i) When compliance with the MCL or SAL is determined annually or less frequently: The highest detected level at any sampling (~~(point)~~) location and the range of results expressed in the same units as the MCL or SAL.
 - (ii) When compliance with the MCL or SAL is determined by calculating a running annual average of all samples taken at a sampling (~~(point)~~) location: The highest average of any of the sampling (~~(points)~~) location and the range of all sampling (~~(points)~~) locations expressed in the same units as the MCL or SAL. For the TTHM and HAA5 MCLs determined on the basis of the LRAA, systems must include the highest LRAA for TTHM and HAA5 and the range of individual sample results for all monitoring locations expressed in the same units as the MCL. If more than one location exceeds the TTHM or HAA5 MCL, the system must include the LRAA for all locations that exceed the MCL.
 - (iii) When compliance with the MCL is determined on a system-wide basis by calculating a running annual average of all samples at all sampling points: The average and range of detection expressed in the same units as the MCL. The system is required to include individual sample results for the IDSE conducted under WAC 246-290-300 (6)(b)(i)(F) when determining the range of TTHM and HAA5 results to be reported in the annual consumer confidence report for the calendar year that the IDSE samples were taken.
 - (iv) Note to WAC 246-290-72005 (4)(d): When rounding of results to determine compliance with the MCL or SAL 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 *E. coli* analytical results under WAC 246-290-300 (3)(e) through (g): The total number of positive samples; and

(h) 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~~) Detected contaminants without a MCL, SAL, federal action level, TT or MRDL 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.

AMENDATORY SECTION (Amending WSR 17-01-062, filed 12/14/16, effective 1/14/17)

WAC 246-290-72012 Regulated contaminants.

Contaminant ((units))	((traditional MCL in mg/L)) MCL or SAL <u>(units match lab results)</u>	To convert <u>lab results</u> for CCR, multiply by	MCL in CCR units	MCLG in <u>CCR units</u>	Major Sources in Drinking Water	Health Effects Language
Microbiological Contaminants						
Total Coliform Bacteria	TT	-	TT	((N/A)) 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, waterborne pathogens may be present or that a potential pathway exists through which contamination may enter the drinking water distribution system. We found coliforms indicating the need to look for potential problems in water treatment or distribution. When this occurs, we are required to conduct assessment(s) to identify problems and to correct any problems that were found during these assessments.

Contaminant ((units))	((traditional MCL in mg/L)) MCL or SAL (units match lab results)	To convert lab results for CCR, multiply by	MCL in CCR units	MCLG in CCR units	Major Sources in Drinking Water	Health Effects Language
<i>E. coli</i>	Routine and repeat samples are total coliform-positive and either is <i>E. coli</i> -positive or system fails to take repeat samples following <i>E. coli</i> -positive routine sample or system fails to analyze total coliform-positive repeat sample for <i>E. coli</i> .	-	Routine and repeat samples are total coliform-positive and either is <i>E. coli</i> -positive or system fails to take repeat samples following <i>E. coli</i> -positive routine sample or system fails to analyze total coliform-positive repeat sample for <i>E. coli</i> .	0	Human and animal fecal waste	<i>E. coli</i> are bacteria whose presence indicates that the water may be contaminated with human or animal wastes. Human pathogens in these wastes can cause short-term effects, such as diarrhea, cramps, nausea, headaches, or other symptoms. They may pose a greater health risk for infants, young children, the elderly, and people with severely-compromised immune systems.
Fecal indicators (<i>E. coli</i>)	TT	-	TT	((N/A)) 0	Human and animal fecal waste	Fecal indicators are microbes whose presence indicates that the water may be contaminated with human or animal wastes. Microbes in these wastes can cause short-term health effects, such as diarrhea, cramps, nausea, headaches, or other symptoms. 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 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.
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.
<i>Giardia lamblia</i> Viruses <i>Cryptosporidium</i>	TT	-	TT	((N/A)) 0	Human and animal fecal waste	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.

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Heterotrophic plate count (HPC) bacteria	TT	-	TT	N/A	HPC measures a range of bacteria that are naturally present in the environment	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.
Legionella	TT	-	TT	((N/A)) 0	Found naturally in water; multiplies in heating systems	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.
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)) [gross alpha excluding uranium and radon] (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)) [226 & 228] (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)) (ppb)	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.
Inorganic Contaminants						
Antimony ((ppb))	.006 ppm	1000	6 ppm	6 ppm	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))	0.010 ppm	1000	10 ppb	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.

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Beryllium ((ppb))	.004 ppm	1000	4 ppb	4 ppb	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 ppm	1000	5 ppb	5 ppb	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 ppm	1000	100 ppb	100 ppb	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 ppm	1000	200 ppb	200 ppb	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.
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))	TT AL = .015 ppm	1000	TT AL = 15 ppb	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 ppm	1000	2 ppb	2 ppb	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.

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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 ppm	1000	50 ppb	50 ppb	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 ppm	1000	2 ppb	0.5 ppb	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.
Disinfection Byproducts (DBPs)						
Bromate	.010 ppm	1000	10 ppb	0	Byproduct 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.
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	Byproduct 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.
Chlorine dioxide	MRDL = .8 ppm	1000	MRDL = 800 ppb	MRDLG = 800 ppb	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.

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Haloacetic Acids (HAA5) (ppb)	60	1000	60	N/A for combined dichloroacetic acid = 0; monochloroacetic acid = 70; trichloroacetic acid = 20	Byproduct 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.
Total Trihalomethanes [TTHMs] (ppb)	80	1000	80	N/A (chloroform = 70; dibromochloromethane = 60; bromoform = 0; bromodichloromethane = 0)	Byproduct 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.
Synthetic Organic Contaminants including Pesticides and Herbicides						
2,4-D (ppb)	((.07)) 70	((1000)) 1	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)) 50	((1000)) 1	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.
(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)) 2	((1000)) 1	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)) 3	((1000)) 1	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)) .2 ppb	((1,000,000)) 1000	200 ppt	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)) 40	((1000)) 1	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)) 2	((1000)) 1	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.

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Dalapon (ppb)	((2)) 200	((4000)) -	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.
DCPA (ppb)	SAL = 85	-	SAL = 85	N/A	Breakdown of the herbicide Dacthal used on grasses and weeds	Some people who drink water containing DCPA and its metabolites above the SAL over many years could experience problems with their lungs, kidneys, liver, thyroid, or eyes, or may have an increased risk of getting cancer.
Di(2-ethylhexyl) adipate (ppb)	((4)) 400	((4000)) -	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)) 6	((4000)) -	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)) [DBCP]	((.0002)) .2 ppb	((1,000,000)) 1000	200 ppt	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)) 7	((4000)) -	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	4000	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] ((ppt))	((.00000003)) .03 ppt	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.
((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.)
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.
Endothall (ppb)	100	-	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)) 2	((4000)) -	2	2	Residue of insecticide	Some people who drink water containing endrin in excess of the MCL over many years could experience liver problems.

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((Epiclorohydrin))	FF	-	FF	0	Discharge from industrial chemical factories; An impurity of some water treatment chemicals	Some people who drink water containing high levels of epiclorohydrin over a long period of time could experience stomach problems, and may have an increased risk of getting cancer.)
Ethylene dibromide ((ppt))	((.00005)) .05 ppb	((1,000,000)) 1000	50 ppt	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)) 700	((1000)) 1	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)) .4 ppb	((1,000,000)) 1000	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)) .2 ppb	((1,000,000)) 1000	200 ppt	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)) 1	((1000)) 1	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.
Hexachlorocyclopentadiene (ppb)	((.05)) 50	((1000)) 1	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)) .2 ppb	((1,000,000)) 1000	200 ppt	200 ppt	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)) 40	((1000)) 1	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)) 200	((1000)) 1	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.
PCBs [Polychlorinated biphenyls] (ppt)	((.0005)) .5 ppb	((1,000,000)) 1000	500 ppt	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.

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Pentachlorophenol (ppb)	((001)) 1	((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.
PFOA (ppt)	10		10	N/A	Run-off or leaching from firefighting foam, industrial discharge, and landfills; wastewater treatment plants	Some people who drink water containing PFOA in excess of the SAL over prolonged periods may have cholesterol, immune or thyroid problems; high blood pressure during pregnancy and children with lower birthweights; and a higher risk of getting certain types of cancers.
PFOS (ppt)	15		15	N/A	Run-off or leaching from firefighting foam, industrial discharge, and landfills; wastewater treatment plants	Some people who drink water containing PFOS in excess of the SAL over prolonged periods may have cholesterol and immune problems; children with lower birthweights; and increased risk of having kidney or thyroid disease.
PFHxS (ppt)	70		70	N/A	Run-off or leaching from firefighting foam, industrial discharge, and landfills; wastewater treatment plants	Some people who drink water containing PFHxS in excess of the SAL over prolonged periods may have liver or immune problems, or increased risk of thyroid hormone problems during pregnancy and infancy. Exposed children may have increased risk of abnormal behavior.
PFNA (ppt)	14		14	N/A	Run-off or leaching from firefighting foam, industrial discharge, and landfills; wastewater treatment plants	Some people who drink water containing PFNA in excess of the SAL over prolonged periods may have cholesterol, immune, liver or reproductive problems. Children exposed prenatally may have lower birthweights and increased risk of abnormal development.
PFBS (ppt)	860		860	N/A	Run-off or leaching from firefighting foam, industrial discharge, and landfills; wastewater treatment plants	Some people who drink water containing PFBS in excess of the SAL over prolonged exposure may have higher risk of cholesterol, liver, kidney or thyroid problems.
Picloram (ppb)	((5)) 500	((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)) 4	((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)) 3	((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)) 5	((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	Byproduct 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.))

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Bromomethane (ppb)	SAL = 5	-	SAL = 5	N/A	Fumigant for pests; Byproduct of drinking water disinfection	Some people who drink water containing bromomethane in excess of the SAL over many years may have effects of the nervous system, the eyes, gait, behavioral changes, mild liver and kidney dysfunction.
Carbon tetrachloride (ppb)	((.005)) 5	((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	Byproduct 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.
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)) 100	((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)) 600	((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)) 75	((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.
Dichlorodifluoromethane (ppb)	SAL = 530	-	SAL = 530	N/A	Refrigerant; leaching from landfills	Some people who drink water containing dichlorodifluoromethane may experience irritation of the skin and eyes. Exposure to high levels can also cause dizziness, lightheadedness, and make it hard to concentrate. It may also cause an irregular heartbeat.

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1,2-Dichloroethane (ppb)	((005)) 5	((1000)) 1	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)) 7	((1000)) 1	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)) 70	((1000)) 1	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)) 100	((1000)) 1	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)) 5	((1000)) 1	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)) 5	((1000)) 1	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)) 700	((1000)) 1	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	Byproduct 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.)
Naphthalene (ppb)	SAL = 14	1	SAL = 14	N/A	Discharge from creosote, fuel spills, or petroleum refineries	Some people who drink water containing naphthalene may experience anemia, damage to the liver, damage or destroy some red blood cells. Exposure over many years could cause eye problems such as cataracts and retinal hemorrhage, inflammation of the lungs and nose, and may have an increased risk of getting cancer.
Styrene (ppb)	((1)) 100	((1000)) 1	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.
Tetrachloroethylene (ppb)	((005)) 5	((1000)) 1	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)) 70	((1000)) 1	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.

Contaminant ((units))	((traditional MCL in mg/L)) MCL or SAL (units match lab results)	To convert lab results for CCR, multiply by	MCL in CCR units	MCLG in CCR units	Major Sources in Drinking Water	Health Effects Language
1,1,1-Trichloroethane (ppb)	((=2)) 200	((+000)) -	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)) 5	((+000)) -	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	4000	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)	.080	4000	80	N/A	Byproduct 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.)
Trichlorofluoromethane (ppb)	SAL = 1300	-	SAL = 1300	N/A	Refrigerant; leaching from landfills	Some people who drink water containing trichlorofluoromethane may experience skin and eye irritation. Long-term exposure may cause dryness and crack of the skin.
1,2,3-Trichloropropane(ppb)	SAL = 21	-	SAL = 21	N/A	Leaching from hazardous waste sites or agricultural soils treated with some fumigants	Some people who drink water containing trichloropropane may experience throat and eye irritation and may affect muscle coordination and concentration from short-term use. Long-term exposure can affect body weight and kidney function.
Toluene (ppm)	((+)) 1000	-	((+)) 1000	((+)) 1000	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)) 2	((+000)) -	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)) (ppb)	((+)) 10,000	-	((+)) 10,000	((+)) 10,000	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.
Treatment Technique Violations						
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.
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.

Contaminant ((units))	((traditional MCL in mg/L)) MCL or SAL (units match lab results)	To convert lab results for CCR, multiply by	MCL in CCR units	MCLG in CCR units	Major Sources in Drinking Water	Health Effects Language
Groundwater rule TT violations	TT	-	TT	N/A	-	Inadequately treated or inadequately protected water may contain disease-causing organisms. These organisms can cause symptoms such as diarrhea, nausea, cramps, and associated headaches.
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/l)) pCi/L = picocuries per liter (a measure of radioactivity) ppm = parts per million, or milligrams per liter ((mg/l)) (mg/L) ppb = parts per billion, or micrograms per liter (ug/L) ppt = parts per trillion, or nanograms per liter (ng/L) ppq = parts per quadrillion, or picograms per liter (pg/L) SAL = State Action Level TT = Treatment Technique						

AMENDATORY SECTION (Amending WSR 17-01-062, filed 12/14/16, effective 1/14/17)

WAC 246-290-810 Water use efficiency program. (1) Water system plans and small water system management programs submitted for approval for the first year after (~~the effective date of this rule~~) January 22, 2007, must describe the municipal water supplier's existing water use efficiency program. The municipal water supplier must continue existing levels of water use efficiency.

(2) Subsections (3) and (4) of this section apply to:

(a) Water system plans submitted to the department for approval under WAC 246-290-100 one year after the effective date of this rule.

(b) Small water system management programs developed and implemented or submitted to the department for approval one year after the effective date of this rule.

(3) Municipal water suppliers shall develop and implement a water use efficiency program which includes sufficient cost-effective water use efficiency measures to meet the water use efficiency goals developed under WAC 246-290-830.

(4) Municipal water suppliers shall complete the following items in the water use efficiency program:

(a) Describe the current water use efficiency program;

(b) For systems serving one thousand or more total connections, estimate the amount of water saved through implementation of the water use efficiency program over the prior six or more years; the estimate may include the entire approval period of the most recent water system plan required under WAC 246-290-100;

(c) Describe the chosen water use efficiency goals and document the goals were established in accordance with WAC 246-290-830;

(d) Evaluate water use efficiency measures to determine if they are cost-effective as follows:

(i) Evaluate or implement, at a minimum, the number of water use efficiency measures specified in Table ((13)) 18 of this section based on the system's total number of connections.

(ii) Evaluate or implement water use efficiency measures from the following categories of measures if they are applicable: Indoor residential, outdoor, and industrial/commercial/institutional.

(iii) For systems serving less than one thousand total connections, describe the evaluation process used to select water use efficiency measures.

(iv) For systems serving one thousand or more total connections, include the following criteria when evaluating water use efficiency measures:

(A) Quantitatively evaluate water use efficiency measures to determine if they are cost-effective from the system's perspective including the marginal costs of producing water.

(B) Address whether the water use efficiency measures are cost-effective if the costs are shared with other entities.

(C) Quantitatively or qualitatively evaluate water use efficiency measures to determine if they are cost-effective from the societal perspective.

Table ((13)) 18

Number of connections	Less than 500	500-999	1,000-2,499	2,500-9,999	10,000-49,999	50,000 or more
Water use efficiency measures	1	4	5	6	9	12

(e) Describe all water use efficiency measures to be implemented over the next six or more years, including a schedule and a budget that demonstrates how the water use efficiency measures will be funded. Purveyors may submit a schedule and budget for the entire water system plan approval period, if the approval period is longer than six years;

(f) Describe how consumers will be educated on water use efficiency practices;

(g) Estimate projected water savings from selected water use efficiency measures;

(h) Describe how the water use efficiency program will be evaluated for effectiveness;

(i) Evaluate water distribution system leakage as follows:

(i) Include distribution system leakage annual totals in accordance with WAC 246-290-820 for each of the past six or more years. Purveyors shall submit distribution system leakage annual totals for the entire water system plan approval period if the approval period was longer than six years.

(ii) If necessary, include a copy of the water loss control action plan in accordance with WAC 246-290-820(4).

(iii) If all or portions of transmission lines are excluded when determining distribution system leakage, estimate the amount of leakage from the excluded portion of the transmission mains and describe how it is maintained to minimize leakage.